PB91-904202
April-June 1991

United States
Environmental Protection
Agency

Office of
Administration
Washington, D.C. 20460

Library Systems Staff

EPA

EPA Publications Bibliography

Quarterly Abstract Bulletin

ABOUT NTIS

As a cornerstone of the technological publishing structure in the United States, the National Technical Information Service (NTIS) is a key participant in the development of advanced information products and services for the achievement of U.S. productivity and industrial innovation goals in the 1980's.

NTIS, an agency of the U.S. Department of Commerce, is the central source for the public sale of U.S. Government-sponsored research, development, and engineering reports, and for sales of foreign technical reports and other analyses prepared by national and local government agencies and their contractors or grantees.

And, it is the central source for:

- federally generated machine processable data files and software;
- licensing U.S. Government-owned patents.

NTIS manages the:

- *Center for the Utilization of Federal Technology (CUFT)*, which alerts U.S. industry to specially selected technology having immediate practical value;
- *Federal Software Exchange Center*, for the exchange of computer software among Federal agencies, with public availability through NTIS.

Consequently, NTIS is one of the world's leading processors of specialty information.

The NTIS information collection is approaching two million titles, several hundred thousand of which contain foreign technology or foreign marketing information. All are permanently available for sale, either directly from 80,000 titles in shelf stock or from microform master copies of documents that are less in demand. Annually, NTIS supplies its customers with more than six million documents and microforms, shipping about 24,000 information items daily.

Full summaries of current U.S. and foreign research reports and other specialized information, in hundreds of subject categories, are published regularly by NTIS in a wide variety of newsletters, journals, and indexes, and in a variety of subscription formats for other Federal agencies. The complete texts of the technical reports cited are sold in paper and microform.

Some 70,000 new technical reports of completed research are added annually to the *NTIS Bibliographic Data Base*. Anyone seeking the latest technical reports or wanting to compile unique subject groups of abstracts may search the *NTIS Bibliographic Data Base* online using the services of vendors or organizations that maintain the NTIS data base for public use. The whole data base in machine readable form may be leased directly from NTIS.

The more timely documents in the NTIS collection are selected by category and sold as paperbound *Published Searches*, covering some 3,000 topical subject areas.

Customers with well defined continuing interests may subscribe to a standing order microfiche service *(SRIM)* which enables them to automatically receive the full texts of only those documents relating to their individual requirements.

NTIS sells its technical information products and services under the provisions of Title 15 of the U.S. Code (1151-7). The law established a clearinghouse for scientific, technical, and engineering information within the Department of Commerce and directed that it be self-supporting.

NTIS, therefore, is a unique Government agency supported by its customers. All costs, such as salaries, manufacturing, information acquisition, marketing and postage, are paid from sales income; not from tax-supported congressional appropriations, certain developmental programs excepted.

HOW TO ORDER

NTIS DELIVERY AND ORDERING OPTIONS

Sales Desk Business Hours: 8:30 a.m. - 5:30 p.m. Eastern Standard Time

Delivery Options	Class of Delivery	NTIS In-house Processing	Phone Numbers	Service Charge
Express	Overnight[1] Courier	Guaranteed[2] 24 hours	(800) 553-NTIS VA (703) 487-4650	$22 per item Only available in U.S.
Rush	First Class or equivalent	Guaranteed[2] 24 hours	(800) 553-NTIS VA (703) 487-4650	$12 per item $14.50 outside U.S., Canada, and Mexico
	Customer Pickup 8:30-5:00	Guaranteed[2] 24 hours	(800) 553-NTIS VA (703) 487-4650	$12 Per Item
Regular	First Class or equivalent	Stocked Reports[3] 2-3 days	(800) 553-NTIS VA (703) 487-4650	$3 handling fee per order $4 outside U.S., Canada, and Mexico

[1]Express Order Service guarantees overnight delivery to most U.S. cities. Express orders received by 1 p.m. (EST) on any working day are in your hands by 3 p.m. (local time) the following working day for **reports in stock**.

[2]Express and Rush Order Services guarantee same day processing on reports in stock and 24-hour processing on reports requiring printing. Toll free ordering is available for express and rush orders. All express and rush orders require NTIS Deposit Account, American Express, VISA, or MasterCard. Standard $3.00 handling fee is waived on all express and rush orders, QuikService, or pickup at NTIS.

[3]Regular handling for reports not in stock (requiring reproduction) normally takes 2 to 8 days to process.

Ordering Options Available 24 Hours a Day

Telex: 89-9405 (Domestic) or 64617 (International)
Fax: (703) 321-8547
Online: DIALOG (Command: DialOrder)
ORBIT (Command: Order NTIS)
STN International (Command: Order NTI)
OCLC (Interlibrary Loan Command NTI, NTI)

NTIS/QuikSERVICE
Call (703) 487-4650 and ask for PR-846/827.
Code-A-Phone: (703) 487-4650

NOTE: Whether you request Express Order, Rush Order, or Regular service, your orders always receive our best attention. NTIS is required by law to recover costs, and every order is important to us.

NTIS
U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
Springfield, Virginia 22161

PB91-904202
April-June 1991

EPA PUBLICATIONS BIBLIOGRAPHY

QUARTERLY ABSTRACT BULLETIN

SPONSORED BY
Library Systems Staff
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

FOREWORD

The **EPA Cumulative Bibliography,** 1970-1976, published in December 1976 (order number PB-265920, price code E99) contains bibliographic citations with abstract for reports generated by EPA and its predecessor agencies and entered into the NTIS collection through 1976. Access points to this cumulative are by Report Title; Subject (keyword); Corporate or Personal Author; Contract Number; and Accession/Report Number.

The *EPA Publications Bibliography,* 1977-1983, is also available (order number PB84-158500, price code E99) containing EPA reports entered into the NTIS collection and published in the *EPA Publications Bibliography, Quarterly Abstract Bulletin* from its inception in 1977 through December 1983. This cumulated volume contains all the indexes of its predecessor plus a "Sponsoring EPA Office" index as in the quarterly bulletin.

Quarterly update supplements will continue to be published listing and indexing EPA technical reports and journal articles added to the NTIS collection during the preceding quarter. The fourth issue of the year contains bibliographic citations with abstracts for the preceding quarter and cumulative indexes for the calendar year.

To order documents or subscriptions, return the order form (at the back of this issue) to the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Do not order from the U.S. Environmental Protection Agency. If what you have ordered is in stock, you should receive your order within a few days after it arrives at NTIS. If what you have ordered must be reproduced from a microform, or if all the paper copies have been sold and reprints are in process, you should receive your order within four to six weeks. Infrequently, orders may be further delayed by a contractor's inability to deliver to NTIS. You will be notified if such delay is expected.

Prices for documents are indicated in each entry by a price code for paper copy and for microform. To determine the current price, consult the price-code table printed on the outside back cover of the most recent issue of the *EPA Publications Bibliography, Quarterly Abstract Bulletin.*

The EPA Publications Bibliography Quarterly Abstract Bulletins are available on annual subscription from NTIS at a Cost of $120.00 for North American Continent, users (single copies, when available, are $32.50 each). For those outside the North American Continent, please write NTIS for prices.

CONTENTS

About NTIS ..... inside front cover
Foreword ii
User's Guide v
Report Summaries 1
Title Index TI-1
Keyword Index KW-1
Sponsoring EPA Office Index SO-1
Corporate Author Index CA-1
Personal Author Index PA-1
Contract/Grant Number Index CG-1
NTIS Order/Report Number Index OR-1
Order Form ..... At end
EPA Libraries ..... inside back cover
Price Codes ..... outside back cover

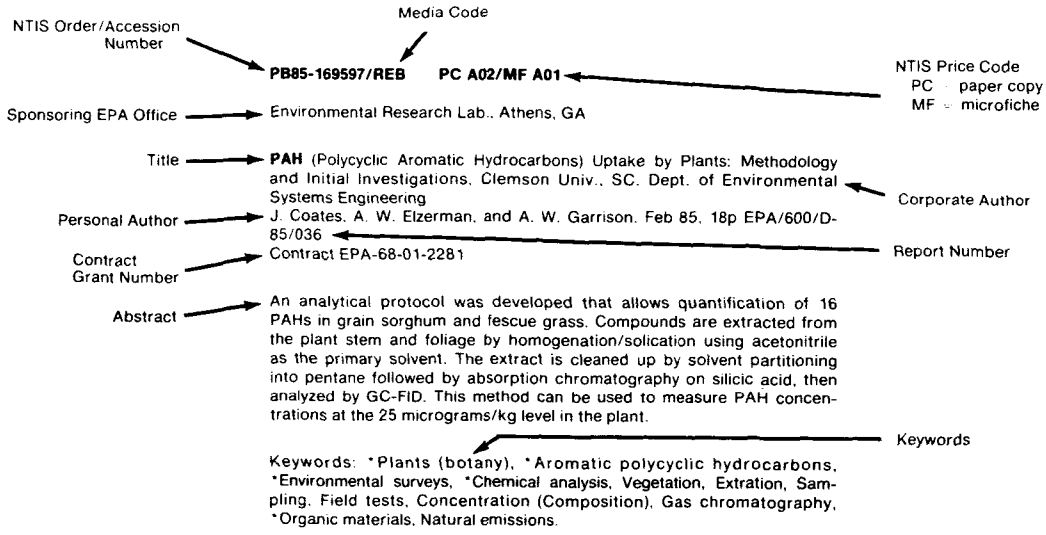
NATIONAL TECHNICAL INFORMATION SERVICE
KEY TELEPHONE NUMBERS

Business hours: Monday thru Friday, 8:30 am to 5:30 pm

INFORMATION ABOUT NTIS PRODUCTS & SERVICES	
Springfield Information Center	(703) 487-4600
Computer Products	(703) 487-4763
IDENTIFICATION OF A REPORT TITLE, NUMBER, PRICE OR	
NTIS AVAILABILITY (telephone answering machine)	(703) 487-4780
TO ORDER ANY NTIS PRODUCT OR SERVICE	
Online: DIALOG (Command: DIALORDER)	
ORBIT (Command: ORDER NTIS)	
Springfield Order Desk (document or report)	(703) 487-4650
Springfield Pickup Desk (8:30 a.m.-5:30 p.m.)	(703) 487-4604
Subscription Orders	(703) 487-4630
Telex	89-9405 or 64617
Fax	(703) 487-8547
Express or Rush Service (Virginia)	(703) 487-4700
Express or Rush Service (outside Virginia)	(800) 336-4700
QUESTIONS ABOUT YOUR ORDER OR DEPOSIT ACCOUNT	
Subscriptions	(703) 487-4630
Other inquiries	(703) 487-4660
Accounting	(703) 487-4770

USERS' GUIDE

Report entries are arranged alphanumberically by NTIS order number—alphabetic data precedes numeric.



Index entries are arranged alphanumerically. Titles are included in all indexes except Contract/Grant Number Index. Sample entries for each index follow:

Title: Reports are listed alphabetically by title; **A, An,** and **The** at the beginning of a title are ignored in alphabetizing.	**PAH (Polycyclic Aromatic Hydrocarbons)** Uptake by Plants: Methodology and Initial Investigations **PB85-169597/REB PC** A02/**MF** A01
Keyword: Entries are sequenced by major subject term, second paired term, and NTIS order number.	**Plants (Botany)** PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations **PB85-169597/REB PC** A02/**MF** A01
Sponsoring EPA Office: Publications are sorted alphabetically by title under the sponsoring EPA office. The EPA office is listed alphabetically beginning with the major EPA Headquarters Office. Laboratories and Divisions are listed alphabetically within the appropriate office.	**Environmental Research Lab., Athens, GA** EPA/600/D-85/036 PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations **PB85-169597/REB PC** A02/**MF** A01
Corporate Author: Entries are sequenced by corporate author name, report number, and NTIS order number. The monitor agency number is given following the report title.	**Clemson Univ., SC, Dept.of Environmental Systems Engineering** EPA/600/D-85/036 PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology *and Initial Investigations* EPA/600/D-85/036 **PB85-169597/REB PC** A02/**MF** A01
Personal Author: Entries are sequenced by personal author, report title, and NTIS order number.	**J. Coates, A. W. Elzerman and A. W. Garrison** PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology **PB85-169597/REB PC** A02/**MF** A01
Contract/Grant Number: Entries are sequenced by contract or grant number, corporate author, and NTIS order number.	**EPA-68-01-2281** Clemson Univ., SC, Dept. of Environmental Systems Engineering **PB85-169597/REB PC** A02/**MF** A01
NTIS Order/Report Number: Entries are sequenced by NTIS order, report, or monitor agency number.	**EPA/600/D-85/036** PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology **PB85-169597/REB PC** A02/**MF** A01

EPA PUBLICATIONS BIBLIOGRAPHY

Quarterly Abstract Bulletin

The full bibliographic report entries in this section are arranged alphanumerically by NTIS order number. Alphabetic data precedes numeric.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

NTIS Order Number/Media Code Price Codes	**PB85-169597/REB PC A02/MF A01**
Report Title	PAH (Poly Cyclic Aromatic Hyrdocarbons) Uptake by Plants: Methodology and Initial Investigations
Corporate Author	Clemson Univ., SC. Dept. of Environmental Systems Engineering
Personal Authors	COATHES J., ELZERMAN A. W. and GARRISON A. W.
Date	February 85
Pages	18p
Report Number	EPA/600/D-85/036
Contract Number	EPA-68-01-2281
Abstract	An analytical protocol was developed that allows quantification of 16 PAHs in grain sorghum and fescue grass. Compounds are extracted from the plant stem and foliage by homogenation/solication using acetonitrile as the primary solvent. The extract is cleaned up by solvent partitioning into pentane followed by absorption chromatography on silicic acid, then analyzed by GC-FID. This method can be used to measure PAH concentrations at the 25 micrograms/kg level in the plant.
Keywords (Descriptors & Identifiers)	*Plants (botany, *Aromatic polycyclic hydrocarbons, Environmental surveys, *Chemical analysis, Vegetation, Extration, Sampling, Field tests, Concentration (Composition), Gas chromatography, *Organic materials, Natural emissions.

EPA PUBLICATIONS BIBLIOGRAPHY
Quarterly Abstract Bulletin

PB90-274531/REB PC **A11**/MF **A02**
CERCLA Site Discharges to POTWs: Guidance Manual.
Environmental Protection Agency, Washington, DC. *Office of Emergency and Remedial Response.*
Aug 90, 226p EPA/540/G-90/005
Also available from Supt. of Docs.

The purpose of the guidance manual is to provide the current regulatory framework and technical and administrative guidance that is necessary for a Feasability Study (FS) evaluating the remedial alternative of discharging wastes from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites to POTWs. The remedial alternative is to be evaluated and compared to other alternatives developed in the FS. The POTW discharge alternative consists of discharging untreated or pretreated wastes to a POTW for treatment and disposal. Aqueous wastes from CERCLA sites can constitute a majority of waste treated during remedial clean-up efforts. These wastes can include groundwater, leachate, surface runoff, and other aqueous wastes.

Keywords: *Water pollution, *Ground water, *Water treatment, *Waste water disposal, *Industrial waste treatment, *Remedial actions, *Sewage treatment plants, Manuals, Guidelines, Feasability, Regulations, *Site discharges, CERCLA(Comprehensive Environmental Response Compensation and Liability Act), POTW(Publicly Owned Treatment Works), Case studies.

PB91-110528/REB PC **A02**/MF **A01**
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
Nov 90, 6p EPA/540/FS-91/118

The document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on the pesticide, Gliocladium Viriens GL-21. A Fact Sheet is issued after one of the following actions has occurred: Issuance or reissuance of a registration standard, Issuance of each special review document, Registration of a significantly changed use pattern, Registration of a new chemical, or An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

Keywords: *Pesticides, *Fungicides, Hazardous materials, Chemical properties, Regulations, Ecology, Toxicology, Agricultural products, *Toxic substances, *Gliocladium virens GL-21, Path of pollutants, Chemical information fact sheet, Use patterns.

