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EPA NEWSLETTER

Quality Assurance

CONTENTS

U.S. Environmental Protection Agency
Office of Research and Development
Environmental Monitoring and Support Laboratory
Cincinnati, Ohio 45268

MEMORIAL TO BOB KRONER

Robert C. Kroner, affectionately known to us all as Bob, died this past April. He was truly one of our pioneer environmental research scientists, starting his career at the U.S. Public Health Service (USPHS) research station at the old Kilgore Mansion, and becoming one of the original employees of the U.S. Environmental Protection Agency (USEPA) when it was created in 1970. Bob was part of the original team that did methods research in the basic measurement techniques for municipal and industrial wastes. He was one of the founders of the National Water Quality Network (NWQN), a system of surface monitoring stations, which is still in existence, providing valuable water quality data to the national program. Most of you probably remember him as Chief of our Physical and Chemical Methods Branch, the position he held at the time of his well-deserved retirement.

During his career, Bob authored numerous publications on the analytical chemistry of water and wastes. He received the Award of Merit in 1975, the highest award presented by American Society for Testing and Materials (ASTM), which also gave him the Max Hecht award in 1984 for his outstanding contributions to the study of water chemistry. A man of many interests, he combined his love of Cincinnati and flair for photography into a travelling slide show for the Cincinnati Historical Society.

Bob was a good friend and mentor to many of us. He made significant contributions to the field of environmental monitoring that will serve us for years to come. We'll miss him.

(Robert Booth, FTS: 684-7301; COML: 513-569-7301)

Scientific/Technical Highlight

Office of Solid Waste (OSW) - Washington, DC

SW-846 Methods

The Technical Assessment Branch, Characterization and Assessment Division, of OSW, is the focal point for expertise in all aspects of chemistry, testing methodology, quality assurance (QA), risk assessment and toxicology. The Methods Section of this Branch, headed by David Friedman, directs OSW's program to develop and promulgate test methods for identifying hazardous wastes and for determining the properties of wastes. It is also responsible for implementing the Resource Conservation and Recovery Act (RCRA) QA program.

When the RCRA regulations were proposed in 1978, the USEPA wanted to inform the regulated community about test methods which were acceptable for determining compliance with the regulations. A methods manual was made available through the public printing agencies of the government. The first edition: Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods (SW-846), was published in 1980. Its purpose was to present the state of the art in routine analytical testing, adapted for the RCRA program SW-846 methods. To keep current, it was updated yearly.

The second edition was published in 1982 and updated twice to keep pace with the state of the art and the growing RCRA program. In 1984, OSW proposed to make it mandatory for all RCRA testing and to include a number of new methods. Comments on this proposal indicated that the second edition needed modifications and more supporting data before it became mandatory.OSW responded with method validation studies to gather supporting data.The text of the methods was edited for clarity and a standard format was adopted. SW-846 was modified, to the extent possible, to make it consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Contract Laboratory Program (CLP) methods and methods from the Office of Water.

The third edition was published this past April and contains a revised Quality Control (QC) chapter. OSW is placing emphasis on QC so the quality of data produced by the methods is known. OSW will propose to make this QC, contained in Chapter One, mandatory for all RCRA testing and to sustitute the third edition for the second edition in the regulations. OSW will study the comments made in response to this proposal and determine whether or not to propose to make the third edition mandatory for all RCRA testing. OSW will update the third edition annually. The manual will be modified in response to public comment and RCRA requirements.

The third edition is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, on a subscription basis. The subscription includes both the third edition of the manual and a number of future updates. The cost is $110.00 per subscription for domestic mailing ($137.50 if mailed to a foreign address). The document number is 955-001-00000-1. The second edition of SW-846 is still referenced in several sections of the RCRA regulations, copies will be available through the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, COML: 703-487-4650.

Test Method Equivalency

The RCRA regulations (40 CFR 260.20) establish procedures by which persons may petition USEPA to approve the use of alternative or equivalent testing procedures when conducting testing under RCRA. A manual has been prepared to provide guidance for persons submitting a test method petitition. The document explains, in detail, the information a test method equivalency petition must include. Copies are available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, COML: 703-487-4650. The cost is $18.95 per paper copy and $6.50 per microfiche. The document number is PB-87-178349.

QA

The primary goals of the OSW Quality Assurance Program (QAP) are two-fold. The first is to insure that the data collected is sufficient to permit us to answer the question for which it is being gathered. The second is to insure that all test data will be of known quality. Ongoing QA efforts in OSW are:

1. Conduct Laboratory Evaluation Program (LEP) (Supported by ORD; EMSL-Cincinnati and EMSL-Las Vegas). This program involves about 45 Regional, State and OSW contractor laboratories.

2. Review and approve all plans for data gathering projects in OSW prior to start of the activity.

3. Issue memoranda "Notes on RCRA Methods and QA Activities" each 6-8 weeks. The memorandum series is designed to help the Regions and States keep abreast of RCRA activities in methods development, QA, hazardous waste identification characteristics and to solicit ideas and participation by Regional and State personnel in OSW workgroups.

4. Perform systems audits on laboratories under contract to OSW.

5. Prepare manuals or guidance material as needed.

6. Participate in planning and operating the annual symposium, "Solid Waste Testing and QA". (The most recent symposium was held July 13-14, 1987, in Washington, DC).

7. Review and rate the QA section in all proposals for OSW contracts.

8. Procure samples and oversee operation of repository of hazardous wastes.

9. Oversee a QA Work Group which supports the efforts of OSW in the QA area. Any questions on the above QA program may be directed to Florence Richardson, OSW's QAO.

(Denise Zabinski, FTS: 202-382-7458; COML: 202-382-7458)

Environmental Monitoring and Support Laboratory - Cincinnati (EMSL-Cincinnnati)

Mailing List Verification

In compliance with prior notice and government requirements to perform an annual review of mailing list, *the Mailing List Update page of this Newsletter (next to the last page) must be returned to the writer by August 31, 1987.* A new list will be established in September. Continue to send information by electronic mail, through use of magnafax (FTS: 684-7274 and 684-7276), or mail articles to: Betty Thomas, Publications Assistant, EMSL-Cincinnati, 26 West St. Clair Street, Cincinnati, Ohio 45268.

New Telephone Changes for the Office of the Director (OD) Staff

Effective immediately, the OD staff has made some telephone changes. The new telephone changes for the OD staff are as follow:

Director's Office

Robert Booth — FTS: 684-7301
Beverly Halbe — COML: 513-569-7301

Deputy Director's Office

Thomas Clark — FTS: 684-7303
Joan Lobitz — COML: 513-569-7303

Publications Office

Betty Thomas — FTS: 684-7302
Jerry Bivens — COML: 513-569-7302

Administration Office

Kathie Fieler — FTS: 684-7304
Shirley Graden — COML: 513-569-7304

Budget/Fiscal Office

Terri Firestone — FTS: 684-7305
Debra Lang — COML: 513-569-7305

Equivalency Program

Terence Grady — FTS: 684-7328
COML: 513-569-7328

Science Advisor's Office

Robert Graves — FTS: 684-7315
COML: 513-569-7315

QA Management Staff Liaison

Daniel Bender — FTS: 684-7351
COML: 513-569-7351

(Betty Thomas, FTS: 684-7302; COML: 513-569-7302)

Physical and Chemical Methods Branch

New Methods for the Support of the National Pesticide Survey (NPS)

Six new methods have been developed through contract with Battelle-Columbus Laboratories for the determination of a total of over 100 pesticides and pesticide metabolites. These methods are currently being used by Battelle and USEPA laboratories in the NPS pilot study. A comprehensive review of these method write-ups by USEPA, State and private concerns will be conducted. The methods should be finalized and available by October, 1987. They will be used for the NPS that is scheduled to begin this fall. Also, they may be proposed to support future regulations developed by the ODW or the Office of Pesticide Programs (OPP) of USEPA.

The six methods include five broad-spectrum methods: [three capillary column gas chromatographic (GC) methods and two high performance liquid chromatographic (HPLC) methods] and one single-analyte method [a GC method for measuring ethylene thiourea]: neutral halogenated pesticides are determined by methylene chloride extraction and GC/electron capture detector; halogenated acids are determined by ethyl ether extraction, methylation, column cleanup, and GC/electron capture detector; nitrogen and/or phosphorus containing pesticides are determined by methylene chloride extraction and GC/nitrogen-phosphorus detector; non-volatile, nonpolar analytes are determined by methylene chloride extraction and HPLC/ultraviolet detector; non-volatile, nonpolar analytes are measured by direct liquid injection, HPLC/post-column reaction and a fluorescence detector; and ethylene thiourea is measured by concentrating on a solid adsorption column, methylene chloride elution and GC/nitrogen-phosphorus detector. (Robert Graves, FTS: 684-7315; COML: 513-569-7315)

Methods Manuals for Organics in Drinking Water

Six methods prepared in support of the final rule on volatile organic compounds (VOC) in drinking water are now available from EMSL-Cincinnati. These methods have been edited in response to public comments received on the proposed rule of November 13, 1985, and include the two capillary column purge and trap methods described in the February, 1987 edition of this Newsletter.

The methods are being typeset and punched for insertion into a three-ring binder that will contain all of the methods related to the measurement of organics in water to meet the requirements of the Safe Drinking Water Act.
(James Longbottom, FTS: 684-7308; COML: 513-569-7308)

Intergovernmental Personnel Act (IPA) Assignment

Dr. Fred Kawahara of the EMSL-Cincinnati has accepted an IPA assignment with the National Bureau of Standards (NBS) for a six-month period. The research that is currently being conducted at NBS is complimentary to the work of Dr. Kawahara's on the coating of fiber optics with silane polymers to sensitize the fiber optics to the presence of trace amounts of aromatics. The NBS is also developing an analytical method for aromatics by observing the reaction of aromatics with antigens coated on glass beads.
(Joseph Roesler, FTS: 684-7286; COML: 513-569-7286)

Automatic Sequential Sampling of Volatile Organics in Water

Dr. James Shou-Yien Ho of the EMSL-Cincinnati has successfully completed his research on the design, construction, and evaluation of two automatic bottle sealing mechanisms for the collection of volatile organic compounds in water. This information is published in the June 1987 issue of the Water Resources Bulletin, American Water Resources Association, Volume 23, No. 3. Dr. Ho compared samples of volatile organics that were manually collected in uncapped bottles and in bottles capped with the automatic bottle sealing mechanisms. After 24 hours' storage, significant losses of volatile compounds from uncapped bottles occurred even if the samples were stored at 4°C, but not for the samples capped with the automatic bottle sealing mechanisms. The mechanism for sealing the sample bottles was

integrated into a commercial sampler with minor modifications to the sampler. The sampling system was then evaluated under controlled conditions to simulate actual field sampling. The results showed that the system was suitable for taking sequential discrete water samples automatically for 24 hours without significant losses of volatile organic compounds.
(Joseph Roesler, FTS: 684-7286; COML: 513-569-7286)

Announcement

EMSL-Cincinnati is considering a recommendation to remove the Brucine Method (352.1) for nitrate measurement from the list of approved drinking water methods. It is felt that the method's extreme dependence upon temperature creates considerable possibility of error. We would like to have written comments from any readers who may be using this method. Write to John Pfaff, Research Chemist, Inorganic Analyses Section, Physical and Chemical Methods Branch, EMSL-Cincinnati, 26 West St. Clair, Cincinnati, Ohio 45268.

In addition to the recommendation for removal of brucine, EMSL-Cincinnati is also considering recommending the removal of the Atomic Absorption, Furnace Technique for Sodium, Method 273.2, from the list of approved drinking water methods. Any comments should be addressed to John Pfaff at address given above.
(John Pfaff, FTS: 684-7313; COML: 513-569-7313)

Method 200.1: Determination of Acid Soluble Metals

To measure and define a more realistic impact of metal toxicity on the aquatic environment, the Agency has established the concept of "acid-soluble" metal. The term refers to the solubilized metal fraction of a sample that will pass through a 0.45 μ membrane filter after acidification with nitric acid to a pH between 1.5 to 2.0. The "acid-soluble" metal measurement is believed to be less rigorous and a more scientifically correct basis upon which to establish ambient water quality criteria than "total" or "total-recoverable" metal analyses. Method 200.1 describes the sample preparation procedure for the determination of six acid-soluble metals (As, Cd, Cr, Cu, Pb and Hg) by atomic spectroscopy. However, the method does not distinguish oxidation states or organometallic speciation. The method has been evaluated by being subjected to limited single laboratory ruggedness testing covering the analyses of 10 metals. Copies of the draft report that discusses the single laboratory evaluation along with copies of Method 200.1 are available from EMSL-Cincinnati by calling Ms. Louise Hoffman, FTS: 684-7586; COML: 513-569-7586. Comments and suggestions concerning the method are welcome.
(Theodore Martin, FTS: 684-7312; COML: 513-569-7312)

Method 200.11: Determination of Metals in Fish Tissue by Inductively Coupled Plasma-Atomic Emission Spectrometry

The present dry ashing interim method recommended for whole fish analyses has been criticized as being time consuming and subject to contamination because of the number and length of operative steps involved in the procedure. In response to this criticism and for a more reliable procedure, Method 200.11 was developed. In Method 200.11 a 1 to 2 gram aliquot of fresh tissue is placed in labeled, pre-weighed polysulfone Oak Ridge type centrifuge tube for transport, storage and sample processing. At the time of analysis, the tissue is dissociated using tetramethylammonium hydroxide, mild heating and vortex mixing. The resulting colloidal suspension is cooled, partially oxidized with hydrogen peroxide, and the metals are finally solubilized in nitric acid with additional heating. After solubilization, the volume of the acid solution is diluted with deionized, distilled water to a uniform weight/volume ratio of 1 gram fish tissue per 10 mL of solution. The solution is then mixed, centrifuged and analyzed directly from the centrifuge tube by inductively coupled plasma-atomic emission spectrometry. The analytical results are reported in concentration of μg/gram wet tissue weight. Method 200.11 is applicable to the analyses of aluminum, antimony, arsenic, beryllium, cadmium, calcium, chromium, copper, iron, lead, magnesium, nickel, phosphorus, selenium, sodium, thallium and zinc. Included in the method description are typical method detection limits along with single laboratory precision and accuracy data determined using bluegill fillet tissue. Copies of the method are available from EMSL-Cincinnati by calling Ms. Louise Hoffman, FTS: 684-7586; COML: 513-569-7586. Comments and suggestions concerning the method are welcome.
(Theodore Martin, FTS: 684-7312; COML: 513-569-7312)

Multi-Laboratory Evaluation of a Broad Spectrum Gas Chromatograph/Mass Spectrometer (GC/MS) Method

The EMSL-Cincinnati laboratory is assisting the Office of Emergency and Remedial Response (OERR) with a seven-laboratory test of a method for the identification and measurement of a broad range of organic compounds. The purpose of the test is to demonstrate that it is not only feasible, but also cost-effective to identify and measure polychlorinated biphenyls (PCBs), chlorinated hydrocarbon pesticides, a wide range of base-neutrals, and phenols with a single streamlined procedure. The method is designed for real-world, highly contaminated water and soil samples from abandoned hazardous chemical waste sites where compounds are ordinarily present in concentrations above one part per billion. The test method uses an MS to detect sample components as they elute from a fused silica capillary column in a GC. The MS is operated in the standard full-range mass spectrum mode.

Water and soil samples will be extracted in the test of the method using procedures similar to those currently used by OERR in its contract laboratory program. Changes to these procedures for this test were designed to improve method performance and include a change in the pH adjustments prior to extraction of water samples and improved gel permeation chromatography procedures for soil sample extracts. The PCBs will be measured using the approach of Method 680; that is, the identification and measurement of PCB components by level of chlorination. Groups of PCB components at each level of chlorination are called isomer groups, and total PCBs are measured by summing the quantities of isomer groups.

In the seven-laboratory test, automated procedures will be used to identify PCBs by level of chlorination, identify pesticides, carry out the calculations required to produce the final results, and generate reports on magnetic media (diskettes) for submission to USEPA. The automated procedures are contained in a set of computer programs (software) developed by EMSL-Cincinnati. These programs execute on the same computer used for the GC/MS data acquisition (or a personal computer) and their use substantially reduces the time and effort required to obtain the final results. Accuracy and precision of the identifications and measurements are improved by the elimination of the need to inspect numerous mass spectra and carry out extensive calculations.

Results of the seven-laboratory test will be presented in the form of a detailed written report in November 1987.

(William Budde, FTS: 684-7309; COML: 513-569-7309)

Biological Methods Branch

Microbiology

Workshop on Drinking Water Quality: Current Trends and Emerging Problems

A workshop addressing recent concerns in drinking water quality was sponsored by the Office of Continuing Education, American Society for Microbiology (ASM), at the Valley Forge Regional Meeting held May 8, 1987 in King of Prussia, Pennsylvania. Several microbiologists from USEPA, the Centers for Disease Control (CDC), and academic institutions participated. The workshop was moderated by Robert Bordner and included sessions on "Biofilm Occurrence in Water Pipes," Edwin E. Geldreich, Water Engineering Research Laboratory – Cincinnati; "Evaluation of Alternative Coliform Membrane Filter Media for Drinking Water," Robert Bordner, Environmental Monitoring and Support Laboratory – Cincinnati; "Potential Problems in Drinking Water: Giardia and Cryptosporidium," Frank W. Schaefer, Toxicology and Microbiology Division – Cincinnati, Health Effects Research Laboratory; "Association of Heterotrophs and Nosocomial Infections," Anita K. Highsmith, Nosocomial Infections Laboratory Branch, Center for Infectious Diseases, CDC, Atlanta, Georgia; "Application of Conventional Coliform Data to the Frequency of Occurrence Concept," Wesley O. Pipes, and "Occurrence and Significance of Fungi in Drinking Water," William Rosenzweig, Drexel University, Philadelphia; and "Pros and Cons of Concentration-time (C-t) Tables in Disinfection Treatment," Vincent Olivieri, Johns Hopkins University, Baltimore, Maryland. Requests for more information should be addressed to the individual speakers.

(Robert Bordner, FTS: 684-7319; COML: 513-569-7319)

Drinking Water Laboratory Certification Courses

EMSL-Cincinnati held three Drinking Water Laboratory Certification courses in June at the Andrew W. Breidenbach Environmental Research Center (AWBERC), Cincinnati, for Laboratory Certification Officers from USEPA regions and the states in support of the Agency's QA program. A Microbiology course was held during the week of June 8, and Chemistry courses were held during the weeks of June 15 and 22. All three courses were filled to capacity. The course contents included the legislative mandate and development of the national certification program, current analytical methodology and QA procedures, essential background information, and procedures for on-site laboratory visits.

(Robert Bordner, FTS: 684-7319; COML: 513-569-7319 and Jack Pfaff, FTS: 684-7312; COML: 513-569-7312)

Evaluation of the Hydrophobic Grid Membrane Filter (MF) Procedure for Coliforms to be Published

EMSL-Cincinnati compared the hydrophobic grid membrane filter (HGMF) to the standard MF and most probable number (MPN) procedures for the detection and enumeration of coliforms in nonchlorinated wastewaters, and polluted surface and dosed drinking waters. Recoveries of fecal coliforms were significantly higher with the MPN method than with the filtration methods only for the nonchlorinated domestic wastewaters. No significant difference was observed in recoveries of fecal and total coliforms with either MFs or HGMFs. Total coliform results obtained with HGMFs having greater than 100 positive grid cells were significantly more precise than estimates obtained with the standard MF method only for polluted surface waters. The results of this study are scheduled to be published in the May 1987 issue of *Applied and Environmental Microbiology*.

(Audrey McDaniels, FTS 684-7332; COML: 513-569-7332)

Screening Test for Acceptability of MFs

The accurate recovery of bacteria from water samples using the MF method depends on the quality of the filters used. Any defects in the filters due to changes in materials, manufacturing processes, storage conditions, or degree of quality control (QC) may result in an increase or decrease in the recovery of microorganisms. A study of MF irregularities, such as partial or complete inhibition of microbial growth at the gridlines, abnormal spreading of colonies, nonwetting areas, growth in and along the gridlines, poor colony sheen development and formation of a metallic sheen on the MF surface on Endo agar, decreased recovery, and various combinations of these defects, found on several lots of MFs during routine QC procedures has resulted in the development of a sensitive screening test for MF acceptability. The test was described in an oral presentation entitled "A New Screening Test to Determine the Acceptability of 0.45 μm Membrane Filters for the Analysis of Water," presented at the Annual Meeting of the American Society for Microbiology (ASM) held in Atlanta, Georgia, March 4, 1987.

(Kristen Brenner, FTS: 684-7317; COML: 513-569-7317)

Comparison of Media for the Isolation and Enumeration of Staphylococcus aureus *in Swimming Pool Water*

A paper was presented at the poster session of the American Society for Microbiology (ASM) annual meeting on the results of research comparing Baird-Parker (BP) agar, Vogel-Johnson (VJ) agar, and M-Staphylococcus (MS) broth for the isolation and enumeration of *S. aureus* in swimming pool water using the membrane filter method.