PB91-110536/REB PC **A02**/MF **A01**
Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
Nov 90, 6p EPA/540/FS-91/119

The document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on the pesticide, Trichoderma harzianum. A Fact Sheet is issued after one of the following actions has occurred: Issuance or reissuance of a registration standard, Issuance of each special review document, Registration of a significantly changed use pattern, Registration of a new chemical, or An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

Keywords: *Pesticides, *Fungicides, Hazardous materials, Chemical properties, Regulations, Ecology, Toxicology, Agricultural products, *Toxic substances, *Trichoderma harzianum Rifai Strain KRL-AG2, Path of pollutants, Chemical information fact sheet, Use patterns.

PB91-129155/REB PC **A02**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Mutagenic Activity of Particulate Matter from Wood Smoke. Symposium paper.
NSI Technology Services Corp., Research Triangle Park, NC.
T. E. Kleindienst, D. F. Smith, E. E. Hudgens, E. Perry, and L. T. Cupitt. 1990, 10p EPA/600/D-90/175
Contract EPA-68-02-4443
Presented at American Association for Aerosol Research Annual Meeting on Atmospheric Aerosols and Climatic Effects, Philadelphia, PA., June 18-22, 1990. Prepared in cooperation with Environmental Health Research and Testing, Inc., Research Triangle Park, NC. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The formation of mutagenic products through combustion and by atmospheric processes has become an area of increased interest. Experiments were performed to examine the effect oxidation processes have on the mutagenicity from compounds found in the particulate phase from wood combustion emissions. Experiments were carried out in a 22.7 cu m Teflon environmental chamber. Two types of experiments were performed, (1) wood smoke irradiations in the presence of nitrogen oxides which are representative of the types of oxidation expected to occur under daytime conditions; (2) wood smoke oxidation by the nitrate radical (NO3) representative of processes expected to occur under nighttime conditions. The particulate matter from the oxidized and non-oxidized mixtures were collected on Teflon-impregnated glass fiber filters. Extractable organic mass was then recovered from the filters and tested for mutagenic activity using the Ames Test bacteria Salmonella typhimurium strains TA100 and TA98.

Keywords: *Smoke, *Toxicity, *Wood, *Air pollution, Oxidation, Combustion, Salmonella typhimurium, Nitrogen oxides, Irradiation, *Mutagenicity tests, Particulates, Dose-response relationships.

PB91-129205/REB PC **A03**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement. Symposium paper.
NSI Technology Services Corp., Ada, OK.
R. M. Powell. 1990, 14p EPA/600/D-90/159
Contract EPA-68-C8-0025
Pub. in Ground Water Management, n2 p1245-1258.
Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

Quantifying the total organic carbon (TOC) content of soils and aquifer materials is essential for understanding subsurface chemistry during environmental site characterization. Contaminant fate and transport, microbial ecology, and effective treatment methodology are all influenced by the quantity of both naturally occurring and anthropogenic organic carbon present. Unfortunately, the determination both in natural and contaminated settings is complicated by many factors. These include the system chemistry and heterogeneity, sampling methodology, and analytical limitations. Accurate determination becomes increasingly difficult as the total carbon (TC):TOC ratio increases, due to carbonate components of the TC and the difficulty of removing them without affecting the TOC. Interlaboratory data shows variations of 39% between laboratories analyzing the same sample, even with appropriate pretreatment. Further errors occur, enhanced by the limited sample sizes used in most instruments, when widely dispersed or heterogeneously distributed carbon particles are present. Additional complexity is introduced when the sample is from the saturated zone and contaminated with volatile organic compounds (VOCs). This is illustrated by data from the aviation gasoline and JP-4 jet fuel spills at the Traverse City Coast Guard Air Station bioremediation projects. Carbonate removal is impossible in this case and requires a separate determination, doubling the TOC measurement inaccuracy. This, combined with volatiles losses during handling and potential transport of unreacted volatiles through the instrument, results in observed coefficients of variation of 52%, with values 73% lower than a gas chromatographic (GC) method. Standardizing TOC determinations of subsurface materials, from both the saturated and unsaturated zones, must be accomplished for consistent interlaboratory results. Standard reference aquifer materials are necessary. Attempts to increase sample integrity, from field collection to analysis, particularly with volatile contaminants present, are needed. An instrument design prototype that should be useful for water-saturated, volatiles contaminated aquifer materials is presented. Cooperation between field investigators, analysts, and instrument manufacturers will be required to improve data quality and usefulness.

Keywords: *Soil analysis, *Aquifers, Chemical analysis, Measuring instruments, Hazardous materials, Ground water, Gas chromatography, Mass spectroscopy, Reprints, *Total organic carbon, *Water pollution sampling, *Water pollution detection, Site characterization, Organic matter, Volatile organic compounds, Environmental transport.

PB91-129742/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources. Summary rept.
Southern Research Inst., Birmingham, AL.
W. E. Farthing, and T. E. Ward. Dec 90, 50p EPA/600/3-90/093
Contract EPA-68-02-4442
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The report describes the initial development of a technique using dilution of stack gas with conditioned ambient air for measurement of the particulate mass of condensible emissions from stationary sources. The methodology developed is designed for widespread application to measure emissions which are in the vapor phase at temperatures greater than that of the Method 5 filter and which immediately condense to the particulate phase upon mixing in a temperature-controlled chamber with air that has been cooled, dried, and filtered. The front half of the condensibles air dilution train (CADT) is a Method 5 probe and filter. The promulgated EPA Method 17 or the PM-10 methods (with a glass-lined probe) could be used for the CADT front half. The portion of the train for collection of condensibles (back half) includes a dilution air injection cone and a mixing chamber followed by a separate filter for condensibles. The temperature selected for the separate filter for condensibles is 20 C, and the dilution factor is 15:1 on a volume basis, high enough to prevent condensation of moisture. In the field testing, the stack gas condensible emission concentrations measured by the CADT ranged from 25.2 to 27.6 mg/dscm, and the average difference between the CADT and the impinger catch (IC) approach was 2%.

Keywords: *Condensates, *Flue gases, Dilution, Air filters, Gas injection, Field tests, Air pollution control equipment, *Air pollution sampling, *Particulates, Laboratory tests, Stationary sources.

PB91-129759/REB PC **A05**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PRC Environmental Management, Inc., Chicago, IL.
G. Welshans, K. Topudurti, B. Sootkoos, and S. Weinberg. Sep 90, 79p EPA/540/A5-89/012
Contract EPA-68-03-3484
Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

In support of the U.S. Environmental Protection Agency's (EPA) Superfund Innovative Technology Evaluation (SITE) Program, the report evaluates both treatment efficiency and economic cost from the SITE demonstration and seven case studies. The Ultrox technology simultaneously uses ultraviolet (UV) radiation, ozone, and hydrogen peroxide to oxidize dissolved organic contaminants found in groundwater or wastewater. Under the SITE Program, the Ultrox technology demonstration was conducted at the Lorentz Barrel and Drum (LB&D) site, San Jose, California, in February and March of 1989. During the demonstration, the Ultrox system achieved volatile organic compound (VOC) removals greater than 90 percent. The majority of VOCs were removed through chemical oxidation. However, stripping also contributed toward removal of a few VOCs, such as 1,1,1-trichloroethane (1,1,1-TCA) and 1,1-dichloroethane (1,1-DCA). The treated groundwater met the applicable National Pollutant Discharge Elimination System (NPDES) standards for discharge into a local waterway. In addition, there were no harmful air emissions to the atmosphere from the Ultrox system, which is equipped with an off-gas treatment unit.

Keywords: *Water treatment, *Waste water, *Ground water, Organic wastes, Ultraviolet radiation, Field tests, Ozone, Hydrogen peroxide, Oxidation, *Ultrox technology, *Technology assessment, *Remedial action, *Superfund, Volatile matter, San Jose(California).

PB91-129817/REB PC **A04**/MF **A01**
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
W. E. Grube. Sep 90, 59p* EPA/540/A5-89/005

The Soliditech process mixes and chemically treats waste material with Urrichem (a proprietary reagent), additives, pozzolanic materials or cement, and water, in aten-cubic yard batch concrete mixer to form a more stable material. This technology was demonstrated in December 1988 at the Imperial Oil Company/Champion Chemical Company Superfund site in Morganville, New Jersey. Contaminated soil, waste filter cake material, and oily sludge, containing PCBs, various metals, and petroleum hydrocarbons were treated. The process was evaluated based on contaminant mobility, measured by leaching and permeability tests; structural and integrity of the solidified material, measured by physical, engineering, and morphological tests; and economic analysis, using cost information supplied by Soliditech, Inc. The conclusions drawn were: (1) process can solidify waste materials containing high oil and grease concentrations; (2) heavy metals such as arsenic, cadmium, lead, and zinc are successfully immobilized; (3) short-term physical stability of the treated waste was high; (4) some long-term tests of the treated wastes indicate a potential for physical degradation, while others indicate stability; (5) treatment results in a 22 percent average volume increase and an average bulk density increase of 33 percent; and (6) the process is economical.

Keywords: *Chemical stabilization, *Solidification, Sludge, Arsenic, Zinc, Cadmium, Lead, Economic analysis. Sites, *Superfund, *Remedial action, *Technology assessment, *Soliditech process, Solid wastes, Morganville(New Jersey), Polychlorobiphenyl compounds.

PB91-130153/REB PC **A04**/MF **A01**
Water Quality Modeling in Distribution Systems.
Environmental Protection Agency, Cincinnati, OH. Drinking Water Research Div.
R. M. Clark. 1990, 53p EPA/600/D-90/184
Presented at the Proceedings of the Symposium on Water Modeling, Sponsored by the Madrid Water Utility, Madrid, Spain, October 17, 1990.

The paper reviews the use of models for predicting water quality in distribution systems. Results of an extensive field study conducted by the USEPA and North Penn Water Authority are examined. A case study of the model application to a waterborne disease outbreak in Cabool, Missouri is presented. The application and extension of the model to the South Central Connecticut Regional Water Authority (SCCRWA) is discussed. It may be concluded that models can be used to predict water quality changes and human exposure in drinking water distribution systems. Based on field studies, water quality can vary widely over a short time in a given place. Tank operations can have a significant impact on water quality. As standards become more stringent system design have had to be reconsidered in order to meet water quality objectives.

Keywords: *Water quality management, *Mathematical models, *Distribution systems, Field tests, Water distribution, Water pollution, Potable water, Water treatment, Operating, Path of pollutants, Water quality maintenance, Case studies, Water pollution standards, Pollution regulations.

PB91-130195/REB PC **A18**/MF **A03**
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
S. Garg, A. Meiners, J. Onstot, A. Romeu, and G. Scheil. Nov 90, 410p EPA/530/SW-91/016
Portions of this document are not fully legible.

The EPA is developing regulations to control emissions of products of incomplete combustion (PICs) from cement kilns. The emission parameters planned for use in this regulation are total hydrocarbons (HCs) and carbon monoxide (CO). To support the use of these parameters as surrogates for PICs, more information from full-scale testing of dry cement kilns is needed. As a part of this data-gathering effort, a test was conducted at the Ash Grove Cement Company precalciner kiln in Louisville, Nebraska.

Keywords: *Air pollution control, *Combustion efficiency, *Kilns, Hazardous materials, Hydrocarbons, Carbon monoxide, Cements, Process charting, Fuel systems, Tables(Data), Design criteria, Electrostatic precipitators, Concentration(Composition), Quality control, Quality assurance, *Air pollution sampling, Pollution regulations, Waste utilization, Refuse derived fuels, Louisville(Nebraska), Pyroclone precalciner, Total organic carbon, Cocombustion.

PB91-130203/REB PC **A20**/MF **A03**
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
S. Garg, S. Klamm, D. March, J. Onstot, and A. Romeu. Dec 90, 466p EPA/530/SW-91/017
Portions of this document are not fully legible.

The EPA is developing regulations to control emissions of products of incomplete combustion (PICs) from cement kilns. The emission parameters planned for use in this regulation are total hydrocarbons and carbon monoxide. To investigate the use of these parameters as surrogates for PICs, more information from full-scale testing of wet cement kilns is needed. Data are also needed for development of regulations to control emissions of hydrogen chloride. As part of this data-gathering effort, a test was conducted at the Continental Cement Company in Hannibal, MO. One reason that Continental was selected by EPA for the test is that the facility uses a wet process kiln and also burns both liquid and solid (powdered) hazardous waste as supplementary fuels in the kiln. All test activities were conducted for and under the direction of EPA/OSW, Waste Treatment Branch.

Keywords: *Air pollution control, *Kilns, *Combustion efficiency, Hazardous materials, Hydrocarbons, Carbon monoxide, Hydrogen chloride, Cements, Process charting, Fuel systems, Tables(Data), Design criteria, Concentration(Composition), Quality control, Quality assurance, *Air pollution sampling, Pollution regulations, Waste utilization, Refuse derived fuels, Hannibal(Missouri), Wet methods, Total organic carbon, Cocombustion.

PB91-130211/REB PC **A03**/MF **A01**
State Authorization Manual. Volume 1.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
S. Brugler-Jones. Oct 90, 50p EPA/530/SW-91/018A, OSWER DIRECTIVE-9540.00-9A
See also PB91-130229.

The State Authorization Manual (SAM) (Vol. I) provides guidance for States applying for program revisions to their authorized RCRA State program. The SAM is an updated version of the 1988 State Consolidated RCRA Authorization Manual (SCRAM). It focuses on program revision applications rather than initial applications since most States have received initial authorization for the RCRA program. The SCRAM should continue to be used to assist States not yet authorized under the RCRA program.

Keywords: *Waste disposal, *Hazardous materials, State government, Regulations, Documents, Revisions.

PB91-130229/REB PC **A99**/MF **A99**
State Authorization Manual. Volume 2. Appendices.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
S. Brugler-Jones. Oct 90, 1941p EPA/530/SW-91/018B, OSWER DIRECTIVE-9540.00-9A-1
See also PB91-130211.

The document provides the supportive appendices for Volume 1 of the State Authorization Manual (SAM), which provides guidance for States applying for program revisions to their authorized RCRA State program. Among the appendices are: various program checklists, lists of revision checklists by cluster, model Federal Register Notices, guidance for State Authorization Files, and guidance for using Wordperfect files and for CFR files.

Keywords: *Waste disposal, *Hazardous materials, State government, Regulations.

PB91-131227/REB PC **A12**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
Systems Applications, Inc., San Rafael, CA.
R. E. Morris, and T. C. Myers. Jun 90, 272p EPA/450/4-90/007A, , EPA/SW/MT-91/002A
Contracts EPA-68-02-4352, EPA-68D90066
See also Volume 2, PB91-131235. For system on magnetic tape, see PB91-505578. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The user's guide for the Urban Airshed Model (UAM) is divided into five volumes. Volume I provides historical background on the model and describes in general the scientific basis for the model. It describes the structure of the required unformatted (binary) files that are used directly as input to UAM. The volume also presents the formats of the output files and information on how to run an actual UAM simulation. For those user's that already possess a UAM modeling data base or have prepared inputs without the use of the standard UAM preprocessors, the volume should serve as a self-sufficient guide to running the model.

Keywords: *User manuals(Computer programs), Documentation, Air quality, Data base management, File maintenance(Computers), Computer programs, Concentration(Composition), Meteorological data, Pollution sources, Air pollution, Atmospheric diffusion, Photochemical reactions, *Urban Airshed Model, *Carbon-Bond Chemical Mechanism, Emission factors.

PB91-131235/REB PC **A22**/MF **A03**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
Systems Applications, Inc., San Rafael, CA.
R. E. Morris, T. C. Myers, E. L. Carr, M. C. Causley, and S. G. Douglas. Jun 90, 504p EPA/450/4-90/007B, , EPA/SW/MT-91/002B
See also Volume 1, PB91-131227 and Volume 3, PB91-131243. For system on magnetic tape, see PB91-505578. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The user's guide for the Urban Airshed Model (UAM) is divided into five volumes. Volume II describes the file formats and software for each of the standard UAM preprocessors that are part of the UAM modeling system. The preprocessor input files are ASCII files that are generated from raw input data (meteorological, air quality, emissions). The preprocessor input files are then read by individual preprocessor programs to create the unformatted (binary) files that are read directly by the UAM. Included in the volume is an example problem that illustrates how inputs were created from measurement data for an application of the UAM in Atlanta. The preprocessors available for generating wind fields and emission inventories for the UAM are described separately in Volumes III and IV, respectively.