Alternatively, recovery of *S. aureus* with BP agar, VJ agar, and MS broth ranged from 87-117%, 25-89%, and 52-96% respectively, compared to recovery on a nonselective medium. In swimming pool comparison studies statistically significant higher recoveries of staphylococci were obtained with BP agar. VJ agar and BP agar demonstrated poor specificity for *S. aureus*,

but were specific and selective for staphylococci. When isolates were speciated, the accepted description of "typical" colony morphology with either VJ or BP agar correlated poorly with identification as *S. aureus*. Neither VJ nor BP agar was found acceptable for enumeration of S. aureus, but both were acceptable for total staphylococci. MS broth was not sufficiently differential or selective for quantitative recovery of staphylococci or *S. aureus*. Copies of the poster are available upon request.
(Terry Covert, FTS: 684-7318; COML: 513-569-7318)

Virology

Revision of Chapter of the USEPA Manual of Methods for Virology, EPA/600/4-84/013

The revised Chapter, "Cell Culture Preparation and Maintenance," EPA/600/4-84/013(R9), is available for distribution. This chapter and the soon to be completed chapter, "Cell Culture Procedures for Virus Assay," will replace the current description of cell culture procedures in the manual. These new chapters will be designated as 9 and 10, respectively. The chapter on "Virus Plaque Confirmation Procedure" which was Chapter 10, will be renumbered as Chapter 11, and the current Chapter 11 ("Identification of Enteroviruses") will be renumbered as Chapter 12. These chapter number changes will be instituted in 1988, when the chapters are reissued.
(Robert Safferman, FTS: 684-7334; COML: 513-569-7334)

Aquatic Biology

Draft Marine Rapid Chronic Toxicity Test Manual Distributed

A draft of the methods manual, "Short-term Methods for Measuring the Chronic Toxicity of Effluents and Surface Waters to Marine and Estuarine Organisms," was distributed for review by the Bioassay Subcommittee of the EMSL-Cincinnati Biological Advisory Committee, USEPA Headquarters and regional staff, other Federal agencies, state and interstate water pollution control programs, environmental protection groups, trade associations, major industries, consulting firms, academic institutions engaged in aquatic toxicology research and other interested parties in the private sector. The manual describes short-term (one-hour to nine-days) methods for estimating the chronic toxicity of effluents and receiving waters to two marine fish, two invertebrates, and an alga. Also included are guidelines on laboratory safety, QA, facilities and equipment, dilution water, effluent sampling and holding, data analysis, report preparation, and organism culturing and handling. Listings of computer programs for Dunnett's Procedure and Probit Analysis are provided in the Appendix.
(William Horning, FTS: 778-8350; COML: 513-527-8350)

Report on the Taxonomy of Ceriodaphnia *Available*

The report, "Taxonomy of Ceriodaphnia (Crustacea: Cladocera) in U.S. Environmental Protection Agency Cultures," EPA/600/S4-86/032, by Dorothy B. Berner, Temple University, can be obtained by contacting ORD Publications, CERI, U.S. Environmental Protection Agency, Cincinnati, Ohio, 45268. *Ceriodaphnia* is an important toxicity test organism in the Agency's new Water Quality Based Approach to the control of toxic discharges in the Discharge Permit Program. Correct identification of the test organisms is important in establishing the validity of the test results.
(William Horning, FTS: 778-8350; COML: 513-527-8350)

Correction in Project Summary (EPA/600/S4-86/032) for Ceriodaphnia *Taxonomy Study*

The principal investigator (Dr. Berner) has indicated that the last sentence in the "Conclusions" of the recently distributed Project Summary (EPA/600/S4-86/032) should read as follows: "It is likely, however,

that other species of *Ceriodaphnia* exist that have a heavy, fine-toothed central pecten on the claw similar to that of *dubia*. Therefore, that character alone should not be used to identify animals found in natural populations." For further information on Ceriodaphnia taxonomy contact Dr. Berner, Biology Department, Temple University, Philadelphia, PA 19122.
(William Horning, FTS: 778-8350; COML: 513-527-8350)

Meeting of the Biological Advisory Committee

The Bioassay Subcommittee of the EMSL-Cincinnati sponsored Biological Advisory Committee met in Cincinnati, May 13-15. The meeting was attended by approximately 25 members, representing regional programs, ORD laboratories, and headquarters program offices. Subjects discussed included: the proposed revisions in the freshwater short-term chronic toxicity test manual (EPA/600/4-85/014); the draft marine short-term chronic toxicity test methods; toxicity laboratory certification; fractionation of toxic chemicals in effluents; the need for standardized sediment toxicity test methods; biological assessment protocols for superfund sites; revision of the (1973) biological field and laboratory methods manual (EPA/600/4-73/001); and biological assessments mandated by the Water Quality Act of 1987.
(William Horning, FTS: 778-8350; COML: 513-527-8350)

Environmental Monitoring Systems Laboratory - Las Vegas, Nevada (EMSL-Las Vegas)

Superfund Contract Laboratory Program (CLP) Reference Material

The University of Nevada, Las Vegas Quality Assurance Laboratory (UNLV-QAL) produces several inorganic and organic reference materials (RMs) in support of the Superfund Contract Laboratory Program. The USEPA Regional personnel and Remedial Field Investigation Teams (REM/FITs) may request these materials through: Dr. Larry C. Butler, USEPA, EMSL-Las Vegas, QA Research Branch, Post Office Box 15027, Las Vegas, NV 89114-5027 (FTS: 545-5027; COML: 702-798-2114).

Inorganic Reference Materials

Reference Materials suitable for inorganic analyses presently include a natural ground rock matrix from a local mine containing 23 elements. It is available for use as a Lab Control Sample. Aqueous samples include Initial Calibration Verification (ICV) Solutions 1-5, which can also be used as aqueous Lab Control Samples, and an inductively coupled plasma (ICP) Interference Check Sample. ICV-1 contains 18 elements; ICV-2 contains arsenic and selenium, ICV-3 contains antimony; and ICV-4 contains lead, cadmium, thallium, and silver; and ICV-5 contains mercury. The ICP Interference Check Sample is a set of two solutions containing 4 interferences and 13 analytes.

These materials have all been certified in interlab studies. Instruction sheets for use of the materials as well as qualitative and quantitative information are included with each material requested. Materials presently available are listed below.

Organic Reference Materials

The UNLV-QAL also produces several dioxin Performance Evaluation Materials (PEMs). These PEMs presently consist of various fortified and unfortified sands. (Fortified is defined as having analytes and/or interfering compounds added). Dioxin PEMS are available fortified at concentrations appropriate for low

resolution mass spectrometry analysis parts per billion (ppb). Blanks with and without interferences exist for ppb and parts per trillion (ppt) levels of analysis.

Included in a dioxin PEM shipment is a listing of nominal analytical values for each container in the shipment and a listing of the PEM Sample Numbers. The nominal value is an approximation of the analytical value obtained in a single lab study. Dioxin PEMS presently available are listed below.

The UNLV-QAL is planning to develop ppb and ppt tetra-, penta-, hexa-, hepta-, and octachlorinated dibenzo-p-dioxin (PCDD) and dibenzo-furans (PCDF) soil PEMs to support Method 8280 and a high resolution mass spectrometry version of the method (8290). PEMS composed of real matrices with all of their attendant interferences are being developed now. Dioxin water PEMs are not available; however, development is in the planning stage.

UNLV-QAL Reference Materials

Inorganic Materials:
Interference Check Sample 0387; Laboratory Control Sample: Initial Calibration Verification (ICV) Solutions I-5.

Organic Materials:
Dioxin Materials: Fortified Kiln Ash; Fortified XAD Resin; Fortified Filter Paper; Fortified Florisil; Fortified ppb PEMs; Fortified PEM Blanks; PEM Blanks (ppb and ppt). Requests, questions, and comments should be addressed to Dr. Butler at the address and phone number above.
(Amy Smiecinski, FTS: 545-3149; COML: 702-798-3119)

Headquarters

Office of Water - Washington, DC

Progress Report on the Discharge Monitoring Reports (DMR) QA Program

Through EMSL-Cincinnati, Office of Water Enforcement and Permits (OWEP) has been conducting a QA program to assure the quality of DMR from the 7500 major National Pollutant Discharge Elimination System (NPDES) permittees. Since 1980, six national studies have been completed.

Major permittees are sent performance evaluation (PE) samples containing constituents normally found in industrial and municipal wastewaters. The samples are to be analyzed with the method normally used to generate the data submitted in DMRs. Responding permittees subsequently receive an evaluation of their data, and where necessary, are given guidance for checking error sources.

The program has provided valuable data in assessing the quality of self-monitoring data. Data quality has steadily improved (as illustrated in Figures 1 and 2). This program also enables the tracking of improvements by permittee category, identifying the sources of error, and improving the efficiency of NPDES compliance monitoring.

Innovations for Study 6 include the following:

1. Effluent limit information from the Permit Compliance System (PCS) has been used to evaluate concentration ranges for the 29 analytes. The results were used to set suitable concentration ranges for PE samples for the next study.

2. Performance can now be evaluated by method code for each of the analytes. This capability allows for assessing the frequency of use and also comparing the effectiveness of different analytical methods.

3. A code has been added for identifying the type of laboratories used by permittees. This code enables more effective follow-up of permittees using commercial laboratories.

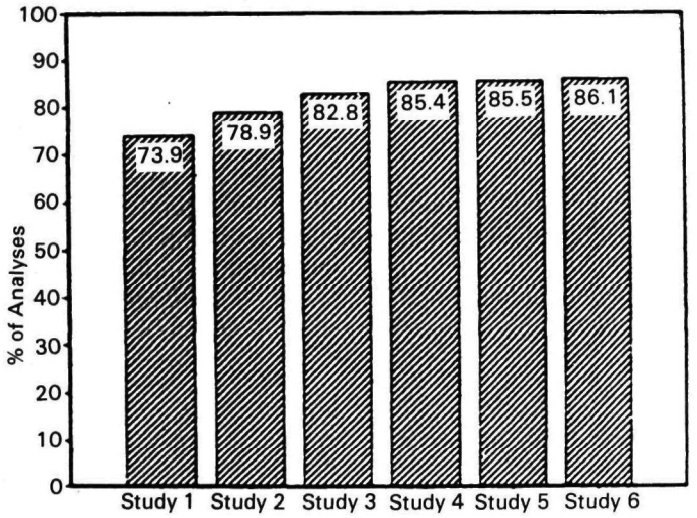

Figure 1. Percent of DMRA QA analyses acceptable.

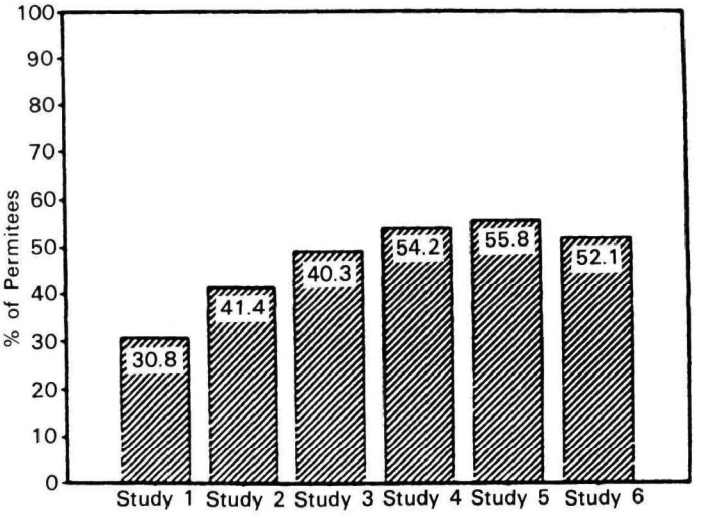

Figure 2. Percent of permittees with all data acceptable.

(Samuel To, FTS: 202-475-8322; COML: 202-475-8322)

QA SUPPORT FOR WATER AND WASTEWATER ANALYSES EMSL-CINCINNATI

Absolute Limit on Numbers of Quality Control (QC) and Performance Evaluation (PE) Samples

The anticipated initiation of a user-free program in the U.S. Environmental Protection Agency (USEPA) has caused a significant increase in requests from regional, state, and local laboratories, for large numbers of QC samples or PE samples (outside of the Agency's formal studies).

To prevent a serious loss of sample inventories until the final decision is made on user-fees, and mechanisms are in place for distribution, *only a single set of samples of a type will be distributed to requesters, as of May 6, 1987. There will be no exceptions.*

Quality Control (QC) Sample Program

Single Level QC Sample Series

To increase efficiency and economy in the preparation and distribution of QC samples, new or re-made series are being prepared at one concentration/analyte. For USEPA methods which specify use of a specific QC sample concentration for analytes, the concentration of the QC sample will be so set. For other analytes, a mid-range concentration will be provided.

Replacement QC Series

Aromatic Purgeables (Method 602), Halogenated Purgeables—I and II (Method 601), Volatile Organics (Method 601 and 602), and GC/MS Purgeables I through IV (Method 624) have been depleted and are replaced by the new VOC samples. Series I through III contain Aromatic Purgeables and Series IV and VII contain Halogenated Purgeables. VOC I through VII replace all of the Purgeables, seven mentioned above. Polychlorinated Biphenyls (PCBs) in Fish, PCB Aroclor 1262, Mercury (available in WP and WS Trace Metals), and Temik and Municipal Digested Sludge have been depleted.

Availability of PCBs in Sediment QC Samples

A sediment sample containing both PCB Aroclor 1242 and PCB Aroclor 1254 is available. Each sample bottle contains 50 grams of dried homogeneous sediment. Reference values and standard deviations were generated by the National Bureau of Standards (NBS).

Notice

As an economy measure, QC samples are now sent by the least expensive means which may be United Parcel Service (UPS). *Therefore, street addresses must be provided.*

The QC Sample series are intended for periodic use (quarterly) as independent checks on each laboratory's own QC activities. They are not intended to replace the standards, check sample, blind samples or replicates incorporated into each analytical run as part of the laboratory's QC program.

There is no certification or other formal evaluative function resulting from the use of QC samples and data

return is not expected. The QC Sample Program covers the ambient water quality, drinking water, water pollution, priority pollutant, hazardous, and toxic waste programs for chemical, biological, and microbiological analytes. Most samples are prepared as concentrates in water or organic solvent sealed in glass ampuls. Instructions are provided for dilution of samples to volume with water or wastewater prior to analysis. The following samples are available now:

QC Samples for Water Quality Analyses

DEMAND ANALYSES	*BOD, COD, and TOC*
EPA/API STANDARD REFERENCE OILS	*Arabian Light Crude Oil, Prudhoe Bay Crude Oil, South Louisiana Crude Oil, No. 2 Fuel Oil (high aromatics), and No. 6 Fuel Oil (high viscosity) Bunker C (laboratory must request specific oil).*
LINEAR ALKYLATE SULFONATE	*LAS, the anionic surfactant standard for the MBAS Test*
MINERAL/PHYSICAL ANALYSES	*sodium, potassium, calcium, magnesium, pH, sulfate, chloride, fluoride, alkalinity/acidity, total hardness, total dissolved solids, and specific conductance.*
NONIONIC SURFACTANT (CTAS TEST) STANDARD	*Reference Nonionic Surfactant, $C_{12\text{-}18}E_{11}$ Standard Methods Method 512 C*
NUTRIENTS	*nitrate-N, ammonia-N, Kjeldahl-N, orthophosphate, and total P*
OIL AND GREASE	*analyzable by IR and gravimetrically*
PESTICIDES IN FISH	*toxaphene, DDD, DDE, and DDT*
PHENOLS, TOTAL (4AAP Method)	*total phenols in water*
POLYCHLORINATED BIPHENYLS (PCBs) IN OILS	*Aroclor 1016, 1242, 1254, and 1260 in transformer, hydraulic, and capacitor oils, (specify Aroclor and oil)*
POLYCHLORINATED BIPHENYLS (PCBs) IN SEDIMENTS	*Aroclor 1242 and 1254 in sediment*
SUSPENDED SOLIDS	*non-filterable, volatile and total filterable residue*
TRACE METALS - WP I	*aluminum, arsenic, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, vanadium, and zinc*
TRACE METALS - WP II	*antimony, silver, and thallium*
TRACE METALS - WP III	*barium, calcium, potassium, sodium, magnesium, and molybdenum*
TRACE METALS IN FISH	*arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc*

QC Samples for Priority Pollutants/Hazardous Wastes/Toxic Chemicals

n-ALKANES	*dodecane, eicosane, heptadecane, hexacosane, tetradecane, tricosane in acetone*
CHLORINATED HYDROCARBONS (Method 612)	*hexachloroethane, hexachlorobenzene, 1,2,4-trichlorobenzene, o-dichlorobenzene, p-dichlorobenzene, m-dichlorobenzene, hexachlorobutadiene, 2-chloronaphthalene in acetone*

CHLORINATED HYDROCARBON PESTICIDES - WP I (Method 608)	*aldrin, dieldrin, DDT, DDE, DDD, and heptachlor in acetone*
CHLORINATED HYDROCARBON PESTICIDES - WP II (Method 608)	*chlordane in acetone*
CHLORINATED HYDROCARBON PESTICIDES - WP III (Method 608)	*alpha-BHC, beta-BHC, heptachlor epoxide, endrin, aldehyde, and alpha and beta endosulfan in acetone*
CYANIDE, TOTAL	
EP METALS	*arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver in acetic acid*
EP PESTICIDES & HERBICIDES	*lindane, endrin, methoxychlor, 2,4-D, and Silvex in acetone*
GC/MS ACIDS (Method 625)	*2-chlorophenol, 2-nitrophenol, phenol, 2,4-dimethylphenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol, 4-chloro-3-methylphenol, pentachlorophenol, and 4-nitrophenol in methanol*
GC/MS BASE NEUTRALS - I (Method 625)	*bis-2-chloroethyl ether, 1,3-dichlorobenzene, 1,2-dichlorobenzene, nitrosodipropylamine, isophorone, bis-2-chloroethoxy methane, 1,2,4-trichlorobenzene, hexachlorobutadiene, 2-chloronaphthalene, 2,6-dinitrotoluene, 2,4-dinitrotoluene, diethyl phthalate, hexachlorobenzene, phenanthrene, dibutyl phthalate, pyrene, benzo(a)anthracene, dioctyl phthalate, benzo(k)fluoranthene in methanol*
GC/MS BASE NEUTRALS - II (Method 625)	*1,4-dichlorobenzene, bis-2-chloroisopropyl ether, hexachloroethane, nitrobenzene, naphthalene, dimethyl phthalate, acenaphthene, fluorene, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether, anthracene, fluoranthene, butyl benzyl phthalate, benzo(a)pyrene, benzo(b)fluoranthene, benzo(a,h)anthracene, benzo(g,h,i)perylene in methanol*
GC/MS BASE NEUTRALS- III (Method 625)	*4-chlorobenzotrifluoride, m-chlorotoluene, 2,4-dichlorotoluene, 1,3,5-trichlorobenzene, 1,2,4,5-tetrachlorobenzene, 1,2,3,4-tetrachlorobenzene, 2,4,6-trichloroaniline, and pentachlorobenzene in acetone*
GC/MS PESTICIDES - I (Method 625)	*heptachlor, heptachlor epoxide, dieldrin, endrin, DDD, alpha BHC and gamma BHC*
GC/MS PESTICIDES - II (Method 625)	*beta-BHC, delta-BHC, aldrin, alpha and beta Endosulfan, 4,4'-DDE, and 4,4'-DDT in acetone*
HALOETHERS (Method 611)	*bis(2-chloroisopropyl)ether, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether in acetone*
ICAP - 19	*As, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Ti, Tl, V and Zn in dilute nitric acid*
ICAP - 7	*Ag, Al, B, Ba, K, Na, and Si in dilute nitric acid*
NITROAROMATICS AND ISOPHORONE (Method 609)	*isophorone, nitrobenzene, 2,4-dinitrotoluene, and 2,6-dinitrotoluene in acetone*

PHENOLS (GC) (Method 604)	*phenol, 2,4-dimethylphenol, 2-chlorophenol, 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol, pentachlorophenol, 2-nitrophenol, 4-nitrophenol, and 2,4-dinitrophenol in acetone*
PHTHALATE ESTERS (Method 606)	*dimethyl phthalate, diethyl phthalate, di-n-butyl phthalate, butyl benzyl phthalate, diethyl hexyl phthalate and dioctyl phthalate in acetone*
POLYCHLORINATED BIPHENYLS (Method 608)	*separate samples available for Aroclor 1016, 1221, 1232, 1242, 1248, 1254, and 1260 in acetone (laboratory must request specific Aroclor needed)*
POLYNUCLEAR AROMATICS - I (Method 610)	*acenaphthene, anthracene, benzo(k)fluoranthene, chrysene, naphthalene, and pyrene in acetone*
POLYNUCLEAR AROMATICS - II (Method 610)	*acenaphythylene, 1,2-benzanthracene, benzo(b)fluoranthene, benzo-(g,h,i)perylene, benzo(a)pyrene, dibenzo(a,h)anthracene, fluoranthene, and phenanthrene in acetone*

PLEASE NOTE: Distribution of limited quantities of Standard Reference Material (SRM) 1647 is restricted to USEPA laboratories, USEPA contractor laboratories, and state or local government laboratories. Others may purchase SRM 1647 directly from the National Bureau of Standards, Office of Standard Reference Materials, B-311 Chemistry Building, Washington, DC 20234, (301) 921-2045.

QC Samples for Drinking Water Analyses

CORROSIVITY/SODIUM	*Langlier's Index Value and Sodium in water*
HERBICIDES	*2,4-D, 2,4,5-TP (Silvex) in methanol*
NITRATE/FLUORIDE	*nitrate-N and fluoride*
CHLORINATED HYDROCARBON PESTICIDES - WS I	*lindane, endrin, and methoxychlor*
CHLORINATED HYDROCARBON PESTICIDES - WS II	*toxaphene in acetone*
RESIDUAL FREE CHLORINE	*solvent in water*
TRACE METALS - WS	*arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver*
TRIHALOMETHANES	*chloroform, bromoform, dichlorobromomethane, and chlorodibromomethane in methanol*
TURBIDITY	
VOLATILE ORGANIC CONTAMINANTS - I (Methods 503, 524, 602 and 624)	*benzene, ethylbenzene, m-xylene, n-propylbenzene, p-chlorotoluene, 1,3,5-trimethylbenzene and p-dichlorobenzene*
VOLATILE ORGANIC CONTAMINANTS - II (Methods 503, 524, 602 and 624)	*trichloroethane, p-xylene, o-xylene, t-butylbenzene, p-cymene and n-dichlorobenzene*
VOLATILE ORGANIC CONTAMINANTS - III (Methods 503, 524, 602 and 624)	*toluene, chlorobenzene, isopropylbenzene, sec-butylbenzene, 1,2,4-trimethylbenzene, n-butylbenzene, and o-dichlorobenzene*

VOLATILE ORGANIC CONTAMINANTS - IV (Methods 502, 524, 601 and 624)	*1,1-dichloroethylene, cis-1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1-dichloropropene, 1,1,2-trichloroethane, 1,1,2,2-tetrachloroethylene, and bis(2-chloroethyl)ether*
VOLATILE ORGANIC CONTAMINANTS - V (Methods 502, 524, 601 and 624)	*bromochloromethane, chloroform, carbon tetrachloride, 1,1,2-trichloroethylene, 1,2-dibromoethane, 1,1,2,2-tetrachloroethane, pentachloroethane, 1,2-dibromo-3-chloropropane and m-dichlorobenzene*
VOLATILE ORGANIC CONTAMINANTS - VI (Methods 502, 524, 601 and 624)	*dichloromethane, 1,1-dichloroethane, 1,2-dichloroethane, bromodichloromethane, 1,3-dichloropropane, 2-chloroethyl ethyl ether, 1,2,3-trichloropropane, chlorobenzene, bromobenzene and o-dichlorobenzene*
VOLATILE ORGANIC CONTAMINANTS - VII (Methods 502, 524, 601 and 624)	*trichlorofluoromethane, trans 1,2-dichloroethane, dibromomethane, 1,2-dichloropropane, chlorodibromomethane, 1,1,2,2-tetrachloroethane, chlorohexane, o-chlorotoluene, and p-dichlorobenzene*