Keywords: *User manuals(Computer programs), Documentation, Meteorological data, Air quality, Data base management, File maintenance(Computers), Computer programs, Concentration(Composition), Case studies, Pollution sources, Air pollution, Tables(Data), *Urban Airshed Model, Emission factors, Atlanta(Georgia).

PB91-131243/REB PC **A04**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
Systems Applications, Inc., San Rafael, CA.
S. G. Douglas, R. C. Kessler, and E. L. Carr. Jun 90, 65p EPA/450/4-90/007C, , EPA/SW/MT-91/002C
Contracts EPA-68-02-4352, EPA-68D90066
See also Volume 2, PB91-131235 and Volume 4, PB91-131250. For system on magnetic tape, see PB91-505578. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The user's guide for the Urban Airshed Model (UAM) is divided into five volumes. Volume III is the user's manual for the Diagnostic Wind Model (DWM). The model is a stand-alone interpolative wind model that uses surface- and upper-level wind observations at selected sites within the modeling domain of interest to provide hourly, gridded, three-dimensional estimates of winds using objective techniques. It provides one means of formulating wind field inputs to the UAM.

Keywords: *User manuals(Computer programs), Documentation, Air quality, Data base management, File maintenance(Computers), Computer programs, Concentration(Composition), Meteorological data, Wind(Meteorology), Pollution sources, Air pollution, Atmospheric diffusion, *Urban Airshed Model, Diagnostic Wind Model, Emission factors.

PB91-131250/REB PC **A13**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
Systems Applications, Inc., San Rafael, CA.
M. C. Causley, J. L. Fieber, M. Jimenez, and L. Gardner. Jun 90, 285p EPA/450/4-90/007D, , EPA/SW/MT-91/002D
Contracts EPA-68-02-4352, EPA-68D90066
See also Volume 3, PB91-131243 and Volume 5, PB91-131268. For system on magnetic tape, see PB91-505578. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The user's guide for the Urban Airshed Model (UAM) is divided into five volumes. Volume IV describes in detail the Emission Preprocessor System (EPS). The software package is used to process anthropogenic area and point source emissions for UAM from countywide average total hydrocarbon, NOx, and carbon monoxide emissions available from national emission inventories, such as the National Emissions Data System or the National Acid Precipitation Assessment Program. An appendix to the volume describes the Biogenic Emissions Inventory System (BEIS), which can be used to generate gridded, speciated biogenic emissions. Software for merging the anthropogenic area, mobile, and biogenic emission files into UAM input format is also described in the volume.

Keywords: *User manuals(Computer programs), Documentation, Meteorological data, Air quality, Data base management, File maintenance(Computers), Computer programs, Concentration(Composition), Pollution sources, Air pollution, Tables(Data), Point sources, *Urban Airshed Model, *Emission inventories, Emission factors.

PB91-131268/REB PC **A11**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
Computer Sciences Corp., Research Triangle Park, NC.
R. T. Tang, S. C. Gerry, J. S. Newsome, A. R. Van Meter, and R. A. Wayland. Jun 90, 233p EPA/450/4-90/007E, , EPA/SW/MT-91/002E
Contract EPA-68-01-7365
See also Volume 4, PB91-131250. For system on magnetic tape, see PB91-505578. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The user's guide for the Urban Airshed Model (UAM) is divided into five volumes. Volume V describes the ROM-UAM interface program system, a software package that can be used to generate UAM input files from inputs and outputs provided by the EPA Regional Oxidant Model (ROM).

Keywords: *User manuals(Computer programs), Air quality, Data base management, File maintenance(Computers), Computer programs, Concentration(Composition), Documentation, Meteorological data, Pollution sources, Air pollution, Tables(Data), Computer programming, Atmospheric diffusion, Wind(Meteorology), Case studies, *Urban Airshed Model, Emission factors, Regional Oxidant Model.

PB91-131300/REB PC **A10**/MF **A02**
Office of Radiation Programs, Washington, DC.
National Radon Contractor Proficiency Program. Proficiency Report.
ICF, Inc., Fairfax, VA.
Feb 91, 222p EPA/520/1-91/002
Contract EPA-68-D90170
See also PB91-157222 and PB91-125922. Sponsored by Office of Radiation Programs, Washington, DC.

The report lists those individual contractors who have met the requirements of the Radon Contractor Proficiency (PCP) Program as of December 15, 1990. These requirements are designed to provide minimum proficiency criteria for individuals who design and supervise the installation of radon mitigation systems in buildings. The RCP Program measures the proficiency of an individual contractor, not their company. The report provides the program requirements, RCP mitigation guidelines, State Radon contacts, and information on how to use the RCP tables.

Keywords: *Mitigation, *Contractor personnel, *Radon, Manuals, Tables(Data), Education, Records management, Performance testing, Standards, Occupational safety, *Proficiency report.

PB91-131672/REB PC **A03**/MF **A01**
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
F. M. Black, S. B. Tejada, and L. Gage. 1989, 20p EPA/600/D-90/174
Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC.

During the period June 1 to June 9, 1989, aldehyde and other oxygenated organic compound concentrations were examined at sites 3, 10, and 80 meters northeast of the Vilnius-Kaunas highway in Lithuania, SSR by collecting 120 liter (1 L/min for 120 min) samples on 2,4-dinitrophenylhydrazine-coated silica gel cartridges acidified with hydrochloric acid. The cartridges were preceded in the sampling system by potassium iodide-coated denuders to remove interfering ozone from the sample stream. Collected compounds were eluted from the cartridges with acetonitrile and analyzed using High Performance Liquid Chromatography with a UV (360 nm) detector, a Zorbax ODS analytical column, and a gradient water-acetonitrile mobile phase. Formaldehyde, acetaldehyde, and acetone were the most abundant oxygenated organic compounds observed, with lesser amounts of propionaldehyde, butyraldehyde, benzaldehyde, valeraldehyde, and tolualdehyde also generally observed. Formaldehyde concentrations ranged from 1.1 ppb (1.4 microgram/cu m) to 5.7 ppb (7.0 microgram/cu m), acetaldehyde from 1.2 ppb (2.2 microgram/cu m) to 5.0 ppb (9.0 microgram/cu m), and acetone from 2.3 ppb (5.4 microgram/cu m) to 6.8 ppm (16.2 microgram/cu m); the concentrations varied with wind direction and speed, and distance from the highway.

Keywords: *Formaldehyde, *Acetaldehyde, *Acetone, *Aldehydes, *Vehicular traffic, Highways, Lithuania, Field tests, Wind velocity, Wind direction, *Air pollution monitoring, Liquid chromatography.

PB91-131987/REB PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Policy, Planning and Evaluation.
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure. Final rept.
Research Triangle Inst., Research Triangle Park, NC.
W. H. Desvousges, J. A. Mauskopf, and A. Forrest.
Sep 90, 137p EPA/230/9-90/081
Sponsored by Environmental Protection Agency, Washington, DC. Office of Policy, Planning and Evaluation.

The publication, 'Hazardous Substances in Our Environment', is aimed at the aware citizen who is already concerned about an environmental issue and wants to know more. The first part explains how risk is estimated and what is being done or can be done to reduce exposures. The rest lists additional sources of information.

Keywords: *Hazardous materials, *Public health, *Pollution control, Guidelines, Identifying, Communities, Legislation, Accidents, Exposure, Risk, Dosage, Humans, Estimates, Government policies, Education, Cleanup.

PB91-132118/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid. Technical rept.
Oregon State Univ., Corvallis. Dept. of Statistics.
W. S. Overton, and S. V. Stehman. Aug 90, 39p EPA/600/3-90/095
Prepared in cooperation with State Univ. of New York Coll. of Environmental Science and Forestry, Syracuse. Sponsored by Corvallis Environmental Research Lab., OR.

The proposed monitoring design involves sampling resources systematically via a triangular grid that is overlaid on the United States. This grid is applied in different ways to sample different types of resources. For continuous resources, such as extensive waterbodies, the observations may be point measurements of the response variable. The specific problem investigated in the paper is motivated by design considerations for open-water sampling in the estuary component of the Near Coastal resource. Statistical properties of two sampling design alternatives imposed on the triangular grid are explored, and contrasted to a third design that does not use the grid. The three designs were evaluated on the criteria of precision and suitability of variance estimation, by a mixture of analysis and simulation. The surface models used throughout the evaluation to explore properties of the designs were planar, quadratic, and sinusoidal.

Keywords: *Water resources, *Sampling, *Statistical analysis, Experimental design, Grids(Coordinates),

Mathematical models, Variance(Statistics), Estimating, Tables(Data), Environmental Protection Agency, Environmental Monitoring and Assessment Program.

PB91-132845/REB PC **A02**/MF **A01**
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
Environmental Research Lab., Narragansett, RI.
S. M. Baksi. 1990, 8p EPA/600/D-90/185, CONTRIB-P08
Pub. in Water Chlorination, v16 p341-346 1990.

Chlorination of drinking water and wastewaters results in the formation of numerous compounds, including trihalomethanes (THMs). The THM formed most frequently during the chlorination of drinking water is chloroform. However, in coastal areas where wastewaters may be introduced into a marine environment, the relative concentration of brominated THMs increases dramatically. The toxicity of chloroform has been the most widely investigated of all the THMs, although the extent of its toxicological effects is not known. Most of this information has been determined for mammalian species. Experimental data on the toxicological effects of THMs on aquatic species are limited. The chapter presents data on the toxicity of THMs to isolated hepatocytes from striped bass (Morone saxatilis). This test system was chosen because the primary target organ in chloroform toxicity is the liver. Additionally, use of this in vitro system allows for greater control over the portion of the applied dose that actually reaches the target cells, and it is possible to measure more than one endpoint simultaneously.

Keywords: *Chloroform, *Bass, *Liver, *Toxicity, *Chlorination, Waste water, Potable water, Halohydrocarbons, Proteins, Biosynthesis, Reprints, *Water pollution effects(Animals), Morone saxatilis, Cultured cells, Coastal waters.

PB91-132944/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
Environmental Monitoring and Services, Inc., Chapel Hill, NC.
L. J. Folinsbee. c1988, 27p EPA/600/D-90/171
Pub. in Toxicology of the Lung, p175-199 1988. Prepared in cooperation with North Carolina Univ. at Chapel Hill. Dept. of Medicine. Sponsored by Health Effects Research Lab., Research Triangle Park, NC.

Knowledge of the effects of inhaled pollutants on man is the underlying purpose of research in inhalation toxicology. Specifically, the aims of the chapter are to summarize some experimental design issues, illustrate them with study results demonstrating the use of certain procedures, and discuss the importance of particular methodology. Several important factors in the design and implementation of human exposure studies have been addressed by other reviewers. It is not the author's intent to provide a comprehensive review of either methodology or the pulmonary responses of man to air pollutants, neither of which is feasible in a brief chapter. The results of many investigations of ambient or toxic air contaminants have been and will be used in the establishment of air quality standards. Therefore, certain aspects of experimental design, such as subject selection and characterization, description of symptoms, and details of mode of exposure, require specific attention to elucidate the relevance of these studies to ambient exposure conditions.

Keywords: *Air pollution, *Respiration, *Physiology, Design, Allergies, Asthma, Exercise(Physiology), Reprints, *Toxic substances, Environmental exposure pathways, Respiratory function tests, Dose-response relationships.

PB91-132951/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays. Book chapter.
National Inst. of Environmental Health Sciences, Research Triangle Park, NC. Cellular and Genetic Toxicology Branch.
R. Langenbach, C. Crespi, R. Davies, K. Rudo, and P. Smith. c1990, 12p EPA/600/D-90/169
Contract EPA-68-02-4456
Pub. in Proceedings of the ICEM Meeting (5th), July 1989. Prepared in cooperation with Environmental Health Research and Testing, Inc., Research Triangle Park, NC., and Gentest Corp., Woburn, MA. Sponsored by Health Effects Research Lab., Research Triangle Park, NC.

The present work demonstrates that cDNAs coding for cytochrome P450 enzymes can be transfected into mammalian cells and expressed. Two different cell systems were used for transfection. The 10T 1/2 cells can be treated with a nontransforming dose of an initiator followed by continuous treatment with a second chemical that requires cytochrome P450 specific metabolism to manifest its promoting activity. By this approach, greater insight into the role of chemical metabolism in the promotion process (and presumably other nongenotoxic effects) can be obtained. Additionally, the role of specific cytochrome P450s in the metabolism of different classes of carcinogens/drugs can be elucidated. A major advantage of having the metabolizing enzymes actually present in the target cell is that effects of chemicals can be studied in long-term, low-dose exposure protocols which will eliminate the acute toxic effects which are associated with many current protocols.

Keywords: *Deoxyribonucleic acids, *Mutagens, Cells(Biology), Mammals, In vitro analysis, Carcinogens, Reprints, *Transfection, *Mutagenicity tests, *Genetic transformation, *Cytochrome P450, Cell survival, Enzymologic gene expression regulation, Carcinogenicity tests.

PB91-132969/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC. Genetic Toxicology Div.
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior. Journal article.
Wellcome Research Labs., Research Triangle Park, NC.
J. W. Allen, P. Poorman-Allen, L. C. Backer, B. Westbrook-Collins, and M. J. Moses. c1990, 17p EPA/600/D-90/167
Contract EPA-68-02-4456, Grant EPA-R-812736
Pub. in Banbury Report 34: Biology of Mammalian Germ Cell Mutagenesis, p155-169 Aug 90. Prepared in cooperation with Environmental Health Research and Testing, Inc., Research Triangle Park, NC., and Duke Univ. Medical Center, Durham, NC. Sponsored by Health Effects Research Lab., Research Triangle Park, NC. Genetic Toxicology Div.

Homologous chromosome synapsis and crossing-over at meiosis are basic to mammalian gamete development: They achieve genetic recombination, regulate chromosome segregation, and are believed to function in repair and maturation. Synaptonemal complexes (SCs) are axial correlates of meiotic chromosome bivalents and develop in conjunction with homologous chromosome synapsis. It is shown here that various mutagens/anti-mitotic agents-cyclophosphamide (alkylating agent), colchicine (anti-tubulin alkaloid), amsacrine or m-AMSA (topoisomerase inhibitor), bleomycin (radiomimetic agent), and gamma radiation-induce diverse structural and synaptic errors in SCs of treated mice and hamsters. Conventional types of clastogenic effects as well as damage unique to meiotic prophase appear to be manifested in the SC. Distinctive patterns of damage are associated with specific mutagenic agents/mechanisms. Some SC aberrations are suggestive of a site specificity possibly related to crossing-over. (Copyright (c) 1990, Cold Spring Harbor Laboratory Press.)

Keywords: *Mutagens, *Meiosis, Mutations, Reprints, *Synaptonemal complexes, *Chromosome aberrations, Toxic substances, Recombination(Genetics), Dose-response relationships.

PB91-132993/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.
Does Chronic Ozone Exposure Lead to Lung Disease.
Duke Univ. Medical Center, Durham, NC. Center for Extrapolation Modelling.
D. L. Costa, G. E. Hatch, and J. D. Crapo. 1990, 11p EPA/600/D-90/168
Grant EPA-R-813113
Sponsored by Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.

The potential role of ozone (O3) in the induction of chronic lung diseases remains unclear. Using an ambient profile adopted from aerometric data from the Southwest Air Basin, rats were exposed to O3 for up to 18 months before assessments of pulmonary structure, function and biochemistry. Small, but significant alterations in lung function were observed at 52 and 78 weeks of exposure which were consistent with an overall 'restrictive' functional lesion; these effects subsided during the post-exposure in clean air. Evidence of augmented lung permeability to plasma proteins and shifts in the antioxidant balance of lung tissues, free cells and lavage fluids were consistent with chronic oxidant stress. EM-morphometry revealed alterations in proximal bronchoalveolar epithelia and interalveolar interstitium which largely resolved during clean air post-exposure. However, fibrotic activity within the epithelial basement membrane and interstitium persisted. These collective data suggest that chronic exposure to O3 in an ambient exposure pattern induces alterations of lung infrastructure at presumptive O3 deposition sites resulting in functional and biochemical consequences.