QC Samples for Biology/Microbiology

ALGAE FOR IDENTIFICATION	*Sample 1 contains two taxa and Sample 2 contains three taxa of preserved algae for microscopic identification. Instructions include the identifications of the algae. (Laboratory must specify sample needed.)*
BACTERIA INDICATOR STRAINS	Enterobacter aerogenes, Escherichia coli, Klebsiella peumoniae, Pseudomonas aeruginosa *and* Streptococcus faecalis, *lyophilized (laboratory must request specific organisms needed). Also available are sterile lyophilized blanks for evaluation of aseptic technique.*
CHLOROPHYLL	*fluorometric analyses, three levels, in acetone*
CHLOROPHYLL	*spectrophotometric analyses, one level, in acetone*
REFERENCE TOXICANTS	*sodium lauryl sulfate, one level, aqueous solution, and cadmium chloride, one level, aqueous solution (laboratory must specify toxicant(s) needed)*
SIMULATED PLANKTON	*20 mL aqueous suspension of latex spheres for particle counting, and a permanent, glass slide mount of latex spheres for particle size distribution determinations*

The USEPA Repository for Toxic and Hazardous Materials

EMSL-Cincinnati maintains the USEPA Repository for Toxic and Hazardous Materials to provide a continuing source of calibration materials, standards, reference compounds, and spiking solutions for all trace organics of interest to the Agency. The Repository provides support for Ambient Monitoring, Drinking Water, NPDES/Priority Pollutants, Hazardous Waste/ Solid Waste, and Toxics Programs.

Compounds are prepared individually as 1.5 mL solutions in water-miscible solvents sealed in all-glass ampuls. A data sheet with each ampul contains general chemical data, solution specifications, storage and preservation recommendations, information on purity and health hazards, and safe handling instructions. Included with each data sheet is a GC or high performance liquid chromatograph (HPLC) showing relative peak areas, retention times of the compound, and impurities, if any. The chromatograms are obtained using detector conditions specified in USEPA's methods.

Three grades of materials will be distributed:

QA Standards (QAS) ≥99 percent purity
QA Reagents (QAR) 95-98 percent purity
QA Technical Materials (QAT) ≤95 percent purity

The Repository will move as many compounds as possible from the QAT and QAR categories into the QAS category by use of purification techniques. Exceptions are multicomponent materials such as PCBs, toxaphene, chlordane, and halowaxes which will be categorized as QAR or QAT and will not be purified further. The current list of the Repository materials distributed is given in the following table:

Concentrations are 5000 µg of QAS-pure compound per mL of methanol solvent unless otherwise noted.

E001 Acenaphthene
*E002 Acrolein***
E003 Acrylonitrile (10,000 µg/mL)
E004 Benzene (10,000 µg/mL)
E005 Benzidine
E006 Chlorobenzene (10,000 µg/mL)
E007 1,2,4-Trichlorobenzene
*E008 Hexachlorobenzene (1000 µg/mL)**
E009 1,2-Dichloroethane
E010 1,1,1-Trichloroethane (10,000 µg/mL) (QAR)
E011 Hexachloroethane
E012 1,1-Dichloroethane (5,500 µg/mL)
E013 1,1,2-Trichloroethane (QAR)
E014 1,1,2,2-Tetrachloroethane (10,000 µg/mL) (QAR)
*E015 Chloroethane (11,000 µg/mL)****
E016 bis(2-Chloroethyl) ether
E017 2-Chloroethyl vinyl ether
E018 2-Chloronaphthalene
E019 2,4,6-Trichlorophenol (QAR)
E020 p-Chloro-m-cresol
E021 Chloroform
E022 2-Chlorophenol
E023 1,2-Dichlorobenzene
E025 1,4-Dichlorobenzene
E026 3,3'-Dichlorobenzidine
E027 1,1-Dichloroethylene (1,000 µg/mL)
E028 trans-1,2-Dichloroethylene (11,500 µg/mL)
E029 2,4-Dichlorophenol
E030 1,2-Dichloropropane (10,000 µg/mL)
E033 2,4-Dinitrotoluene
E034 2,6-Dinitrotoluene
E036 Ethylbenzene (10,000 µg/mL)
E037 Fluoranthene
E038 4-Chlorophenyl phenyl ether
E039 4-Bromophenyl phenyl ether
E040 bis(2-Chloroisopropyl) ether (QAR)
E041 bis(2-Chloroethoxy) methane (QAR)
E042 Methylene chloride (10,000 µg/mL)
*E043 Methyl chloride****
*E044 Methyl bromide (9940 µg/mL)****
E046 Dichlorobromomethane
E047 Fluorotrichloromethane
E050 Hexachlorobutadiene (QAR)
E051 Hexachlorocyclopentadiene
E052 Isophorone
E053 Naphthalene
E054 Nitrobenzene
E055 2-Nitrophenol
E056 4-Nitrophenol
E057 2,4-Dinitrophenol (QAR)
E058 4,6-Dinitro-o-cresol
E059 N-Nitrosodimethylamine
E060 N-Nitrosodiphenylamine
E061 N-Nitrosodi-n-propylamine
E062 Pentachlorophenol
E063 Phenol
E064 bis(2-Ethyl hexyl) phthalate
E065 Butyl benzyl phthalate
E066 Di-n-butyl phthalate
E067 Di-n-octyl phthalate
E068 Diethyl phthalate
E069 Dimethyl phthalate
E070 Benzo(a)anthracene (1000 µg/mL)
*E071 Benzo(a)pyrene (1000 µg/mL) (QAR)**
*E072 Benzo(b)fluoranthene (2500 µg/mL)**
*E073 Benzo(k)fluoranthene (1000 µg/mL)**
*E074 Chrysene (1000 µg/mL)**
E075 Acenaphthylene (QAR)
*E076 Anthracene (1000 µg/mL)**
*E077 Benzo(g,h,i)perylene (1000 µg/mL)***
E078 Fluorene (QAR)
E079 Phenanthrene
*E081 Indeno(1,2,3-c,d)pyrene (500 µg/mL)**
E082 Pyrene (1000 µg/mL)
E083 Tetrachloroethylene (10,000 µg/mL)
E084 Toluene (10,000 µg/mL)
E085 Trichloroethylene (10,000 µg/mL)
E088 Dieldrin (1,000 µg/mL)
E089 Chlordane (QAT)
E091 4,4'-DDE
E092 4,4'-DDD
*E093 alpha-Endosulfan 1,000 µg/mL***
*E094 beta-Endosulfan 1,000 µg/mL***
*E095 Endosulfan sulfate 1,000 µg/mL (QAR)***

E096 Endrin (QAR)
E097 Endrin aldehyde (2,500 µg/mL)
E098 Heptachlor
E099 Heptachlor epoxide (2,500 µg/mL)
E100 alpha-BHC (2500 µg/mL)
E101 beta-BHC (2500 µg/mL)*
E102 gamma-BHC (Lindane)
E103 delta-BHC (1000 µg/mL)
E104 PCB-Aroclor 1242 (QAT)
E105 PCB-Aroclor 1254 (QAT)
E107 PCB-Aroclor 1232 (QAT)
E108 PCB-Aroclor 1248 (QAT)
E110 PCB-Aroclor 1016 (QAT)
E111 Toxaphene (QAT)
E124 4,4'-DDT (QAR)
E125 PCB-Aroclor 1016 (1,000 µg/mL) (QAT)++
E126 PCB-Aroclor 1221 (QAT)++
E129 PCB-Aroclor 1260 (500 µg/mL) (QAT)++
E129 PCB-Aroclor 1260 (1,000 µg/mL) (QAT)++
E129 PCB-Aroclor 1260 (3,000 µg/mL) (QAT)++
E130 PCB-Aroclor 1262 (QAT)++
E131 PCB-Aroclor 1268 (2,500 µg/mL)* (QAT)
E132 PCB-Aroclor 1242 (500 µg/mL) (QAT)++
E132 PCB-Aroclor 1242 (1,000 µg/mL) (QAT)++
E132 PCB-Aroclor 1242 (3,000 µg/mL) (QAT)++
E135 PCB-Aroclor 1254 (500 µg/mL) (QAT)++
E135 PCB-Aroclor 1254 (1,000 µg/mL) (QAT)++
E135 PCB-Aroclor 1254 (3,000 µg/mL) (QAT)++
E136 Bromochloromethane (10,000 µg/mL)
E149 2,4-Dichlorotoluene
E150 2-Chlorotoluene
E151 3-Chlorotoluene
E152 4-Chlorotoluene (QAR)
E153 4-Chlorobenzotrifluoride
E156 Pentachloronitrobenzene
E168 alpha, alpha,2,6-Tetrachlorotoluene
E169 Benzyl chloride (QAR)****
E170 2,3-Dichloro-1-propylene (10,000 µg/mL)
E171 1,2-Dibromoethane (EDB) (10,000 µg/mL)
E173 cis-1,2-Dichloroethylene (10,000 µg/mL) (QAR)
E175 1,2,3-Trichlorobenzene
E176 1,3,5-Trichlorobenzene
E177 1,2,4,5-Tetrachlorobenzene (2500 µg/mL) (QAR)+
E179 2,4,5-Trichlorophenol (QAR)
E180 2,4,6-Trichloroaniline
E182 3-Chlorophenol
E183 4-Chlorophenol
E200 Chlorodibromomethane (10,000 µg/mL) (QAR)
E201 ortho-Xylene
E202 meta-Xylene
E203 para-Xylene
E212 Bromoform (10,000 µg/mL) (QAR)
E214 1,3-Dichlorobenzene
E218 cis- and trans-1,3-Dichloropropylene (QAR)
E219 Mirex (1000 µg/mL)*
E220 Aldrin
E222 2,3,5-Trichlorophenol (QAR)
E224 2,4-Dimethylphenol (QAR)
E225 1,2,3,4-Tetrachlorobenzene (2500 µg/mL)
E231 Dibenzo(a,h)anthracene (1000 µg/mL)**
E236 n-Decane
E237 n-Undecane
E238 n-Dodecane
E239 n-Tridecane
E240 n-Tetradecane
E241 n-Pentadecane
E242 n-Heptadecane (2500 µg/mL)
E244 n-Nonadecane (1000 µg/mL)
E250 ortho-Cresol (QAR)
E251 meta-Cresol (QAR)
E252 para-Cresol
E255 Dibutyl ether
E257 Styrene
E258 Epichlorohydrin****
E260 Pentachlorobenzene (2500 µg/mL)
E261 Dibenzofuran
E262 Diphenyl ether
E263 Diphenylamine
E270 Acrylamide (10,000 µg/mL)
E271 Pyridine (10,000 µg/mL)
E282 Diisodecyl phthalate
E284 Acetone
E285 Diethyl ether (4500 µg/mL)
E286 1,2-Epoxybutane****
E295 Phenacetin
E298 N-Nitrosopyrrolidine
E299 2-Fluoroacetamide
E300 Pentachloroethane
E305 4-Chloroaniline
E311 Methyl ethyl ketone (10,000 µg/mL)
E322 Methylene bis (o-chloroaniline)
E324 o-Nitroaniline
E325 m-Nitroaniline
E329 Ethylenethiourea
E330 2,4-Dichlorophenoxyacetic acid (2,4-D)****
E334 N-Nitrosodiethylamine
E335 1,1,1,2-Tetrachloroethane (QAR)
E338 Propionitrile
E342 4-Nitroaniline
E349 4-Methyl-2-pentanone
E360 Carbon tetrachloride (10,000 µg/mL)
E363 Carbon disulfide
E368 1,2,3-Trichloropropane
E455 Dinoseb****
E470 PCN Halowax 1099 (QAT)
E471 PCN Halowax 1001 (QAT)
E472 PCN Halowax 1000 (QAT)
E473 Acetonitrile***
E480 para-Dioxane (10,000 µg/mL)
E536 Vinyl chloride***
E541 Benzoic acid****
E542 Aniline
E548 N,N-Dimethylformamide
E552 2,4,5-TP (Silvex) (QAR)****
E572 Methyl parathion (1,000 µg/mL)****
E662 3-Nitrophenol
E669 1-Methyl ethyl benzene (Cumene)
E688 2-Picoline
E713 Picloram (1000 µg/mL)****
E715 Carbofuran
E952 p,p'-Methoxychlor
E954 Aldicarb (1000 µg/mL)****
E993 1,2-Dibromo-3-chloropropane (QAT)
E995 Aldicarb sulfone (1000 µg/mL)****
E996 Aldicarb sulfoxide (1000 µg/mL)****
E1089 Alachlor (1000 µg/mL)
E1090 Atrazine (1000 µg/mL)
E1097 Dibromomethane

*In Acetone **In para-Dioxane ***In 2-Propanol ****Acetonitrile +Methylene chloride ++In Isooctane

Surrogates and Internal Standard for USEPA/GC/MS Methods 624 and 625

E188 Phenanthrene - d_{10} (150 µg/mL)
*E189 Phenol - d_5 (100 µg/mL)**
*E190 2,4-Dimethylphenol-3,5,6-d_3 (100 µg/mL) (QAR)**
*E191 Pentachlorophenol - $^{13}C_6$ (100 µg/mL)**
*E192 Dimethyl phthalate - d_6 (150 µg/mL)**
*E193 2-Fluorophenol (QAR) (100 µg/mL)**
*E194 2-Fluorobiphenyl (100 µg/mL)**
*E195 1-Fluoronaphthalene (100 µg/mL)**
E196 1,4-Dichlorobutane-d_8 (150 µg/mL)
E197 2-Bromo-1-chloropropane-d_6 (150 µg/mL) (QAT)
E198 Bromochloromethane-d_2 (150 µg/mL)
*E199 Benzo(g,h,i)perylene-$^{13}C_{12}$ (100 µg/mL)**
E232 Fluorobenzene (150 µg/mL)
E233 4-Bromofluorobenzene (150 µg/mL)
*E234 4,4-Dibromooctafluorobiphenyl (100 µg/mL)**
E776 1,2-Dichlorobenzene-d_4 (150 µg/mL)

**In Acetone* ***In para-Dioxane* ****In 2-Propanol* *****Acetonitrile* *†Methylene chloride* *††In Isooctane*

To obtain QC Samples or Repository Standards, please fill out the attached request form(s) completely and legibly and return to EMSL-Cincinnati. Due to initial small production runs, current Repository orders will be limited to a single ampul per compound. Allow a minimum four to five weeks for delivery.

To insure that the QC Samples and Repository Materials will be used to the best advantage in your laboratory, we require that the request sheet(s) be signed by the Laboratory Director or his designee.

Without this approval, QC sample/repository requests will not be honored.

Please Print or Type

Form Approved O.M.B. 2080-0016
4-30-89

Quality Control Sample Request

Name _____ Telephone _____
Company _____
Laboratory _____
Street _____
City _____ State _____ Zip Code _____
Approval of Laboratory Director _____
Check Programs for which samples are requested: ___ Ambient Monitoring ___ Superfund (CERCLA)
___ Drinking Water ___ Wastewater ___ Toxics (TSCA) ___ Solid Wastes/Hazardous Wastes (RCRA)

Water Quality/Water Pollution Samples

___ *Demand*
EPA/API Reference Oils
___ *Arabian Light Crude*
___ *Prudhoe Bay Crude*
___ *South Louisiana Crude*
___ *No. 2 Fuel (high arom.)*
___ *No. 6 Fuel (high visc.) Bunker C*
___ *LAS*
___ *Mineral*
___ *Nonionic Surfactant Std.*
___ *Nutrients*
___ *Oil & Grease*
___ *Pesticides in Fish*
___ *Phenols (4AAP Method)*
___ *Suspended Solids*
___ *Other* _____

PCBs in Oils
___ *Aro. 1016 in Capac.*
___ *Aro. 1016 in Hydraul.*
___ *Aro. 1016 in Trans.*
___ *Aro. 1242 in Capac.*
___ *Aro. 1242 in Hydraul.*
___ *Aro. 1242 in Trans.*
___ *Aro. 1254 in Capac.*
___ *Aro. 1254 in Hydraul.*
___ *Aro. 1254 in Trans.*
___ *Aro. 1260 in Capac.*
___ *Aro. 1260 in Hydraul.*
___ *Aro. 1260 in Trans.*
___ *Trace Metals WP - I*
___ *Trace Metals WP - II*
___ *Trace Metals WP - III*
___ *Trace Metals in Fish*
___ *Other* _____

Water Supply Samples

___ *WS Corrosivity/Sodium*
___ *WS Herbicides*
___ *WS Nitrate/Fluoride*
___ *WS Chl. Hyd. Pest. I*
___ *WS Chl. Hyd. Pest. II*
___ *WS Res. Free Chlorine*
___ *WS Trace Metals*
___ *WS Trihalomethanes*
___ *WS Turbidity*
___ *WS Vol. Org. Cont. - I*
___ *WS Vol. Org. Cont. - II*
___ *WS Vol. Org. Cont. - III*
___ *WS Vol. Org. Cont. - IV*
___ *WS Vol. Org. Cont. - V*
___ *WS Vol. Org. Cont. - VI*
___ *WS Vol. Org. Cont. - VII*
___ *Other* _____

Priority Pollutants/Hazardous Wastes/Toxic Chemicals

___ *n-Alkanes*
___ *Chlorinated Hydrocarbons*
___ *Chl. Hyd. Pest. WP - I*
___ *Chl. Hyd. Pest. WP - II*
___ *Chl. Hyd. Pest. WP - III*
___ *Cyanide*
___ *EP Pest. & Herb.*
___ *EP Metals*
___ *GC/MS Acids*
___ *GC/MS Base Neutrals - I*
___ *GC/MS Base Neutrals - II*
___ *GC/MS Base Neutrals - III*
___ *GC/MS Pesticides - I*
___ *GC/MS Pesticides - II*
___ *Other* _____

___ *Haloethers*
___ *ICAP - 19*
___ *ICAP - 7*
___ *Nitroaro. & Isophorone*
PCBs (specific Aroclors)
___ *Aroclor 1016*
___ *Aroclor 1221*
___ *Aroclor 1232*
___ *Aroclor 1242*
___ *Aroclor 1248*
___ *Aroclor 1254*
___ *Aroclor 1260*
___ *Phenols (GC)*
___ *Phthalate Esters*
___ *Polynuclear Aromatics I*
___ *Polynuclear Aromatics II*
___ *Other* _____

Biological Samples

___ *Algae for Ident. #1*
___ *Algae for Ident. #2*
Bacteria Indicator Strains
___ Enter. aerogenes
___ E. coli
___ Klebsiella pneumoniae
___ Pseudomonas aeruginosa
___ Streptococcus faecalis
___ *Sterile Lyophil. Blank*
___ *Chlorophyll Fluoro.*
___ *Chlorophyll Spectro.*
Reference Toxicants
___ *Sod. Lauryl Sulfate*
___ *Cadmium Chloride*
___ *Simulated Plankton*
___ *Other* _____
___ *Other* _____

Date Requested: _____ Date Shipped: _____
EPA-360 (Cin) (Rev. 6/83, Pt. 1)

Fold Here

Place Stamp
Here

Quality Assurance Branch, Room 525
Environmental Monitoring and Support Laboratory
U.S. Environmental Protection Agency
Cincinnati, Ohio 45268

Fold Here

PLEASE COMPLETE THE FORM AND MAIL TO:
QUALITY ASSURANCE BRANCH, Room 525
EMSL-CINCINNATI
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OH 45268

Form Approved O.M.B. 2080-0016
4-30-89

The USEPA Repository for Toxic and Hazardous Materials
Request for Materials

Please Print or Type

Name _____ Telephone _____
Company _____
Laboratory _____
Street _____
City _____ State _____ Zip Code _____
Approval of Laboratory Director _____
Check Programs for which materials are requested: ___ Ambient Monitoring ___ Superfund (CERCLA)
___ Drinking Water ___ Wastewater ___ Toxics (TSCA) ___ Solid Wastes/Hazardous Wastes (RCRA)

Concentrations are 5000 µg of QAS-pure compound per mL of methanol solvent unless otherwise noted.

___ *E001 Acenaphthene*
___ *E002 Acrolein***
___ *E003 Acrylonitrile (10,000 µg/mL)*
___ *E004 Benzene (10,000 µg/mL)*
___ *E005 Benzidine*
___ *E006 Chlorobenzene (10,000 µg/mL)*
___ *E007 1,2,4-Trichlorobenzene*
___ *E008 Hexachlorobenzene (1000 µg/mL)**
___ *E009 1,2-Dichloroethane*
___ *E010 1,1,1-Trichloroethane (10,000 µg/mL) (QAR)*
___ *E011 Hexachloroethane*
___ *E012 1,1-Dichloroethane (5,500 µg/mL)*
___ *E013 1,1,2-Trichloroethane (QAR)*
___ *E014 1,1,2,2-Tetrachloroethane (10,000 µg/mL) (QAR)*
___ *E015 Chloroethane (11,000 µg/mL)****
___ *E016 bis(2-Chloroethyl) ether*
___ *E017 2-Chloroethyl vinyl ether (QAR)*
___ *E018 2-Chloronaphthalene*
___ *E019 2,4,6-Trichlorophenol (QAR)*
___ *E020 p-Chloro-m-cresol*
___ *E021 Chloroform*
___ *E022 2-Chlorophenol*
___ *E023 1,2-Dichlorobenzene*
___ *E025 1,4-Dichlorobenzene*
___ *E026 3,3'-Dichlorobenzidine (QAR)*
___ *E027 1,1-Dichloroethylene (1,000 µg/mL)*
___ *E028 trans-1,2-Dichloroethylene (11,500 µg/mL)*
___ *E029 2,4-Dichlorophenol*
___ *E030 1,2-Dichloropropane (10,000 µg/mL)*
___ *E033 2,4-Dinitrotoluene*
___ *E034 2,6-Dinitrotoluene*
___ *E036 Ethylbenzene (10,000 µg/mL)*
___ *E037 Fluoranthene*
___ *E038 4-Chlorophenyl phenyl ether*
___ *E039 4-Bromophenyl phenyl ether*
___ *E040 bis(2-Chloroisopropyl) ether (QAR)*
___ *E041 bis(2-Chloroethoxy) methane (QAR)*
___ *E042 Methylene chloride (10,000 µg/mL)*
___ *E043 Methyl chloride****
___ *E044 Methyl bromide (9940 µg/mL)*****
___ *E046 Dichlorobromomethane*
___ *E047 Fluorotrichloromethane*
___ *E050 Hexachlorobutadiene (QAR)*
___ *E051 Hexachlorocyclopentadiene*
___ *E052 Isophorone*
___ *E053 Naphthalene*
___ *E054 Nitrobenzene*
___ *E055 2-Nitrophenol*
___ *E056 4-Nitrophenol*
___ *E057 2,4-Dinitrophenol (QAR)*
___ *E058 4,6-Dinitro-o-cresol*
___ *E059 N-Nitrosodimethylamine*
___ *E060 N-Nitrosodiphenylamine*
___ *E061 N-Nitrosodi-n-propylamine*
___ *E062 Pentachlorophenol*
___ *E063 Phenol*
___ *E064 bis(2-Ethyl hexyl) phthalate*
___ *E065 Butyl benzyl phthalate*
___ *E066 Di-n-butyl phthalate*
___ *E067 Di-n-octyl phthalate*
___ *E068 Diethyl phthalate*