Keywords: *Ozone, *Respiratory diseases, Rats, Biochemistry, Blood proteins, Exposure, *Air pollution effects(Humans), Respiratory function tests, Health hazards, Basement membrane, Bronchoalveolar lavage fluid, Fibrosis.

PB91-133025/REB PC **A02**/MF **A01**
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
Health Effects Research Lab., Research Triangle Park, NC.
H. Matsushita, S. Goto, O. Endo, M. Koyano, and K. Tanabe. 1990, 8p EPA/600/D-90/162
Presented at the International Conference on Indoor Air Quality and Climate (5th), Toronto, Canada, July 29-August 3, 1990. Prepared in cooperation with National Inst. of Public Health, Tokyo (Japan), and Azabu Univ., Sagamihara (Japan). School of Veterinary Medicine.

Two highly sensitive methods have been developed and applied to the monitoring of personal exposure to airborne mutagens and carcinogenic polycyclic aromatic hydrocarbons (PAH). The automatic method for PAH analysis consists of ultrasonic extraction and multicolumn HPLC/computer controlled spectrofluorometric detection, by which 7 PAHs in indoor and/or personal particulate samples were analyzed. Concentration of PAHs, e.g., benzo(a)pyrene, indoors increased remarkably by smoking in a poorly ventilated room. The second method, an ultra microsuspension forward mutation assay using Salmonella typhimurium TM677, is about 100 times more sensitive than the ordinary Ames mutation bioassay. Mutagenicity of airborne particles collected by personal sampling was determined by this method. Personal exposures to ETS were greatest for smokers, followed by passive smokers and lowest for nonsmokers suspension.

Keywords: *Mutagens, *Carcinogens, Exposure, Aromatic polycyclic hydrocarbons, Salmonella typhimurium, Smoke, Personnel monitoring, *Foreign technology, *Indoor air pollution, Mutagenicity tests, Air pollution effects(Humans), Benzo(a)pyrene, Fluorimetry, High pressure liquid chromatography.

PB91-133264/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Swirl Device for Regulating and Treating Combined Sewer Overflows.
Foster Wheeler Boiler Corp., Livingston, NJ.
R. Field. 1977, 26p* EPA/625/2-77/012
Contract EPA-68-C9-0033
Portions of this document are not fully legible. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

An intensive study to develop a new type of combined sewer overflow regulator device, called swirl, was conducted under the general supervision of the U.S. Environmental Protection Agency's Storm and Combined Sewer Technology Program, Risk Reduction Engineering Laboratory, Cincinnati, Ohio. The design of this

device was based on hydraulic and mathematical modeling to optimize its configuration. The report describes the results of a full-scale prototype swirl unit that controlled real overflows in the city of Syracuse, New York, and discusses other areas of operation.

Keywords: *Sewage treatment, *Prototypes, *Overflows, *Combined sewers, Swirling, Water treatment, Performance evaluation, Hydraulic models, Storm sewers, Outfall sewers, Waste water.

PB91-133314/REB PC **E99**/MF **E99**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants.
Radian Corp., Research Triangle Park, NC.
Nov 90, 2066p-in 5v
Set includes PB91-133322 through PB91-133363. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

No abstract available.

PB91-133322/REB PC **A05**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology. Final rept. 1985-90.
Radian Corp., Research Triangle Park, NC.
T. Emmel, and M. Maibodi. Nov 90, 98p EPA/600/7-90/021A
Contract EPA-68-02-4286
See also Volume 2, PB91-133330. For system on diskette, see PB91-506295. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Also available in set of 5 reports PC E99/MF E99, PB91-133314.

The report gives results of a study, the objective of which was to significantly improve engineering cost estimates currently being used to evaluate the economic effects of applying SO2 and NOx controls at 200 large SO2-emitting coal-fired utility plants. To accomplish the objective, procedures were developed and used that account for site-specific retrofit factors. The site-specific information was obtained from aerial photographs, generally available data bases, and input from utility companies. Cost estimates are presented for six control technologies: lime/limestone flue gas desulfurization, lime spray drying, coal switching and cleaning, furnace and duct sorbent injection, low NOx combustion or natural gas reburn, and selective catalytic reduction. Although the cost estimates provide useful site-specific cost information on retrofitting acid gas controls, the costs are estimated for a specific time period and do not reflect future changes in boiler and coal characteristics (e.g., capacity factors and fuel process) or significant changes in control technology and performance.

Keywords: *Air pollution control, *Retrofitting, *Air pollution economics, Site surveys, Documentation, Cost estimates, Sulfur dioxide, Nitrogen oxides, Combustion products, Performance evaluation, Coal preparation, Calcium oxides, Limestone, Injection, Spray drying, Afterburning, Catalysis, Coal fired power plants, Flue gas disulfurization.

PB91-133330/REB PC **A19**/MF **A03**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois. Final rept. 1985-90.
Radian Corp., Research Triangle Park, NC.
T. Emmel, and M. Maibodi. Nov 90, 447p EPA/600/7-90/021B
Contract EPA-68-02-4286
See also Volume 1, PB91-133322 and Volume 3, PB91-133348. For system on diskette, see PB91-506295. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Also available in set of 5 reports PC E99/MF E99, PB91-133314.

The report gives results of studies pertaining to Illinois, Alabama, Delaware, Florida, and Georgia coal fired power plants. The objective of which was to significantly improve engineering cost estimates currently being used to evaluate the economic effects of applying SO2 and NOx controls at 200 large SO2-emitting coal-fired utility plants. To accomplish the objective, procedures were developed and used that account for site-specific retrofit factors. The site-specific information was obtained from aerial photographs, generally available data bases, and input from utility companies. Cost estimates are presented for six control technologies: lime/limestone flue gas desulfurization, lime spray drying, coal switching and cleaning, furnace and duct sorbent injection, low NOx combustion or natural gas reburn, and selective catalytic reduction. Although the cost estimates provide useful site-specific cost information on retrofitting acid gas controls, the costs are estimated for a specific time period and do not reflect future changes in boiler and coal characteristics (e.g., capacity factors and fuel process) or significant changes in control technology and performance.

Keywords: *Air pollution economics, *Air pollution control, *Retrofitting, *Site surveys, cost estimates, Documentation, Illinois, Alabama, Delaware, Florida, Georgia, Coal preparation, Sulfur dioxide, Nitrogen oxides, Performance evaluation, Combustion products, Calcium oxides, Limestone, Injection, Spray drying, Afterburning, Catalysis, Tables(Data), Coal fired power plants, Flue gas desulfurization.

PB91-133348/REB PC **A18**/MF **A03**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota. Final rept. 1985-90.
Radian Corp., Research Triangle Park, NC.
T. Emmel, and M. Maibodi. Nov 90, 425p EPA/600/7-90/021C
Contract EPA-68-02-4286
See also Volume 2, PB91-133330 and Volume 4, PB91-133355. For system on diskette, see PB91-506295. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Also available in set of 5 reports PC E99/MF E99, PB91-133314.

The report gives results of studies pertaining to Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota coal fired power plants. The objective of which was to significantly improve engineering cost estimates currently being used to evaluate the economic effects of applying SO2 and NOx controls at 200 large SO2-emitting coal-fired utility plants. To accomplish the objective, procedures were developed and used that account for site-specific retrofit factors. The site-specific information was obtained from aerial photographs, generally available data bases, and input from utility companies. Cost estimates are presented for six control technologies: lime/limestone flue gas desulfurization, lime spray drying, coal switching and cleaning, furnace and duct sorbent injection, low NOx combustion or natural gas reburn, and selective catalytic reduction. Although the cost estimates provide useful site-specific cost information on retrofitting acid gas controls, the costs are estimated for a specific time period and do not reflect future changes in boiler and coal characteristics (e.g., capacity factors and fuel process) or significant changes in control technology and performance.

Keywords: *Air pollution control, *Retrofitting, *Site surveys, *Air pollution economics, Cost estimates, Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota, Documentation, Coal preparation, Sulfur dioxide, Nitrogen oxides, Performance evaluation, Combustion products, Calcium oxides, Injection, Spray drying, Afterburning, Catalysis, Tables(Data), Coal fired power plants, Flue gas desulfurization.

PB91-133355/REB PC **A23**/MF **A03**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio. Final rept. 1985-90.
Radian Corp., Research Triangle Park, NC.
T. Emmel, and M. Maibodi. Nov 90, 527p EPA/600/7-90/021D
Contract EPA-68-02-4286
See also Volume 3, PB91-133348 and Volume 5, PB91-133363. For system on diskette, see PB91-506295. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Also available in set of 5 reports PC E99/MF E99, PB91-133314.

The report gives results of studies pertaining to Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio coal fired power plants, the objective of which was to significantly improve engineering cost estimates currently being used to evaluate the economic effects of applying SO2 and NOx controls at 200 large SO2-emitting coal-fired utility plants. To accomplish the objective, procedures were developed and used that account for site-specific retrofit factors. The site-specific information was obtained from aerial photographs, generally available data bases, and input from utility companies. Cost estimates are presented for six control technologies: lime/limestone flue gas desulfurization, lime spray drying, coal switching and cleaning, furnace and duct sorbent injection, low NOx combustion or natural gas reburn, and selective catalytic reduction. Although the cost estimates provide useful site-specific cost information on retrofitting acid gas controls, the costs are estimated for a specific time period and do not reflect future changes in boiler and coal characteristics (e.g., capacity factors and fuel process) or significant changes in control technology and performance.

Keywords: *Air pollution control, *Retrofitting, *Site surveys, *Air pollution economics, Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio, Cost estimates, Documentation, Coal preparation, Sulfur dioxide, Nitrogen oxides, Performance evaluation, Combustion products, Calcium oxides, Injection, Spray drying, Afterburning, Catalysis, Tables(Data), Coal fired power plants, Flue gas desulfurization.

PB91-133363/REB PC **A24**/MF **A03**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia. Final rept. 1985-90.
Radian Corp., Research Triangle Park, NC.
T. Emmel, and M. Maibodi. Nov 90, 569p EPA/600/7-90/021E
Contract EPA-68-02-4286
See also Volume 4, PB91-133355. For system on diskette, see PB91-506295. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Also available in set of 5 reports PC E99/MF E99, PB91-133314.

The report gives results of a studies pertaining to Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia, coal fired power plants. The objective of which was to significantly improve engineering cost estimates currently being used to evaluate the economic effects of applying SO2 and NOx controls at 200 large SO2-emitting coal-fired utility plants. To accomplish the objective, procedures were developed and used that account for site-specific retrofit factors. The site-specific information was obtained from aerial photographs, generally available data bases, and input from utility companies. Cost estimates are presented for six control technologies: lime/limestone flue gas desulfurization, lime spray drying, coal switching and cleaning, furnace and duct sorbent injection, low NOx combustion or natural gas reburn, and selective catalytic reduction. Although the cost estimates provide useful site-specific cost information on retrofitting acid gas controls, the costs are estimated for a specific time period and do not reflect future changes in boiler and coal characteristics (e.g., capacity factors and fuel proces) or significant changes in control technology and performance.

Keywords: *Air pollution control, *Retrofitting, *Site surveys, *Air pollution economics, Coal fired power plants, Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia, Documentation, Cost estimates, Coal preparation, Sulfur dioxide, Nitrogen oxides, Performance evaluatin, Combustion products, Calcium oxides, Injection, Spray drying, Catalysis, Tables(Data), Flue gas desulfurization.

PB91-133512/REB PC **A04**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide. Final rept. Jun 89-Sep 90.
Radian Corp., Research Triangle Park, NC.
M. Maibodi, A. L. Blackard, and R. J. Page. Dec 90, 51p EPA/600/7-90/022A , , EPA/SW/DK-91/074A
Contract EPA-68-02-4286
See also Volume 2, PB91-133520. For system on diskette, see PB91-506469 and PB91-506477. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The Integrated Air Pollution Control System (IAPCS) was developed to estimate costs and performance for emission control systems applied to coal-fired utility boilers. The model can project a material balance, equipment list, capital investment and revenue requirements based on user-specific input data. Included in the model are conventional and emerging technologies affecting SO2, NOx, and particulate matter precombustion, in-situ, and post-combustion emission controls. A variety of technology modules built into the model can be incorporated and combined. Cost and performance estimates can be analyzed in terms of integrated technologies. Conventional and emerging technologies included in IAPCS Version 4.0 are overfire air/low NOx burners, lime injection multistage burners, physical coal cleaning, coal switching and blending, spray humidification, electrostatic precipitator, fabric filter, lime spray drying, wet limestone flue gas desulfurization, dry sorbent injection, natural gas reburning, selective catalytic reduction, atmospheric fluidized bed combustion, pressurized fluidized bed combustion, integrated gasification combined cycle, and pulverized coal burning boiler. The model generates capital, annualized, and unitized pollutant removal costs in either constant or current dollars for any year.

Keywords: *Coal fired power plants, *Air pollution control equipment, *Cost estimates, Mathematical models, User manuals(Computer programs), Particulates, Sulfur dioxide, Nitrogen oxides, Stationary sources, Combustion, Documentation, Integrated Air Pollution Control System.

PB91-133520/REB PC **A10**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual. Final rept. Jun 89-Sep 90.
Radian Corp., Research Triangle Park, NC.
M. Maibodi, A. L. Blackard, and R. J. Page. Dec 90, 223p EPA/600/7-90/022B , , EPA/SW/DK-91/074B
Contract EPA-68-02-4286
See also Volume 1, PB91-133512 and Volume 3, PB91-133538. For system on diskette, see PB91-506469 and PB91-506477. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The Integrated Air Pollution Control System (IAPCS) was developed to estimate costs and performance for emission control systems applied to coal-fired utility boilers. The model can project a material balance, equipment list, capital investment and revenue requirements based on user-specific input data. Included in the model are conventional and emerging technologies affecting SO2, NOx, and particulate matter precombustion, in-situ, and post-combustion emission controls. A variety of technology modules built into the model can be incorporated and combined. Cost and performance estimates can be analyzed in terms of integrated technologies. Conventional and emerging technologies included in IAPCS Version 4.0 are overfire air/low NOx burners, lime injection multistage burners, physical coal cleaning, coal switching and blending, spray humidification, electrostatic precipitator, fabric filter, lime spray drying, wet limestone flue gas desulfurization, dry sorbent injection, natural gas reburning, selective catalytic reduction, atmospheric fluidized bed combustion, pressurized fluidized bed combustion, integrated gasification combined cycle, and pulverized coal burning boiler. The model generates capital, annualized, and unitized pollutant removal costs in either constant or current dollars for any year.

Keywords: *Coal fired power plants, *Air pollution control equipment, *Cost estimates, Mathematical models, Particulates, Sulfur dioxide, Nitrogen oxides, Stationary sources, Electrostatic precipitators, Burners, Filters, Gasification, Fluidized bed combustion, Integrated Air Pollution Control Systems, IAPCS 4-0 computer program.

PB91-133538/REB PC **A07**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual. Final rept. Jun 89-Sep 90.
Radian Corp., Research Triangle Park, NC.
M. Maibodi, A. L. Blackard, and R. J. Page. Dec 90, 138p EPA/600/7-90/022C , , EPA/SW/DK-91/074C
Contract EPA-68-02-4286
See also Volume 2, PB91-133520. For system on diskette, see PB91-506469 and PB91-506477. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The Integrated Air Pollution Control System (IAPCS) was developed to estimate costs and performance for emission control systems applied to coal-fired utility boilers. The model can project a material balance, equipment list, capital investment and revenue requirements based on user- specific input data. Included in the model are conventional and emerging technologies affecting SO2, NOx, and particulate matter precombustion, in-situ, and post-combustion emission controls. A variety of technology modules built into the model can be incorporated and combined. Cost and performance estimates can be analyzed in terms of integrated technologies. Conventional and emerging technologies included in IAPCS Version 4.0 are overfire air/low NOx burners, lime injection multistage burners, physical coal cleaning, coal switching and blending, spray humidification, electrostatic precipitator, fabric filter, lime spray drying, wet limestone flue gas desulfurization, dry sorbent injection, natural gas reburning, selective catalytic reduction, atmospheric fluidized bed combustion, pressurized fluidized bed combustion, integrated gasification combined cycle, and pulverized coal burning boiler. The model generates capital, annualized, and unitized pollutant removal costs in either constant or current dollars for any year.