**In Acetone* ***In para-Dioxane* ****In 2-Propanol* *****In Acetonitriile* *(compounds continued on reverse)*

Date Requested: _____ Date Shipped: _____

EPA-360 (Cin) (Rev. 6/83, Pt. 3)

___E069 Dimethyl phthalate
___E070 Benzo(a)anthracene (1000 µg/mL)
___E071 Benzo(a)pyrene (1000 µg/mL) (QAR)*
___E072 Benzo(b)fluoranthene (2500 µg/mL)*
___E073 Benzo(k)fluoranthene (1000 µg/mL)*
___E074 Chrysene (1000 µg/mL)*
___E075 Acenaphthylene (QAR)
___E076 Anthracene (1000 µg/mL)*
___E077 Benzo(g,h,i)perylene (1000 µg/mL)**
___E078 Fluorene (QAR)
___E079 Phenanthrene
___E081 Indeno(1,2,3-c,d)pyrene (500 µg/mL)*
___E082 Pyrene (1000 µg/mL)
___E083 Tetrachloroethylene (10,000 µg/mL)
___E084 Toluene (10,000 µg/mL)
___E085 Trichloroethylene (10,000 µg/mL)
___E088 Dieldrin (1,000 µg/mL)
___E089 Chlordane (QAT)
___E091 4,4'-DDE
___E092 4,4'-DDD
___E093 alpha-Endosulfan**
___E094 beta-Endosulfan**
___E095 Endosulfan sulfate (QAR)
___E096 Endrin (QAR)
___E097 Endrin aldehyde (2500 µg/mL)
___E098 Heptachlor
___E099 Heptachlor epoxide (2500 µg/mL)
___E100 alpha-BHC (2500 µg/mL)
___E101 beta-BHC (2500 µg/mL)*
___E102 gamma-BHC (Lindane)
___E103 delta-BHC (1000 µg/mL)
___E104 PCB-Aroclor 1242 (QAT)
___E105 PCB-Aroclor 1254 (QAT)
___E107 PCB-Aroclor 1232 (QAT)
___E108 PCB-Aroclor 1248 (QAT)
___E110 PCB-Aroclor 1016 (QAT)
___E111 Toxaphene (QAT)
___E124 4,4'-DDT (QAR)
___E125 PCB-Aroclor 1016 (1,000 µg/mL) (QAT)++
___E126 PCB-Aroclor 1221 (QAT)++
___E129 PCB-Aroclor 1260 (500 µg/mL) (QAT)++
___E129 PCB-Aroclor 1260 (1,000 µg/mL) (QAT)++
___E129 PCB-Aroclor 1260 (3,000 µg/mL) (QAT)++
___E130 PCB-Aroclor 1262 (QAT)++
___E131 PCB-Aroclor 1268 (2500 µg/mL)* (QAT)
___E132 PCB-Aroclor 1242 (500 µg/mL) (QAT)++
___E132 PCB-Aroclor 1242 (1,000 µg/mL) (QAT)++
___E132 PCB-Aroclor 1242 (3,000 µg/mL) (QAT)++
___E135 PCB-Aroclor 1254 (500 µg/mL) (QAT)++
___E135 PCB-Aroclor 1254 (1,000 µg/mL) (QAT)++
___E135 PCB-Aroclor 1254 (3,000 µg/mL) (QAT)++
___E136 Bromochloromethane (10,000 µg/mL)
___E149 2,4-Dichlorotoluene
___E150 2-Chlorotoluene
___E151 3-Chlorotoluene
___E152 4-Chlorotoluene (QAR)
___E153 4-Chlorobenzotrifluoride
___E156 Pentachloronitrobenzene
___E168 alpha, alpha,2,6-Tetrachlorotoluene
___E169 Benzyl chloride (QAR)****
___E170 2,3-Dichloro-1-propylene (10,000 µg/mL)
___E171 1,2-Dibromoethane (EDB) (10,000 µg/mL)
___E173 cis-1,2-Dichloroethylene (10,000 µg/mL) (QAR)
___E175 1,2,3-Trichlorobenzene
___E176 1,3,5-Trichlorobenzene
___E177 1,2,4,5-Tetrachlorobenzene (2500 µg/mL) (QAR)+
___E179 2,4,5-Trichlorophenol (QAR)
___E180 2,4,6-Trichloroaniline
___E182 3-Chlorophenol
___E183 4-Chlorophenol
___E200 Chlorodibromomethane (10,000 µg/mL) (QAR)
___E201 ortho-Xylene
___E202 meta-Xylene
___E203 para-Xylene
___E212 Bromoform (10,000 µg/mL) (QAR)
___E214 1,3-Dichlorobenzene
___E218 cis- and trans-1,3-Dichloropropylene (QAR)
___E219 Mirex (1000 µg/mL)*
___E220 Aldrin
___E222 2,3,5-Trichlorophenol (QAR)
___E224 2,4-Dimethylphenol (QAR)
___E225 1,2,3,4-Tetrachlorobenzene (2500 µg/mL)
___E231 Dibenzo(a,h)anthracene (1000 µg/mL)**
___E236 n-Decane
___E237 n-Undecane
___E238 n-Dodecane
___E239 n-Tridecane
___E240 n-Tetradecane
___E241 n-Pentadecane
___E242 n-Heptadecane (2500 µg/mL)
___E244 n-Nonadecane (1000 µg/mL)
___E250 ortho-Cresol (QAR)
___E251 meta-Cresol (QAR)
___E252 para-Cresol
___E255 Dibutyl ether
___E257 Styrene
___E258 Epichlorohydrin****
___E260 Pentachlorobenzene (2500 µg/mL)
___E261 Dibenzofuran
___E262 Diphenyl ether

*In Acetone **In para-Dioxane ***In 2-Propanol ****In Acetonitrile (compounds continued on reverse)

Date Requested: _____ Date Shipped: _____

PLEASE COMPLETE THE FORM AND MAIL TO:
QUALITY ASSURANCE BRANCH, Room 525
EMSL-CINCINNATI
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OH 45268

Form Approved O.M.B. 2080-0016
4-30-89

The USEPA Repository for Toxic and Hazardous Materials
Request for Materials

Please Print or Type

Name_____ Telephone_____
Company_____
Laboratory_____
Street_____
City_____ State_____ Zip Code_____
Approval of Laboratory Director_____
Check Programs for which materials are requested: ___ Ambient Monitoring ___ Superfund (CERCLA)
___ Drinking Water ___ Wastewater ___ Toxics (TSCA) ___ Solid Wastes/Hazardous Wastes (RCRA)

Concentrations are 5000 µg of QAS-pure compound per mL of methanol solvent unless otherwise noted.

___ *E263 Diphenylamine*
___ *E270 Acrylamide (10,000 µg/mL)*
___ *E271 Pyridine (10,000 µg/mL)*
___ *E282 Diisodecyl phthalate*
___ *E284 Acetone*
___ *E285 Diethyl ether*
___ *E286 1,2-Epoxybutane*****
___ *E295 Phenacetin*
___ *E298 N-Nitrosopyrrolidine*
___ *E299 2-Fluoroacetamide*
___ *E300 Pentachloroethane*
___ *E305 4-Chloroaniline*
___ *E311 Methyl ethyl ketone (10,000 µg/mL)*
___ *E322 Methylene bis(o-chloroaniline)*
___ *E324 o-Nitroaniline*
___ *E325 m-Nitroaniline*
___ *E329 Ethylenethiourea*
___ *E330 2,4-Dichlorophenoxyacetic acid (2,4-D)*****
___ *E334 N-Nitrosodiethylamine*
___ *E335 1,1,1,2-Tetrachloroethane (QAR)*
___ *E338 Propionitrile*
___ *E342 p-Nitroaniline*
___ *E349 4-Methyl-2-pentanone*
___ *E360 Carbon tetrachloride*
___ *E363 Carbon disulfide*
___ *E368 1,2,3-Trichloropropane*
___ *E455 Dinoseb*****
___ *E470 PCN Halowax 1099 (QAT)*
___ *E471 PCN Halowax 1001 (QAT)*
___ *E472 PCN Halowax 1000 (QAT)*
___ *E473 Acetonitrile****
___ *E480 para-Dioxane (10,000 µg/mL)*
___ *E536 Vinyl chloride ****
___ *E541 Benzoic acid*****
___ *E542 Aniline*
___ *E548 N,N-Dimethylformamide*
___ *E552 2,4,5-TP (Silvex) (QAR)*****
___ *E662 3-Nitrophenol*
___ *E669 1-Methyl ethyl benzene (Cumene)*
___ *E688 2-Picoline*
___ *E713 Picloram (1000 µg/mL)*****
___ *E715 Carbofuran*
___ *E952 p,p'-Methoxychlor*
___ *E954 Aldicarb (1000 µg/mL)*****
___ *E993 1,2-Dibromo-3-chloropropane*
___ *E995 Aldicarb sulfone (1000 µg/mL)*****
___ *E996 Aldicarb sulfoxide (1000 µg/mL)*****
___ *E1089 Alachlor (1000 µg/mL)*
___ *E1090 Atrazine (1000 µg/mL)*
___ *E1097 Dibromomethane*

Surrogates and Internal Standard for USEPA GC/MS Methods 624 and 625

___ *E188 Phenanthrene - d_{10} (150 µg/mL)*
___ *E189 Phenol - d_5 (100 µg/mL)**
___ *E190 2,4-Dimethylphenol-3,5,6-d_3 (100 µg/mL) (QAR)**
___ *E191 Pentachlorophenol $^{13}C_6$ (100 µg/mL)**
___ *E192 Dimethyl phthalate - d_6 (150 µg/mL)**
___ *E193 2-Fluorophenol (QAR) (100 µg/mL)**
___ *E194 2-Fluorobiphenyl (100 µg/mL)**
___ *E195 1-Fluoronaphthalene (100 µg/mL)**
___ *E196 1,4-Dichlorobutane-d_8 (150 µg/mL)*
___ *E197 2-Bromo-1-chloropropane-d_6 (150 µg/mL) (QAT)*
___ *E198 Bromochloromethane-d_2 (150 µg/mL)*
___ *E199 Benzo(g,h,i)perylene-$^{13}C_{12}$ (100 µg/mL)**
___ *E232 Fluorobenzene (150 µg/mL)*
___ *E233 4-Bromofluorobenzene (150 µg/mL)*
___ *E234 4,4-Dibromooctafluorobiphenyl (100 µg/mL)**
___ *E776 1,2-Dichlorobenzene-d_4 (150 µg/mL)*

**In Acetone **In para-Dioxane ***In 2-Propanol ****In Acetonitrile +Methylene chloride ++In Isooctane*

Date Requested:_____ Date Shipped:_____

EPA-360 (Cin) (Rev. 6/83, Pt. 5)

How to Order USEPA Publications

For Project Summaries (denoted by EPA/600/S number) of full reports, direct your request to CERI, USEPA, Cincinnati, Ohio 45268. Be sure to include the EPA/600/S number and the title for each Summary requested. There is no charge for these publications, but availability is on a limited basis.