Keywords: *Coal fired power plants, *Air pollution control equipment, *Cost estimates, Mathematical models, Programming manuals, Particulates, Sulfur dioxide, Nitrogen oxides, Stationary sources, Combustion, Documentation, Integrated Air Pollution Control System.

PB91-136317/REB PC **A07**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
Northrop Services, Inc., Research Triangle Park, NC.
J. W. Childers. Oct 90, 149p EPA/600/3-90/097
Contract EPA-68-02-4444
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The report describes the application of gas chromatography/matrix-isolation infrared (GC/MI-IR) spectrometry to the analysis of environmental air sample extracts. Samples that were analyzed include extracts from woodsmoke-impacted air, XAD-2 blanks, indoor air, and carpet samples. The emphasis of the report is on the use of GC/MI-IR to identify semivolatile organic compounds in these extracts. The complementarity of GC/MI-IR spectrometry and conventional electron-impact ionization gas chromatography/mass spectrometry (EI-GC-MS) is illustrated. The capability of GC/MI-IR to discriminate between isomeric compounds that are difficult to separate chromatographically and to distinguish by EI-GC/MS is demonstrated. Preliminary results regarding the potential of GC/MI-IR spectrometry for the quantitative analysis of polycyclic aromatic hydrocarbons in air sample extracts are presented. Problem areas and modifications of a commercial GC/MI-IR system are discussed.

Keywords: *Gas chromatography, *Infrared spectroscopy, *Organic compounds, *Vapors, Composite materials, Aromatic polycyclic hydrocarbons, Infrared spectra, Mass spectra, Air pollution, Isomers, *Air samples.

PB91-136523/REB PC **A06**/MF **A01**
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Environmental Criteria and Assessment Office.
W. Victery, S. D. Lee, P. Mushak, and M. Piscator. Apr 90, 104p EPA/600/8-87/048F, ECAO-R-0117
See also PB91-115905.

The document updates the 1984 Health Assessment Document for Chromium by addressing issues regarding noncarcinogenic health effects of chromium: oxidation states and persistence of these states in the environment, sampling and analytical methodology to differentiate these oxidation states and amounts at submicrogram ambient air levels, the degree of human exposure to chromium in the environment, both short-term and long-term, in vivo reduction of Cr (VI) to Cr (III), and effects from environmentally relevant levels on pulmonary function and renal function. Trivalent chromium is chemically stable; Cr (VI) is readily reduced to Cr (III). Oxidation state of chromium in ambient air depends on proximity to sources emitting one form over the other. Reliable monitoring methods to speciate oxidation states at ambient air levels below 1 microgram/cu m are not available. Ambient levels of total chromium (obtained from EPA's National Air Data Branch) range from a high of 0.6 microgram/cu m to below the detection limit of 0.005 microgram/cu m. Reduction of hexavalent chromium in vivo occurs in several organ systems and therefore, small amounts of inhaled Cr (VI) will be reduced before systemic absorption can occur. Trivalent chromium is an essential trace metal which potentiates actions of insulin-mediated glucose transport.

Keywords: *Carcinogens, *Toxicology, *Chromium, Kidney, Respiratory system, Environmental exposure pathways, Glucose, Chemical analysis, Quality control, Quality assurance, Metabolism, Teratogens, *Health risk assessment.

PB91-136531/REB PC **A03**/MF **A01**
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems. Final rept.
Environmental Protection Agency, Washington, DC. Office of Underground Storage Tanks.
Jul 90, 42p EPA/530/UST-88/008
Also available from Supt. of Docs. Supersedes PB89-215180.

The booklet summarizes in laymans' terms the federal technical requirements for Underground Storage Tank systems.

Keywords: *Underground storage, *Storage tanks, *Fuel tanks, *Chemical compounds, *Petroleum products, *Leakage, Standards, *Resource Conservation and Recovery Act, *Pollution Regulations, US EPA, State programs, Service stations.

PB91-136549/REB PC **A04**/MF **A01**
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS). Final rept. Jun 89-Dec 90.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
T. Pierce. Jan 91, 51p EPA/600/8-90/084

The Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS) has been developed to allow users to estimate hourly emissions of biogenic non-methane hydrocarbon emissions for any county in the contiguous United States. PC-BEIS has been compiled using Microsoft FORTRAN and tested on IBM-compatible personal computers. The source code was written in ANSI FORTRAN 77 and should be transportable to most other computers. Emission rates depend on land use, leaf biomass, and emission factors. PC-BEIS also includes adjustments due to temperature and sunlight. A simple leaf energy balance module is included to allow more refined calculations of leaf temperature and sunlight through forest canopies. The user's guide briefly describes the technical background, provides an overview of computer aspects, and shows an example test case.

Keywords: *Vegetation, *Trees, *Computerized simulation, *Terpene hydrocarbons, *Manuals, *Emission factors, Leaves(Botany), Surface temperature, Sun-

light, Air pollution, United States, Rural areas, Stationary sources, Crops.

PB91-136556/REB PC **A07**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
Science Applications International Corp., Paramus, NJ.
Jan 91, 129p EPA/600/2-90/062
Contract EPA-68-C8-0061
Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

The report focuses on a waste minimization assessment of a U.S. Coast Guard facility located on Governors Island in New York. The assessment details both management initiatives and technical changes that can be made to minimize waste. The technical areas that were assessed were paint removal operations using blasting grit, buoy painting, and on-site solvent recovery.

Keywords: *Waste management, *Hazardous materials, US Coast Guard, Governors Island, New York, Materials recovery, Assessments, Forms(Paper), Painting, Paint removers, Waste disposal, Feasibility studies, *Waste minimization, *Source reduction.

PB91-136564/REB PC **A04**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
Computer Sciences Corp., Research Triangle Park, NC.
S. G. Perry, D. J. Burns, and A. J. Cimorelli. Oct 90, 71p EPA/600/8-90/087
Contract EPA-68-02-7365
See also PB89-181424. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The EPA's Technology-Transfer Workgroup has developed a screening version (denoted as CTSCREEN) of the Complex Terrain Dispersion Model, CTDMPLUS. CTSCREEN uses an array of predetermined meteorological conditions to model the user supplied source-terrain configuration. CTSCREEN yields estimates of maximum 1-h, 3-h, 24-h, and annual impacts that are conservative with respect to CTDMPLUS estimates using a full year of on-site data. In comparison with other complex terrain screening models, CTSCREEN provides estimates that most consistently reflect those of CTDMPLUS.

Keywords: *Air pollution, Terrain models, Meteorological data, User manuals(Computer programs), Estimates, *Air quality display model, *Complex Terrain Dispersion model, Screening(Selection).

PB91-136572/REB PC **A10**/MF **A02**
Corvallis Environmental Research Lab., OR.
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
NSI Technology Services Corp., Corvallis, OR.
A. R. Kiester, E. D. Ford, A. Avery, C. Gay, and T. Droessler. Sep 90, 222p EPA/600/3-90/096
Prepared in cooperation with Forest Service, Washington, DC., and Washington Univ., Seattle. Center for Quantitative Science. Sponsored by Corvallis Environmental Research Lab., OR.

In 1986 the National Acid Precipitation Assessment Program (NAPAP) established the Forest Response Program (FRP) to assess the effects of acidic deposition and associated pollutants on forests. Modeling studies were developed in parallel with both field studies on the pattern and trends of forest condition and physiological studies of seedlings, saplings, and branches of mature trees. The goals of the modeling effort were to simulate the dynamics of the processes by which acidic deposition and ozone affect tree physiological processes and therefore lead to changes in growth. Results from models of the physiological function of leaves, branches, roots, xylem, and canopies are presented here. These models illustrate three aspects of the dynamics of these processes. First, growth and the effects of pollutants are stochastic processes; that is, they vary randomly over time. The models help to account for the large amount of variability seen in normal field conditions. Second, some physiological processes can compensate for the effects of acidic deposition or ozone. Third, pollutants may have more than one effect on tree growth, and these effects may be synergistic. The potential nonlinearities and the variabilities demonstrated by these models lead to the conclusions that forest health effects may be developing that are not yet apparent; and for regulation of acidic deposition and associated pollutants to have a detectable effect, regulatory changes will probably have to be of substantial magnitude.

Keywords: *Precipitation(Meteorology), *Acidification, *Forest trees, Response, Plant physiology, Mathematical models, Growth, Deposition, Ozone, Morphology, Vegetation, Dosage, Genetics, Variations, Quality assurance, Nutrients, Stochastic processes.

PB91-136580/REB PC **A09**/MF **A01**
Region 10 Environmental Indicators, FY 89 Summary.
Environmental Protection Agency, Seattle, WA. Region X.
R. Albright, J. Armstrong, E. Barrick, J. Cabreza, and J. Carlin. Oct 90, 182p EPA/910/9-90/018
See also report for FY 88, PB90-125360.

This is EPA Region 10's third annual summary of environmental indicators for air, water and land media. The Region's programs in air, water, toxics, pesticides and hazardous waste are attempting to characterize their progress in addressing environmental degradation via the measures described in the report. The FY 89 report builds upon the FY 88 document with the addition of (1) FY 89 data; (2) new measures and deletions; and (3) new programmatic areas where indicators have been developed, including Underground Injection Control (UIC), Accidental Releases, and Terrestrial Environments. Each chapter includes an introduction providing pertinent background information and, for each environmental indicator.

Keywords: *Degradation, *Environmental impacts, *Pollution control, *Management, Project planning, Air pollution, Water pollution, Toxicity, Pesticides, Hazardous materials, Ground water, Accidents, Standards, Surface waters, Washington(State), Alaska, Environmental indicators, *EPA Region 10, Wetlands.

PB91-136598/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Exposure Indices Consideration for Rural Ozone Relationships in the United States. Symposium paper.
NSI Technology Services Corp., Corvallis, OR.
E. H. Lee, D. T. Tingey, and W. E. Hogsett. c1990, 8p EPA/600/D-90/192
Contract EPA-68-C8-0006
Pub. in Proceedings of American Statistical Association's Business and Economic Sections, p517-522 1990. Sponsored by Corvallis Environmental Research Lab., OR.

The objective of the study is to develop an ambient ozone air quality indicator for examining O3 and its effects on vegetation and forests. The scientific and technical information on O3 and its effects on vegetation and natural ecosystems indicate that a secondary ambient air quality standard is needed that correlates well with both short- and long-term exposures. Air quality analysis of hourly ozone monitoring data from the National Air Data Branch for 82 non-urban sites in the United States was performed to identify the relationships of various ozone exposure indices. A three-month maximum period between April and September is adequate for capturing about 70% of the hourly concentrations of 0.06 ppm or higher. The cumulative censored indices that adequately predict crop loss are strongly correlated with a long-term single peak index. These indices that integrate hourly concentrations of 0.06 (or 0.7) ppm or higher have potential for setting a standard that minimizes the risk of adverse effects.

Keywords: *Ozone, *Rural areas, *Air pollution monitoring, United States, Exposure, Standards, Applications of mathematics, Air quality, Air pollution effects(Plants), Crops, Reprints.

PB91-136606/REB PC **A04**/MF **A01**
Air Quality and Deposition (Chapter 3). Book chapter.
Corvallis Environmental Research Lab., OR.
M. Bohm. c1990, 73p EPA/600/D-90/193
Pub. in Air Pollution and Western Forests, 1990. Prepared in cooperation with NSI Technology Services Corp., Corvallis, OR.

The pollution climate of an area is influenced by meteorology and emissions of air pollutants at local and regional scales. The physical and chemical state of the atmosphere determines pollutant transport, dilution, chemical transformation, and ultimately deposition. In many cases meteorology is more important than atmospheric chemistry in controlling the location and the form in which the pollutants are deposited. Estimating pollutant concentrations and loading to forests in the West requires a detailed analysis of emissions, pollutant transport, dilution, chemical transformations, and deposition processes, together with estimates of the relative contribution by each depositional process to total deposition. The first portion of the chapter examines atmospheric conditions that influence the transport and deposition of pollutants and applies this information to conditions experienced within western forests. A brief discussion of the chemistry of sulfur, nitrogen, and ozone is included. A glossary of technical terms is available in Appendix II. The second portion of the chapter discusses air quality and wet deposition in and around western forests. Emphasis is placed on nitrogen and sulfur oxides and their oxidation products. These pollutants contribute to acid rain as well as to other air pollution problems such as ozone and visibility reduction. All aspects of air quality are presented; from emissions of pollutants to ambient concentrations of important chemical species in gaseous, particulate matter, and precipitation forms.

Keywords: *Sulfur oxides, *Nitrogen oxides, *Ozone, *Forests, *Air pollution effects(Plants), Wind(Meteorology), Atmospheric circulation, Air pollution, Acid rain, Atmospheric chemistry, Reprints, Western Region(United States).

PB91-136614/REB PC **A01**/MF **A01**
Corvallis Environmental Research Lab., OR.
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities. Symposium paper.
NSI Technology Services Corp., Corvallis, OR.
R. M. Hughes. c1990, 5p EPA/600/D-90/194
Contract EPA-068-C8-0006
Pub. in Biological Report, v90 n5 p26-28 1990. Sponsored by Corvallis Environmental Research Lab., OR.

Data on species and their abundances be made understandable to the public and to water resource regulators while retaining the ecological information that is meaningful to biologists. A recent attempt to communicate such information is the Index of Biotic Integrity, or IBI (Karr 1981; Karr et al. 1986). The IBI is a means of quantifying ichthyologists' judgments of the relative quality of a fish assemblage. It is based on a sample of the entire fish assemblage, not just game fish. The index incorporates professional judgment of fish assemblage health in 12 metrics and their scoring criteria, which are based on regional ideals. These regional standards are determined from historical data and data from minimally affected sites that characterize the region. The individual metrics differ in their range of sensitivity for detecting perturbations, and a degree of redundance is built into the IBI because no single metric can reliably indicate integrity.

Keywords: *Assessments, *Health, *Fishes, Abundance, Populations, Scoring, Standards, Sites, Reliability, Water resources, Ecosystems, Index of Biotic Integrity, Fish assemblages.

PB91-136622/REB PC **A04**/MF **A01**
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds. Book chapter.
Corvallis Environmental Research Lab., OR.
D. T. Tingey, D. P. Turner, and J. A. Weber. c1990, 62p EPA/600/D-90/195
Pub. in 'Trace Gas Emissions from Plants', 1990. Prepared in cooperation with NSI Technology Services Corp., Corvallis, OR.

Plants contain a number of volatile organic compounds, including isoprene, mono- and sesquiter-

penes, alcohols, aldehydes, ketones, and esters. Individual plant species have unique combinations of these compounds; consequently, the emission pattern for each species is also specific. The factors controlling the emissions were evaluated from the literature and with a simulation model. While unresolved questions remain concerning monoterpene production, storage, and emissions, the literature and model are in general agreement. Environmental factors influence the rate of emission while genetic factors control the pool size and types of chemicals in the plant. The emission of compounds stored in resin ducts of leaves are primarily controlled by temperature, concentration in the resin ducts, and diffusion path from the resin duct to the intercellular air space, and that stomatal conductance plays a minor role.

Keywords: *Plant chemistry, *Plant metabolism, *Plant genetics, *Terpene compounds, Leaves(Botany), *Volatile organic compounds, Species specificity.

PB91-136630/REB PC **A03**/MF **A01**
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
Health Effects Research Lab., Research Triangle Park, NC.
H. S. Koren, M. Joyce, R. B. Devlin, S. Becker, and K. Driscoll. c1990, 30p EPA/600/D-90/196
Prepared in cooperation with North Carolina Univ. at Chapel Hill. School of Medicine, Procter and Gamble Co., Cincinnati, OH. Miami Valley Labs., and ABB Environmental, Inc., Chapel Hill, NC.

The objective of the study was to determine the eicosanoid production by human alveolar macrophages in response to silica exposure in vitro and to assess their contribution to silica-induced fibrosis and inflammation. Macrophages were obtained from healthy volunteers and were incubated for 3 or 24 hours in the presence of silica (100, 60, and 0 microgram/ml). Supernatants were removed for eicosanoid analysis. Eicosanoids were analyzed by both HPLC and RIA. The data suggested that silica caused an increased release of LTB4, LTC4/D4/E4, and 5-HETE after 3 hours; and decreases in PGE2 and TXB2 production after 24 hours exposure to 100 microgram/ml silica. In addition, 12-HETE and 15-HETE production remained unchanged at either time point. These opposing effects seen with the metabolites of lipoxygenase and cyclooxygenase pathways could contribute to silica-induced fibrosis. The pattern of eicosanoid production after exposure to silica was different from that obtained when macrophages were stimulated with LPS for 3 or 24 hrs, indicating that the response to the particles was not just due to general cellular activation.

Keywords: *Silicon organic compounds, *Toxicity, *Dust, Particles, Respiration, In vitro analysis, Liquid chromatography, Inflammation, Lung, Humans, Laboratory animals, *Pulmonary alveoli, *Macrophages, *Eicosanoids, Dose-response relationships, Bronchoalveolar lavage fluid, Lipoxygenases, Prostaglandin synthase, Cell survival, Leukotrienes, Radioimmunoassay.

PB91-136895/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12. Book chapter.
Baylor Coll. of Medicine, Houston, TX.
B. Kurelec, A. Garg, S. Krca, and R. C. Gupta. c1990, 15p EPA/600/D-90/197
Grant EPA-R813840
Pub. in Biomarkers of Environmental Contamination, p217-227, 1990. Sponsored by Health Effects Research Lab., Research Triangle Park, NC.

A generally applicable (32)P-postlabeling assay was used to examine the presence of DNA adducts in mussels experimentally exposed to known carcinogens and in mussels collected from sites impacted by wastewaters. Mussels exposed to seawater artificially polluted with 2-aminofluorene showed exclusively one adduct which was identified to be dG-C8-2-aminofluorene. Under the same experimental conditions, Diesel-2 oil did not induce any detectable adducts. When mussel digestive gland DNA was collected and analyzed from one unpolluted site, two moderately impacted sites, and one site heavily impacted by cannery wastewaters, mussel DNA from the unpolluted and only one moderately polluted site showed the presence of 6 to 10 adducts. This indicates they were not related to the pollution. This was further supported by the absence of dose-related adducts. Clear evidence for the presence of pollution-related DNA adducts was, however, found in juvenile mussels collected from an oil refinery site. One major and three minor adducts were detected in these mussels with no adducts detected in juvenile mussels from an unpolluted site.

Keywords: *Toxicity, *Mussels, Diesel fuels, Environmental surveys, Sea water, Carcinogens, Reprints, *Water pollution effects(Animals), *DNA damage, *2-Aminofluorene, *Mytilus galloprovincialis, Carcinogenicity tests, Dose-response relationships.

PB91-136903/REB PC **A04**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC. Toxicology Branch.
Toxic Effects of Xenobiotics on the Pituitary Gland.
Smith Kline Beecham Corp., King of Prussia, PA. Dept. of Toxicology.
R. F. Walker, and R. L. Cooper. c1990, 55p EPA/600/D-90/198
Sponsored by Health Effects Research Lab., Research Triangle Park, NC. Toxicology Branch.

The document provides a summary of adverse effects of xenobiotics upon the pituitary gland, an endocrine gland that plays an important role in the regulation of reproductive function. The most common histopathological pituitary lesions observed following exposure to drugs and chemicals are reviewed along with the potential consequences of these lesions on physiological function and the maintenance of homeostasis. In addition, other mechanisms involved in the alteration of pituitary function are discussed. These include changes in function that occur in response to a toxicant's effect on the central nervous system or target gland and thus indirectly influence pituitary gland activity.

Keywords: *Toxicity, *Pituitary gland, Metals, Reproduction(Biology), Homeostasis, Estrogen, Pesticides, Hypothalamus, Pituitary neoplasms, *Xenobiotics, *Toxic substances, Monoamines, Carcinogenicity tests.

PB91-136911/REB PC **A03**/MF **A01**
Control of Motor Vehicle Emissions - The U.S. Experience. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
F. M. Black. c1990, 33p EPA/600/D-90/199

An historical overview of the U.S. experience with controlling emissions from highway motor vehicles is presented. The evolution of new motor vehicle emissions certification practice, end-of-assembly-line inspection, in-use surveillance and recall, inspection and maintenance, and antitampering programs are discussed. The changes in motor vehicle designs and fuel formulations resulting from these practices are also described, along with associated changes in the characteristics of emissions. Future possible directions for further improvements are described as the U.S. Congress considers changes to the Clean Air Act requiring increasingly stringent new motor vehicle emission standards, changes in procedures for identification and repair of motor vehicles that have been tampered with or poorly maintained, and requirements for use of cleaner, more environmentally benign alternatives to conventional petroleum-based fuels.

Keywords: *Motor vehicles, *Exhaust emissions, *Air pollution control equipment, Exhaust gases, Crankcase fumes, Fuel consumption, *Automobile exhaust, Clean Air Act, Historical aspects, Automotive components.

PB91-136945/REB PC **A03**/MF **A01**
Overview of Risk Assessment for Toxic and Pathogenic Agents.
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
N. E. Kowal, R. J. F. Bruins, and C. Sonich-Mullin. c1990, 17p EPA/600/D-90/216
Pub. in Proceedings: Water Quality Technology Conference, American Water Works Association, Philadelphia, PA., November 12-16, 1989, p905-919.

Risk assessment is a process that defines the adverse health consequences of exposure to toxic or pathogenic agents. When used in regulatory decision making, risk assessment is an important component of risk management, which combines the risk assessment with the directives of regulatory legislation, together with socioeconomic, technical, political, and other considerations, to reach a decision as to whether or how much to control future exposure to the suspected toxic agents. (1) The conceptual framework for risk assessment as it is currently practiced was outlined by the National Academy of Science in 1983 as a four-phased process. The elements in this process include hazard identification, exposure assessment, dose-response assessment, and risk characterization. The paper will discuss each of these elements, with particular emphasis on their application to risk assessment of pathogens.

Keywords: *Microorganisms, *Toxic substances, *Risk assessment, Epidemiology, Communicable diseases, Structure-activity relationship, Dose-response relationships, Health hazards, Feeding stuffs, Environmental exposure pathways, Reprints.

PB91-136952/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
Radian Corp., Research Triangle Park, NC.
T. E. Emmel, and J. W. Jones. c1990, 29p EPA/600/D-90/217
Contract EPA-68-02-3994
Presented at the Workshop on Emission Control Costs-Methodology and Example Cases, Esslingen, FRG, September 28-October 1, 1987. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The paper gives results of a research program the objective of which was to significantly improve engineering cost estimates currently being used to evaluate the economic effects of applying SO2 controls to existing coal-fired utility boilers. The costs of retrofitting conventional lime/limestone wet flue gas desulfurization (L/LS FGD) and lime spray drying (LSD) FGD at 100-200 coal-fired power plants are being estimated under this program. The retrofit capital cost estimating procedures used for L/LS FGD and LSD FGD make two cost adjustments to current procedures used to estimate FGD costs: cost adders (for items not normally included in FGD system costs; e.g., demolition and relocation of existing facilities) and cost multipliers (to adjust capital costs for site access, congestion, and underground obstructions).

Keywords: *Air pollution control, Cost estimates, Combustion products, Spray drying, Performance evaluation, Retrofitting, Sulfur dioxide, Calcium oxides, Limestone injection, Wet methods, Dry methods, Coal fired power plants, Reprints, *Flue gas desulfurization.

PB91-136978/REB PC **A02**/MF **A01**
Material Selection.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
W. G. Tucker. Aug 90, 10p EPA/600/D-90/220
Presented at the Plenary Meeting of the NATO/CCMS Pilot Study on Indoor Air Quality, (3rd), Sainte-Adele, Quebec, Canada, August 6-8, 1990.

The paper summarizes various criteria that can be used in selecting material used in the construction, furnishing, maintenance, and operation of a building. It also summarizes the types of material and product testing that can be especially useful in the selection process. In broad terms, materials in buildings are classified as building materials, furnishings, maintenance materials, and other contents. At any given time, emissions from materials and products in any of these four categories can dominate the impact on indoor air quality (IAQ) in a building. Responsibility for the selection of these materials may be that of the designer, owner, or occupants. Information on IAQ impacts of materials therefore needs to be developed for a wide range of people.

Keywords: *Indoor air pollution, *Construction materials, *Air pollution control, Building materials, Particles, Furniture, Selection.

PB91-136986/REB PC **A03**/MF **A01**
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems. Symposium paper.
Environmental Research Lab., Narragansett, RI.
J. F. Paul, A. F. Holland, K. J. Scott, and D. A. Flemer.
c1989, 11p EPA/600/D-90/221, ERLN-1050
Pub. in Oceans '89, an International Conference Addressing Methods for Understanding the Global Ocean, Seattle, WA., September 18-21, 1989, v2 p579-582. Also pub. as Environmental Research Lab., Narragansett, RI. rept. no. CONTRIB-1050.

The U.S. Environmental Protection Agency (EPA) is initiating an Environmental Monitoring and Assessment Program (EMAP) to monitor the status and trends of the nation's near coastal waters, forests, freshwater wetlands, surface waters, and agroecosystems. The program is also intended to evaluate the effectiveness of Agency policies at protecting ecological resources occurring in these systems. Monitoring data collected for all ecosystems will be integrated for national status and trends evaluations.

Keywords: Trends, Surface waters, Law enforcement, Regional planning, Reprints, *Environmental Monitoring and Assessment Program, *Ecosystems, *Environmental protection, Forests, Coastal regions, Natural resources management, Wetlands, Pollution regulations.

PB91-136994/REB PC **A03**/MF **A01**
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9). Book chapter.
Environmental Research Lab., Narragansett, RI.
B. Sanders. c1990, 17p EPA/600/D-90/222 , , ERNL-X177
Pub. in Biomarkers of Environmental Contamination, p165-190 1990. Also pub. as Environmental Research Lab., Narragansett, RI. rept. no. CONTRIB-X177. Prepared in cooperation with California State Univ., Long Beach.

The article deals specifically with the application of biomarkers for two different purposes: to diagnose sublethal stress in an organism, designated as a tier I biomarker, and to detect exposure to specific contaminants, a tier II biomarker. Important criteria for evaluating the utility of tier I biomarkers for diagnosing sublethal stress would include: (1) its ability to be used in a broad range of organisms when exposed to a wide variety of stress conditions in their environment, (2) that it correlates with decreased physiological function and survival of the organism, and (3) that, in practicality, it can be easily measured in a cost efficient manner. Tier II biomarkers, used to identify exposure to specific contaminants, should be detected in organisms exposed to a particular class of contaminants in their environment and be easily measured. By integrating both kinds of biomarkers into a multitiered approach to environmental monitoring, one could develop a series of assays in which organisms are initially screened with biomarkers to detect general stress and, if the results were positive, could be assayed with an array of tier II biomarkers, each of which identifies exposure to a particular class of contaminants or physical conditions. (Copyright (c) 1990 by Lewis Publishers.)

Keywords: *Biological markers, *Heat-shock proteins, *Environmental pollution, *Environmental monitoring, Toxicity, Genetics, Cell physiology, Cell survival, Polyacrylamide gel electrophoresis, Enzymes, Immunology.

PB91-137018/REB PC **A03**/MF **A01**
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
A. D. Venosa, J. R. Haines, W. Nisamaneepong, R. Govind, and S. Pradhan. c1990, 26p EPA/600/2-90/208
Prepared in cooperation with Engineering and Economics Research, Inc., Reston, VA., and Cincinnati Univ., OH.

In the summer of 1989, EPA and Exxon Corp. conducted a joint field study to determine if natural biodegradation of the Prudoe Bay crude oil spilled from the Exxon Valdez could be accelerated by application of oleophilic and water soluble fertilizers. Numerous private firms have since submitted proposals to have their microbial products tested for bioremediation enhancement. EPA commissioned the National Environmental Technology Applications Corporation (NETAC) to coordinate an effort to select and test commercial products for efficacy against Alaskan crude oil. A panel of experts was assembled to review the proposals, and nine products were selected for the first tier of testing. The experiments were conducted at the Risk Reduction Engineering Laboratory in Cincinnati. Three lines of evidence were used to select the final products for further testing: cumalative oxygen uptake via electrolytic respirometry, microbial growth, and compositional analysis of treated oil by GC and GC/MS. The commercial products were compared against oleophilic and inorganic fertilizers in a comprehensive protocol incorporating sterile and non-sterile controls. Respirometric vessels and shaker flask microcosms were set up for the comparative testing using weathered oil and natural seawater from Prince William Sound. The paper presents the protocol, the test results, and conclusions derived from the study.

Keywords: *Oil spills, *Biodeterioration, *Crude oil, Oil pollution removal, Prudoe Bay, Alaska, Experimental design, Weathering, Biological treatment, Microcosmes, Fertilizers, Chemical composition, Respirometers, Bioinstrumentation, *Remedial action, *Cleanup operations.

PB91-137026/REB PC **A03**/MF **A01**
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
S. T. Rao, G. Sistla, K. Schere, and J. Godowitch.
c1990, 12p EPA/600/D-90/200
Presented at the NATO/CCMS ITM on Air Pollution Modeling and Its Application (18th), Vancouver, BC., May 13-17, 1990. Prepared in cooperation with New York State Dept. of Environmental Conservation, Albany. Div. of Air Resources, and National Oceanic and Atmospheric Administration, Silver Spring, MD. Air Resources Lab.

The paper presents an assessment of the temporal and spatial behavior of measured ozone concentrations over the tri-state area around New York City, and an examination of the variability of modeled ozone concentrations due to variations in meteorology and emissions. Measurements of ozone and precursors from monitoring sites in the tri-state area from 1980-1989 were analyzed. The results indicate a distinct downward trend in ozone levels over Connecticut during the period, however, no trend was evident in the ozone values over the New Jersey and New York areas. The photochemical modeling results from the Urban Airshed Model (UAM) revealed that peak ozone concentrations over Connecticut are strongly influenced by the wind fields input to the model. Model results also indicate that unless emissions reduction is substantial, variability in the meteorology can obscure any improvement in ozone levels.

Keywords: *Ozone, *Urban areas, *Air pollution monitoring, Graphs(Charts), New Jersey, Connecticut, Summer, Carbon monoxide, Nitrogen dioxide, Air quality, Emission factors, *New York City(New York).

PB91-137034/REB PC **A03**/MF **A01**
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter. Symposium paper.
Environmental Research Center, Research Triangle Park, NC.
F. H. Haynie, and D. C. Stiles. c1990, 15p EPA/600/D-90/201
Prepared in cooperation with Northrop Services, Inc./Environmental Sciences, Research Triangle Park, NC.

A polarization resistance type sensor has been designed and has been evaluated with an Atmospheric Corrosion Rate Monitor (ACRM). A year of hourly average data were evaluated with respect to simultaneously collected environmental data at a site in the Research Triangle Park, NC. The system can be used as a time-of-wetness meter. The primary effect on time-of-wetness is the difference between dew point and surface temperature. Sensor responses to wetness are reproducable between sensors and are sensitive enough to detect significant environmental changes other than the primary effects of surface temperature and air moisture content.

Keywords: *Atmospheric corrosion, *Measuring instruments, Humidity, Dew point, Field tests, Surface temperature, Design, Thermistors, *Time of wetness, Research Triangle Park(North Carolina).