For full reports (denoted by the National Technical Information Service [NTIS] PB number), direct your request to NTIS, 5285 Port Royal Road, Springfield, Virginia 22161. Be sure to include the NTIS PB number, the report title and a check for the publication(s) ordered.

Some complete reports (denoted by EPA 600 numbers) are available free of charge on a limited basis from ORD Publications. Include the EPA/600 number and the report title with your request. If copies of the report are no longer available, you will be notified. These reports may also be obtained at the cost indicated from NTIS.

Include with your request the NTIS PB number, the report title, and a check for the publication(s) ordered.

Publications Available

The following publications are now available. The name of the EMSL-Cincinnati staff person who served as a project officer or who authored the report is italicized. Please direct all requests for publications to the appropriate organization as is indicated below. Project officers cannot fill publication requests but welcome technical inquiries.

Inorganic Analyses

Determination of Stable Valence States of Chromium in Aqueous & Solid Waste Matrices—Experimental Verification of Chemical Behavior
EPA/600/S4-86/039
NTIS: PB 87 140927/AS ($18.95 per copy)
J. D. Messman, M. E. Churchwell, D. Wong, and J. Lathouse, and *Theodore Martin*

QA Reference Books:

Available from:
American Chemical Society Publications
1155 - 16th Street, N.W.
Washington, DC 20036
(FTS: 737-3337; COML: 202-967-1221)

The Chemical Analysis of Water, 2nd edition (1986)
D. T. E. Hunt & A. L. Wilson Royal Society of Chemistry (London)

Available from:
AOAC
1111 North 19th Street
Suite 210
Arlington, VA 22209
(COML: 202-522-3032)

Use of Statistics to Develop and Evaluate Analytical Methods, G. T. Wernimont, W. Spendley, editor (1985), Association of Official Analytical Chemists (AOAC).

Available from:
National Technical Information Service (NTIS)
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
(FTS: 737-4650; COML: 703-487-4650)

Guidance Manual: Test Method Equivalency Petitions
PB 87 178349
Cost $18.00 per paper copy; $6.50 per microfiche

WHERE TO WRITE

ORD, USEPA, has centralized its publications distribution procedures. When ordering EMSL-Cincinnati publications cited in the Quality Assurance Newsletter, address all requests to:

ORD Publications
CERI
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Include in your request the appropriate title and the EPA number.

EMSLs can be reached by writing to the following:

U.S. Environmental Protection Agency
Environmental Monitoring Systems Laboratory — Las Vegas
Las Vegas, Nevada 89114

U.S. Environmental Protection Agency
Environmental Monitoring Systems Laboratory — Research Triangle Park (MD-75)
Research Triangle Park, NC 27711

U.S. Environmental Protection Agency
Environmental Monitoring and Support Laboratory — Cincinnati
Cincinnati, Ohio 45268

U.S. Environmental Protection Agency (RD-680)
Quality Assurance Management Staff
Office of Acid Deposition, Environmental Monitoring, and Quality Assurance
Washington, DC 20460

U.S. Environmental Protection Agency
Atmospheric Sciences Research Laboratory—Research Triangle Park (MD-59)
Research Triangle Park, North Carolina 27711

Regional QA Coordinators

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Quality Assurance Coordinator (Water and Air)
Central Regional Laboratory
Environmental Services Division
U.S. Environmental Protection Agency, Region 1
60 Westview Street
Lexington, MA 02173
FTS: 828-6211; COML: 617-861-6700, Ext. 205
Connecticut, Maine, Massachusetts,
New Hampshire, Rhode Island, Vermont

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Monitoring Management Branch
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U.S. Environmental Protection Agency, Region 2
Edison, NJ 08837
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Surveillance and Monitoring Branch
Environmental Services Division
U.S. Environmental Protection Agency, Region 2
Edison, NJ 08837
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New Jersey, New York,
Puerto Rico, Virgin Islands

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Quality Assurance Coordinator (Water)
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Philadelphia, PA 19107
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841 Chestnut Street, Eighth Floor
Philadelphia, PA 19107
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West Virginia, District of Columbia

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Laboratory Evaluation and Quality
Assurance Section
Analytical Support Branch
Environmental Services Division
U.S. Environmental Protection Agency, Region 4
College Station Road
Athens, GA 30613
FTS: 250-3390; COML: 404-546-3390
Alabama, Florida,Georgia, Kentucky, Mississippi,
North Carolina, South Carolina, Tennessee

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Quality Assurance Office
Environmental Services Division
U.S. Environmental Protection Agency, Region 5
536 South Clark Street
Chicago, IL 60605
FTS: 353-7712; COML: 312-353-7712

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Quality Assurance Office
Environmental Services Division
U.S. Environmental Protection Agency, Region 5
536 South Clark Street
Chicago, IL 60605
FTS: 353-9317; COML: 312-353-9317
Illinois, Indiana, Michigan,
Minnesota, Ohio, Wisconsin

Robert Forrest
Quality Assurance Officer/Chief (Water and Air)
Quality Assurance Office (6ES-Q)
Environmental Services Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, TX 75202-2733
FTS: 655-2217; COML: 214-655-2217
Arkansas, Louisiana, New Mexico,
Texas, Oklahoma

Dale Bates
Quality Assurance Officer (Water and Air)
Environmental Services Division
U.S. Environmental Protection Agency, Region 7
25 Funston Road
Kansas City, KS 66115
FTS: 757-3881; COML: 913-236-3881
Iowa, Kansas, Missouri, Nebraska

Juanita Hillman
Quality Assurance Coordinator (Water)
Environmental Services Division
U.S. Environmental Protection Agency, Region 8
One Denver Place, Suite 1300
999 Eighteenth Street
Denver, CO 80202-2413
FTS: 776-5065; COML: 303-236-5065

William Basbagill
Acting Quality Assurance Coordinator (Air)
Environmental Services Division
U.S. Environmental Protection Agency, Region 8
Denver Federal Center
Post Office Box 25366
Denver, CO 80225
FTS: 776-5097; COML: 303-236-5097
Colorado, Montana, North Dakota,
South Dakota, Utah, Wyoming

Kent Kitchingman
Quality Assurance Officer (Water and Air)
Office of Quality Assurance and
Monitoring Staff (P3-1)
U.S. Environmental Protection Agency, Region 9
215 Fremont Street
San Francisco, CA 94105
FTS: 454-7480; COML: 415-974-0922
Arizona, California, Hawaii, Nevada,
American Samoa, Guam, Trust Territories of
Pacific Islands, Wake Island

Barry Towns
Quality Assurance Office/Chief (Water and Air)
Environmental Services Division
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Mail Stop 337
Seattle, WA 98101
FTS: 399-1675; COML: 206-442-1675
Alaska, Idaho, Oregon, Washington

QA Officer Changes

Region 2
Lloyd Kahn
Quality Assurance Coordinator (Water)
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Environmental Services Division
U.S. Environmental Protection Agency, Region 2
Edison, NJ 08837
FTS: 340-6709; COML: 201-321-6709

Region 5
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Quality Assurance Coordinator (Air)
Quality Assurance Office
Environmental Services Division
U.S. Environmental Protection Agency, Region 5
536 South Clark Street
Chicago, IL 60605
FTS: 353-9317; COML: 312-353-9317

Address and Telephone Number Change

Robert Forrest
Quality Assurance Officer/Chief (Water and Air)
Quality Assurance Office (6ES-Q)
Environmental Services Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, TX 75202-2733
FTS: 655-2217; COML: 214-655-2217

RESPONSE SHEET*

Subject Matter: ____ Water ____ Air ____ Solid Waste

Author: _____

Comments: _____

(Use Additional sheets if needed.)

_____
Reader's Name

_____
Address

_____
City State Zip Code

_____
Professional Affiliation Phone Number Date

Mail to:

Betty J. Thomas, Publications Assistant
Environmental Monitoring and Support Laboratory-Cincinnati
U.S. Environmental Protection Agency
Cincinnati, OH 45268

(Betty Thomas, FTS: 684-7302; COML: 513-569-7302)

***This response sheet is provided for the reader's use on a voluntary basis. Your thoughts for consideration, suggestions, and comments are welcome. All inquiries and responses received will be sent to the responsible Agency personnel who have expertise in the applicable field/subject for review and consideration.**

ATTENTION

Mailing List Update

You are currently on the Environmental Monitoring and Support Laboratory's mailing list for the Quality Assurance (QA) Newsletter.

We are required by the Office of Management and Budget (OMB) to update our mailing list. If you wish to remain on this list, you must return this page to the address shown below:

Betty J. Thomas
Publications Assistant
EMSL-Cincinnati
26 W. St. Clair Street
Cincinnati, OH 45268

We must receive this page before August 31, 1987, or your name will be removed from this mailing list.

Before mailing this page, detach and return your mailing label, check your name and address, and make corrections below:

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EMSL 1987 8/87

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Quality Assurance Newsletter

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Betty J. Thomas
U.S. Environmental Protection Agency
Environmental Monitoring and Support Laboratory-Cincinnati
Cincinnati, OH 45268

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Name: _____
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City/State/Zip Code: _____

Area of Interest: Circle Applicable Subjects For Each Section

(1) Water:
- (a) Chemical Analysis — Inorganic
- (b) Chemical Analysis — Organic
- (c) Aquatic Biology
- (d) Microbiology
- (e) Viruses
- (f) Quality Assurance
- (g) Sampling and Automatic Measurements
- (h) Monitoring Systems
- (i) Radiochemical Analysis
- (j) All Subjects

(2) Air:
- (a) Chemical Analysis
- (b) Ambient Monitoring
- (c) Source Monitoring
- (d) Monitoring Systems
- (e) Quality Assurance
- (f) All Subjects

(3) Solid Waste:
- (a) Chemical Analysis
- (b) All Subjects

(4) Affiliation: Circle One
- (a) US EPA
- (b) Other Federal Government
- (c) State or Regional Government
- (d) Local Government
- (e) Industry
- (f) Academia
- (g) Consultant
- (h) Individual
- (i) Library
- (j) Citizen or Conservation Group
- (k) Foreign

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