PB91-137042/REB PC **A03**/MF **A01**
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
J. D. Pleil, and K. D. Oliver. c1990, 21p EPA/600/D-90/202
Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC.

Air samples were captured in SUMMA polished stainless steel canisters and returned to the laboratory for analysis of trace level volatile organic compounds by gas chromatography - mass spectrometry. Sampling was performed over 2-hour periods at various distances from heavily traveled highways in three cooperative studies between the U.S. and the U.S.S.R. as a part of the AutoEx series of experiments. The paper discusses the canister work performed in two of these studies, AutoEx-2 near Leningrad, U.S.S.R. and AutoEx-3 near Vilnius, Lithuania, U.S.S.R. Data are presented from these experiments and the sampling and analytical methodology is discussed. AutoEx results are compared to analogous studies performed in the U.S.

Keywords: *Chemical analysis, *Air pollution sampling, *Air pollution detection, Trace amounts, Concentration(Composition), Gas chromatography, Exhaust emissions, Vilnius(USSR), Leningrad(USSR), Mobile pollutant sources, Containers, Mass spectroscopy, States(United States), *Volatile organic compounds, *AutoEx studies, Foreign technology.

PB91-137059/REB PC **A03**/MF **A01**
Swedish Natural Science Research Council, Stockholm.
Organic Chemical Transport to Groundwater. Book chapter.
Robert S. Kerr Environmental Research Lab., Ada, OK.
C. G. Enfield, and S. R. Yates. c1990, 34p EPA/600/D-90/203
Pub. in Pesticides in the Soil Environment: Processes, Impacts, and Modeling, No. 2 in SSSA Book Series, p271-289 1990. Prepared in cooperation with California Univ., Riverside. Dept. of Agriculture. Sponsored by Swedish Natural Science Research Council, Stockholm, and National Swedish Environment Protection Board, Solna.

The use of pesticides in the production of agricultural commodities is widespread. Since nearly one-half of the U.S. population relies on groundwater as their source for drinking water, contamination potential of groundwater, because of pesticide manufacture and use, must be understood. The processes of sorption, biotic and abiotic transformation, and vapor transport have been discussed in previous chapters of the book. Theobjective of the chapter is to integrate the above processes into chemical mass transport models that can be used to forecast environmental exposure. Almost any modeling activity related to groundwater starts with a water flow model, since, for any significant change to take place in the flow field, flow is an essential ingredient. Van der Heijde et al reviewed several hundred groundwater management models from around the world and classified them in a variety of ways. The review included both saturated and unsaturated flow models along with identifying the source and availability of computer codes for the models. Considering the review and several other reviews, the chapter will emphasize chemical transport rather than mass water flow. For completeness, a brief overview of water flow through saturated and unsaturated soils will be included. Decoupling the water and chemical transport is a major assumption in the discussion.

Keywords: *Water pollution, *Pesticides, *Ground water, *Hydrology, Potable water, Organic compounds, Water flow, Transport properties, Formulas(Mathematics), Soil water, Mathematical models, Reprints.

PB91-137067/REB PC **A03**/MF **A01**
Anaerobic In-situ Treatment of Chlorinated Ethenes. Symposium paper.
Robert S. Kerr Environmental Research Lab., Ada, OK.
G. W. Sewell, S. A. Gibson, and H. H. Russell. c1990, 16p EPA/600/D-90/204
Pub. in In-situ Bioremediation of Groundwater and Contaminated Soils, Proceedings WPCF Annual Conference, p68-79 October 7-11, 1990. Prepared in cooperation with NSI Technology Services Corp., Ada, OK.

For chlorinated ethenes anaerobic bacterial remediation designs may prove to be the most cost effective measure available to actually reduce the mass of contamination in-situ. In tight and low yield aquifers, the indigenous anaerobic population may be amenable to stimulation by introduction of only small doses of electron donors, or other required growth factors and still produce the desired effects. Anaerobic treatment processes may not require the alteration of the in-situ redox conditions in mixed waste contaminated aquifers, hence the addition of oxygen with its inherent problems and limitations can be avoided. Thus if we can learn to control and harness the reductive dechlorination process in an effective in-situ technology it may have advantages in cost, applicability and operation over existing aerobic bioremediation and physical-chemical treatment methods.

Keywords: *Biodeterioration, *Ground water, *Tetrachloroethylene, *Anaerobic processes, Electron donors, Water pollution, Organic solvents, Chlorogydrocarbons, Toluene, Feasibility, Field tests, *Trichloroethylene, Remediation, Traverse City(Michigan).

PB91-137075/REB PC **A03**/MF **A01**
Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
Environmental Research Lab.-Duluth, MN.
S. P. Bradbury, T. R. Henry, and R. W. Carlson. c1990, 23p EPA/600/D-90/205
See also PB88-214762.

The focus of the report is to summarize the development and status of the fish acute toxicity syndrome (FATS) research effort. Thus far, FATS associated with nonpolar narcotics, polar narcotics, oxidative phosphorylation uncouplers, respiratory membrane irritants, acetylcholinesterase (AChE) inhibitors, cyclodiene insecticides, pyrethroid insecticides, and strychnine have been described.

Keywords: *Structure-activity relationship, *Fishes, *Toxic substances, Oxidative phosphorylation, Irritants, Insecticides, Narcotics, Cholinesterase inhibitors, Strychnine, Physiologic monitoring, *FATS(Fish acute toxicity syndrome).

PB91-137083/REB PC **A02**/MF **A01**
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
Environmental Research Lab.-Duluth, MN.
C. L. Russom, E. B. Anderson, B. E. Greenwood, and A. Pilli. c1990, 6p EPA/600/D-90/206
Presented at QSAR 1990 Meeting Proceedings, September 16-20, 1990. Prepared in cooperation with Computer Sciences Corp., Duluth, MN.

Ecological risk assessments are used by the U.S. Environmental Protection Agency (USEPA) and other governmental agencies to assist in determining the probability and magnitude of deleterious effects of hazardous chemicals on plants and animals. These assessments are important steps in formulating regulatory decisions. The completion of an ecological risk assessment requires the gathering of ecotoxicological hazard and environmental exposure information. The information is evaluated in the risk characterization section to assist in making the final risk assessment. ASTER (Assessment Tools for the Evaluation of Risk) was designed by the USEPA Environmental Research Laboratory-Duluth (ERL-D) to assist regulators in producing risk assessments. ASTER is an integration of the AQUIRE (AQUatic toxicity Information Retrieval System) and QSAR (Quantitative Structure Activity Relationships) systems. AQUIRE is a database of aquatic toxicity tests and QSAR is comprised of a database of measured physicochemical properties, and various QSAR models that estimate physicochemical and ecotoxicological endpoints. ASTER will be available to international governmental agencies through the USEPA National Computing Center.

Keywords: *Data bases, *Risk assessment, Carcinogens, Mutagens, Environmental protection, Toxic substances.

PB91-137091/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds. Final rept.
Cincinnati Univ., OH. Dept. of Civil and Environmental Engineering.
R. S. Summers, and T. Speth. c1990, 16p EPA/600/D-90/207
Contract EPA-68-03-4038
Proceedings of Annual AWWA Conference, Cincinnati, OH., June 18-21, 1990. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

A study was conducted to evaluate how background organic matter found in surface waters can affect the adsorption kinetics and capacity of cis-1,2-dichloroethene. The study further addressed how ozone/biofilter and anion exchange pretreatment improves the performance of the GAC columns, and the ability of GAC columns to attenuate shock loadings. The results showed that the carbon's capacity for cis-1,2-dichloroethene was reduced with time of preloading. In some cases, the reduction in capacity was found even when it was determined that no total organic carbon (TOC) preloaded onto the carbon. Work with different carbon particle sizes showed that the capacity reductions were not related to the diffusion of organic matter as measured by TOC. The ozone/biofilter and anion exchange pretreatment columns increased the GAC columns operation time and increased its ability to attenuate shock loadings.

Keywords: *Activated carbon, *Chemical removal(Water treatment), Adsorptivity, Ozone, Surface properties, Water pollution, Ohio River, Organic wastes, Surface waters, Ion exchange, *Ethylene, 1,2-dichloro.

PB91-137109/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants. Symposium paper.
Forest Service, Washington, DC.
J. Ford, and D. H. Landers. c3 Oct 90, 15p EPA/600/D-90/190
Contract EPA-DW12931230
Proceedings of the International Conference on the Role of the Polar Regions in Global Change, Fairbank, AK., June 11-15, 1990. Sponsored by Corvallis Environmental Research Lab., OR.

Various kinds of atmospheric pollutants are found in Arctic environments, including organic contaminants, radionuclides, and pollutants associated with fossil fuel combustion, smelting, and industrial development. While some of these contaminants originate in the Arctic itself, others are likely a result of long-range transport from lower latitudes. Recent studies suggest that at least some atmospheric contaminants may be susceptible to poleward redistribution, sequestration, and accumulation as a result of their physical and chemical properties. Thus, contamination of the Arctic may be exacerbated by the tendency of selected contaminants produced at lower latitudes to be transported to polar regions and incorporated into high-latitude food chains. Although awareness of exotic contaminants in high-latitude food chains is not new, international and regional baseline data are needed to document the magnitude, distribution, and ecosystem effects of this potentially serious global (hemispheric) problem. The United States has given little attention to Arctic studies relative to several other circumpolar nations (e.g. Canada, Sweden). However, over the next year, the U.S. Environmental Protection Agency (USEPA) will be designing regional studies to begin remedying this information gap. A major focus of this activity will be to ensure compatibility with international studies of Arctic contamination and with the USEPA's Environmental Monitoring and Assessment Program (EMAP).

Keywords: *Alaska, *Air pollution, *Atmospheric circulation, *Ecosystems, Haze, Food chains, Environmental transport, Path of pollutants, Radionuclide migration, Reprints.

PB91-137117/REB PC **A03**/MF **A01**
Immunotoxicology of Captive and Wild Birds.
Book chapter.
Corvallis Environmental Research Lab., OR.
A. Fairbrother. c1990, 27p EPA/600/D-90/191
Pub. in Population Ecology and Wildlife Toxicology of Agricultural Pesticide Use, 1990.

Environmental chemicals, including pesticides, have the potential to alter the immune response of laboratory or free-ranging animals. As a consequence, wild animals may become more susceptible to microbial or parasitic diseases; there is ample evidence that free-ranging wildlife frequently are diseased. Mathematical models predict that disease and parasitism could alter host population growth rates and that host susceptibility is an important component of the growth rate function. Laboratory studies have shown that all classes of insecticides and fungicides have immunosuppressive properties. Only a few studies have been done with wildlife species (fish, mallards, wild mice, and earthworms). A battery of immune function tests that has been developed recently for captive birds is now being used in free-ranging birds to determine if pesticide use or chemical disposal may be at least partially responsible for recent increases in the incidence of disease outbreaks in free-ranging wildlife.

Keywords: *Pesticides, *Immunology, *Toxicology, Birds, Wildlife, Parasitic diseases, Disease outbreaks, Immune tolerance, Insecticides, Fungicides, Mathematical models, Population dynamics, Reprints.

PB91-137125/REB PC **A03**/MF **A01**
American Water Works Association, Denver, CO.
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
Environmental Protection Agency, Cincinnati, OH. Drinking Water Research Div.
M. R. Schock, and K. W. Smothers. c1989, 15p EPA/600/D-90/209
Proceedings, AWWA Water Quality Technology Conference, Philadelphia, PA., November 12-16, 1989. Prepared in cooperation with Illinois State Water Survey Div., Champaign. Aquatic Chemistry Section. Sponsored by American Water Works Association, Denver, CO.

Commonly used techniques for the analysis of potable water scale and corrosion deposits do not provide equivalent information about the chemical nature and significance of the deposits. Optical examination, with unaided eye and with microscopes, provides some useful information. X-Ray Fluorescence-based techniques, such as EDXA using a Scanning Electro Microscope, can give elemental analysis information for metals, but not anionic species (such as CO3, OH) that are very important in understanding scale and corrosion mechanisms. Wet chemical analyses can provide the most accurate analyses of metals and some other important constituents (eg, CO3, PO4, SiO2), but can be very laborious. None of these mentioned approaches can specifically identify compounds, which is frequently essential in understanding corrosion or scaling processes. X-ray diffraction, particularly when combined with the other methods, produces the information in most cases.

Keywords: *Scale(Corrosion), *Potable water, Water chemistry, Mineral deposits, Water pipes, Chemical analysis, Electron microscopy, X ray analysis, Lead inorganic compounds, Calcium inorganic compounds, Water quality, Reprints.

PB91-137133/REB PC **A03**/MF **A01**
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
J. S. Bridges. c1990, 22p EPA/600/D-90/210
Pub. in the Proceedings of the Annual DOE Low Level Waste Management Conference (12th), Chicago, IL., 1990.

The EPA Waste Minimization Opportunity Assessments Manual (EPA/635/7-88/003) is designed to assist those responsible for planning, managing, and implementing waste minimization activities at the waste generating operation and at all management

levels. The Manual defines waste minimization and incentives as it describes how the assessment procedure is carried out, beginning with the planning and organizational aspects that provide the foundation through the assessment phase, evaluation phase, and option implementation phase. Since the Manual's publishing in July 1988, the Manual has been tested at various and numerous waste generating operations. The procedure is a sound, practical approach and is flexible to be adapted to the specific circumstances within a particular waste generating operation. A set of worksheets useful in carrying out waste minimization assessments is included in Appendix A of the Manual to assist the user. EPA has used the Manual in the conduct of waste minimization assessments within the private and public sectors and the paper will highlight some of the results and experiences. Of great importance was the involvement of plant personnel in all phases of the waste minimization assessment since it is essential for the acceptance and eventual implementation of the recommended waste minimization options.

Keywords: *Waste treatment, *Waste management, *Environmental protection, Waste disposal, Manuals, Shipyards, Field tests, Environmental surveys, Automotive industry, Economic analysis, *Waste minimization assessments.

PB91-137141/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Impact of Drinking Water Treatment on Assimilable Organic Carbon. Final rept.
Cincinnati Univ., OH. Dept. of Civil and Environmental Engineering.
E. M. Mogren, P. V. Scarpino, and R. S. Summers.
1990, 19p EPA/600/D-90/211
Contract EPA-68-03-4038
Presented at the Proceedings, Annual AWWA Conference Cincinnati, OH., June 18-21, 1990. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

Regrowth in the drinking water distribution system is a primary concern for water utilities. The disinfection process, although normally efficient for primary inactivation, is not always enough to discourage microbial regrowth if sufficient substrate is available. Previously, the available substrate in drinking water has been assessed by culturing the sample with suspended bacterial seeds at specific counts and relating increased bacterial counts to a concentration of a specific substrate. Besides being labor intensive, this approach, termed assimilable organic carbon (AOC), does not account for the indigenous bacterial population or the biofilm aspects of degradation. Joret et al. and Gimbel and Maelzer overcame these problems by using indigenous populations attached to a sand media and measuring decreases in dissolved organic carbon (DOC); Joret et al. in a batch system and Gimbel and Maelzer in a recirculating batch reactor. Both systems were site specific i.e., the acclimated biofilm and samples were from the same treatment plant. The objectives of the study were to develop, assess and demonstrate a non-site specific system for the determination of the biodegradable DOC concentration in drinking water, and show applications to samples from several treatment plants.

Keywords: *Potable water, *Bacteria, *Biodeterioration, *Sewage treatment, Technology assessment, Water chemistry, Humus, Ozonization, Water pollution, Ohio River, Delaware River.

PB91-137158/REB PC **A02**/MF **A01**
New Source Reduction Project: The Potential for Safe Substitutes.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
M. A. Curran. cNov 90, 7p EPA/600/D-90/212
Presented at the National Household Hazardous Waste Management Conference (5th), San Francisco, CA., November 6, 1990.

One of the clean product research projects being funded by the EPA's Pollution Prevention Research Branch in Cincinnati, Ohio, involves evaluating the possibility of dramatic reductions in hazardous waste and toxic chemical exposure associated with commercial products. By identifying priority products for substitution and evaluating the feasibility of safe substitutes for those products, this project can be an important shift toward preventing toxic chemical pollution at the source. The paper describes the project's objectives and gives a brief description of the approach the University of Tennessee (Waste Management Institute) plans to take to accomplish the objectives. The project started in September 1990 and will continue for three years.

Keywords: *Substitutes, *Consumer products, Feasibility, Risk, Consumer protection, Environmental protection, Exposure, University of Tennessee Waste Management Institute.

PB91-137166/REB PC **A03**/MF **A01**
Flexibility in Bacteriological Monitoring.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
E. E. Geldreich. 1990, 27p EPA/600/D-90/213
Presented at and pub. in the Proceedings from the AWWA Water Quality Technology Conference, San Diego, CA., November 11-15, 1990.

The monitoring strategies for characterizing the microbiological quality of water in the distribution system require a thorough understanding of a variety of interrelated aspects: the treated water quality, the water supply retention in storage, and infrastructure deterioration. Evaluation of the routine monitoring strategies practiced by 1796 utilities suggests some water systems need to revise their programs to focus more on sampling at the peripheries of the pipe network and on monitoring water quality more uniformly over a 30 day period. Monitoring strategies must be flexible, being individually designed on a case by case basis. The plan must also be usable for all three levels of monitoring activity: (a) routine monitoring to meet the regulatory requirements; (b) specialized monitoring during seasonal biofilm occurrences; and (c) priority monitoring during periods of boil water conditions.

Keywords: *Water quality, *Potable water, *Aquatic microbiology, *Bacteria, Water analysis, Water supply, Pipelines, Utilities, Microbiological techniques, Environmental monitoring.

PB91-137265/REB PC **A12**/MF **A02**
Development of Risk Assessment Methodology for Municipal Sludge Landfilling. Final rept.
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Aug 89, 261p EPA/600/6-90/008

This is one of a series of reports that present methodologies for assessing the potential risks to humans or other organisms from the disposal or reuse of municipal sludge. The sludge management practices addressed by this series include land application practices, distribution and marketing programs, landfilling, incineration and ocean disposal. These reports provide methods for evaluating potential health and environmental risks from toxic chemicals that may be present in sludge. The document addresses risks from chemicals associated with landfilling of municipal sludge. These proposed risk assessment procedures are designed as tools to assist in the development of regulations for sludge management practices. The criteria may address management practices (such as site design or process control specifications), limits on sludge disposal rates or limits on toxic chemical concentrations in the sludge.

Keywords: *Earth fills, *Sludge disposal, *Public health, *Water pollution, Specifications, Toxicity, Municipalities, Regulations, Management, Incinerators, Concentration(Composition), Potable water, Humans, Exposure, Design criteria, Environmental transport, Sites, Risk assessment, Land application, Chemicals.

PB91-137273/REB PC **A03**/MF **A01**
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
Environmental Protection Agency, Research Triangle Park, NC. Environmental Criteria and Assessment Office.
M. R. Peterson, D. F. Naugle, and M. A. Berry. Jun 90, 49p EPA/600/8-90/041, ECAO-R-0440

The monograph describes, in a general way, published sampling procedures and analytical approaches for known and suspected carcinogens. The primary focus is upon carcinogens found in indoor air, although the methods described are applicable to other media or environments. In cases where there are no published methods for a particular pollutant in indoor air, methods developed for the workplace and for ambient air are included since they should be adaptable to indoor air. Known and suspected carcinogens have been grouped into six categories for the purposes of this and related work. The categories are radon, asbestos, organic compounds, inorganic species, particles, and non-ionizing radiation. Some methods of assessing exposure that are not specific to any particular pollutant category are covered in a separate section. The report is the fifth in a series of EPA/Environmental Criteria and Assessment Office Monographs.

Keywords: *Indoor air pollution, *Carcinogens, Radioactive air pollutants, Exposure, Toxicity, Asbestos, Radon, Organic compounds, Inorganic compounds, Particulates, Non-ionizing radiation.

PB91-137281/REB PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Modeling, Monitoring Systems and Quality Assurance.
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2. Final rept. Jan 87-Dec 89.
AScI Corp., McLean, VA.
M. Dellarco, and W. Ott. Oct 90, 139p
Contract EPA-68-D9-0094
Sponsored by Environmental Protection Agency, Washington, DC. Office of Modeling, Monitoring Systems and Quality Assurance.

The Bibliographical Literature Information System (BLIS) is a computer database that provides a comprehensive review of available literature on total human exposure to environmental pollution. Brief abstracts (often condensed versions of the original abstract) are included; if the original document had no abstract, one was prepared. Unpublished draft reports are listed, as well as final reports of the U.S. Government and other countries, reports by governmental research contractors, journal articles, and other publications on exposure models field data, and newly emerging research methodologies. Emphasis on those field studies measuring all the concentrations to which people may be exposed, including indoors, outdoors, and in-transit.

Keywords: *Indoor air pollution, *Humans, *Bibliographies, *Air pollution effects(Humans), Exposure, Public health, Radioactive materials, Abstracts, Radon, Technical reports, Air quality, Toxic substances.

PB91-137307/REB PC **A15**/MF **A02**
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
Health Effects Research Lab., Research Triangle Park, NC.
G. F. Craun. Sep 90, 328p EPA/600/1-90/005A
See also PB91-125716 and PB91-137315.

The publication is Volume I of a series of articles based on selected presentations made at the U.S. Environmental Protection Agency (EPA) and Association of State Drinking Water Administrators Workshop on Methods for Investigation of Waterborne Disease Outbreaks held on October 11-13, 1988, in Denver, Colorado. Articles were selected to provide background on the etiologies and causes of previous outbreaks, various aspects of epidemiologic methods, disease surveillance and reporting, and laboratory analysis. It is intended to serve as a handbook to assist in the investigation of waterborne outbreaks. A number of previously published articles have been reprinted in Volume II to supplement information contained in the handbook. These articles provide examples of outbreak investigations and surveillance activities. They have been reprinted to illustrate principles discussed in the handbook and compiled as a convenience to those investigators with limited access to library facilities.

Keywords: *Water microbiology, *Disease outbreaks, *Microorganism control(Water), Public health, Environmental monitoring, Water treatment, Water analysis, Water quality, Epidemiology, Disinfection, Filtration.

PB91-137315/REB PC **A06**/MF **A01**
Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
Health Effects Research Lab., Research Triangle Park, NC.

G. F. Craun. Sep 90, 102p EPA/600/1-90/005B
See also PB91-125716 and PB91-137307.

The publication is Volume II of a series of articles based on selected presentations made at the U.S. Environmental Protection Agency (EPA) and Association of State Drinking Water Administrators Workshop on Methods for Investigation of Waterborne Disease Outbreaks held on October 11-13, 1988, in Denver, Colorado. Volume II contains reprinted previously published articles to supplement information contained in the handbook. These articles provide examples of outbreak investigations and surveillance activities. They have been reprinted to illustrate principles discussed in the handbook and compiled as a convenience to those investigators with limited access to library facilities.

Keywords: *Water microbiology, *Disease outbreaks, *Microorganism control(Water), Public health, Gastrointestinal diseases, Surface waters, Water treatment, Communicable diseases, Epidemiology, Giardia, Vermont, Colorado, Cryptosporidium.

PB91-138420/REB PC **A05**/MF **A01**
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
Environmental Protection Agency, Research Triangle Park, NC. Environmental Criteria and Assessment Office.
J. M. Davis, and L. D. Grant. Aug 90, 87p EPA/600/8-89/049F, ECAO-R-0297
See also PB87-142386.

The 1986 U.S. EPA document Air Quality Criteria for Lead (EPA-600/8-83/028 aF-dF) evaluated in detail the latest scientific information concerning sources, routes, and levels of lead (Pb) exposure and associated health effects and potential risks. An Addendum (1986) to that document focuses on additional, newer studies concerning the effects of lead on cardiovascular function and on early physical and neurobehavioral development. The present Supplement to the above materials evaluates further still newer information emerging in the published literature concerning (1) lead effects on blood pressure and other cardiovascular endpoints and (2) the effects of lead exposure during pregnancy or early postnatally on birth outcomes and/or the neonatal physical and neuropsychological development of affected children.

Keywords: *Public health, *Lead(Metal), *Toxicity, *Air pollution, Humans, Risk, Exposure, Concentration(Composition), Blood pressure, Pregnancy, Cardiovascular system, Children, Growth, Nervous system disorders, Tests, Tables(Data), Health assessment, Air pollution effects(Humans).

PB91-138818/REB PC **A02**/MF **A01**
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E. Directive (Final).
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
17 Jun 88, 8p EPA/9012.10-A

The directive implements revisions to the consultation and concurrence requirements of the civil judicial settlement delegations, which are designed to streamline the enforcement process and help achieve Agency remedial action and cost recovery goals. These revisions expand Regional authority to approve CERCLA settlements. The directive supplements a portion of directive No. 9012.10 'Redelegation of Authority Under CERCLA and SARA,' dated May 25, 1988.

Keywords: *Refuse disposal, *Penalties, *Office of Solid Waste and Emergency Response, *Comprehensive Environment Response Compensation and Liability Act, Directives, Civil judicial settlement authorities.

PB91-138826/REB PC **A01**/MF **A01**
Waiver of Concurrence on De Minimis Generator Settlements. Directive (Final).
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
15 Jul 88, 5p EPA/9012.10-A-I

The directive authorizes Region I at Type Level 2 of the revised CERCLA civil judicial settlement authorities under Delegation 14-13-B and 14-14-E, providing the Region with delegated authority to transmit de minimis settlements under section 122(g)(1)(A) to the Department of Justice with Headquarters consultation. The directive supplements a portion of directive No. 9012.10-a 'Revision of CERCLA Judicial Settlement Authorities Under Delegations 14-13-B and 14-14-E,' dated June 17, 1988.

Keywords: *Refuse disposal, *Penalties, *Office of Solid Waste and Emergency Response, *Comprehensive Environment Response Compensation and Liability Act, *Generator settlements, Directives, Amendments, Civil judicial settlement authorities.

PB91-138834/REB PC **A02**/MF **A01**
Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E. Directive (Final).
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
18 Aug 88, 9p EPA/9012.10-B

The document is composed of redelegations and consultation on judicial settlements and de minimis settlements to Director of the Office of Waste Programs, from AA/OSWER.

Keywords: *Refuse disposal, *Penalties, *Office of Solid Waste and Emergency Response, *Comprehensive Environment Response Compensation and Liability Act, Directives, Amendments, Civil judicial settlement authorities.

PB91-139006/REB PC **A02**/MF **A01**
Small Cost Recovery Referrals. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
12 Jul 85, 10p OSWER DIRECTIVE-9832.6

The directive clarifies EPA policy on referring CERCLA cost recovery cases valued at less than $200,000. There are two memoranda attached, the first of which is entitled 'Preparation of Hazardous Waste Referrals,' dated July 30, 1985. The memorandum provides guidance on preparing referral packages meeting Department of Justice requirements. The second memorandum, entitled 'Small Cost Recovery Referrals,' dated July 12, 1985, states that although the Agency places high priority on larger cases, there are situations in which cost recovery of small cases is appropriate.

Keywords: *Superfund, *Waste management, *Hazardous materials, Benefit cost analysis, Cost repayment, US EPA, Law enforcement, Case studies, Expenses, Financing, *Office of Solid Waste and Emergency Response, Comprehensive Environmental Response Compensation and Liability Act.

PB91-139014/REB PC **A03**/MF **A01**
Guidance Regarding CERCLA Enforcement against Bankrupt Parties. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
24 May 84, 47p OSWER DIRECTIVE-9832.7
See also PB91-139022.

The directive assists the Regions in developing CERCLA enforcement actions against bankrupt parties. The guidance is intended to encourage agressive enforcement against insolvent parties and ensure national consistency in current and future bankruptcy cases brought by the Agency. The guidance is supplemented by directive no. 9832.7-1a, which used to be directive no. 9832.8, 'Revised Hazardous Waste Bankruptcy Guidance,' dated May 23, 1986.

Keywords: *Superfund, *Hazardous materials, *Waste management, Guidelines, Law enforcement, Bankruptcy, Benefit cost analysis, Expenses, Cost repayment, Administrative procedures, Liabilities, Financing, *Office of Solid Waste and Emergency Response, Comprehensive Environmental Response Compensation and Liability Act, Potentially responsible parties.

PB91-139311/REB PC **A03**/MF **A01**
Municipal Settlements. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
6 Dec 89, 39p OSWER DIRECTIVE-9834.13

The directive establishes EPA's interim policy on settlements involving municipal waste.

Keywords: *Superfund, *Waste management, *Municipal wastes, *Remedial action, Law enforcement, US EPA, Pollution regulations, Sewage sludge, Waste treatment, *Municipal Settlement Policy, *Office of Solid Waste and Emergency Response, Comprehensive Environmental Response Compensation and Liability Act, Cooperative agreements.

PB91-139329/REB PC **A03**/MF **A01**
Interim CERCLA Settlement Policy.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
5 Dec 84, 24p OSWER DIRECTIVE-9835.0
Portions of this document are not fully legible.

The directive discusses private party cleanup and contribution proposals under CERCLA. It is supplemented by directives no. 9835.2 and 9834.2.

Keywords: *Superfund, *Waste management, *Hazardous materials, Remedial action, Law enforcement, Financing, Notice of probable violation, Pollution regulations, Expenses, *Office of Solid Waste and Emergency Response, Cleanup operations, Comprehensive Environmental Response Compensation and Liability Act, Potentially responsible parties.

PB91-139337/REB PC **A03**/MF **A01**
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
16 May 88, 42p OSWER DIRECTIVE-9835.1A
Portions of this document are not fully legible.

The directive sets forth policies and procedures governing potentially responsible party participation in the remedial investigations and feasibility studies process, including initiation of PRP searches, PRP notifications, development of agreements, and oversight of RI/FS activities. The document supersedes directive no. 9835.1 'Participation of Potentially Responsible Parties in Development of RIs and FSs under CERCLA,' dated March 3, 1984.

Keywords: *Superfund, *Waste management, *Hazardous materials, *Remedial action, Law(Jurisprudence), Law enforcement, Pollution regulations, Feasibility studies, Guidelines, *Office of Solid Waste and Emergency Response, *Potentially responsible parties, Cooperative agreements, Comprehensive Environmental Response Compensation and Liability Act.

PB91-139345/REB PC **A03**/MF **A01**
Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
1 May 85, 26p OSWER DIRECTIVE-9835.2

The directive focuses on the consent decree provisions which are vital to settlement in hazardous waste cases, and are handled differently or not at all under other programs. The directive supplements directive no. 9835.0 'Interim CERCLA Settlement Policy,' dated December 5, 1984.

Keywords: *Superfund, *Waste management, *Hazardous materials, Consent orders, Case studies, Administrative procedures, Guidelines, Notice of probable violation, Law enforcement, Expenses, Penalties, *Office of Solid Waste and Emergency Response, Comprehensive Environmental Response Compensation and Liability Act.

PB91-139352/REB PC **A03**/MF **A01**
Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
7 Feb 89, 42p OSWER DIRECTIVE-9835.2A
Portions of this document are not fully legible.

The directive sets forth policies and procedures governing potentially responsible party participation in the remedial investigations and feasibility studies process, including initiation of PRP searches, PRP notification, development of agreements and oversight of RI/FS activities. The directive supersedes directive no. 9835.1 'Participation of PRPs in Development of RIs

and FSs under CERCLA' and directive no. 9355.3-01 'Guidance on RI/FS.'

Keywords: *Superfund, *Waste management, *Hazardous materials, Law enforcement, Guidelines, Remedial action, Feasibility studies, Notice of probable violation, Administrative procedures, Legal aspects, *Office of Solid Waste and Emergency Response, Potentially responsible parties, Cooperative agreements, Comprehensive Environmental Response Compensation and Liability Act.

PB91-139360/REB PC **A03**/MF **A01**
Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
27 Sep 89, 22p OSWER DIRECTIVE-9835.2B

The directive provides guidance on the use of stipulated penalties in hazardous waste consent decrees. The directive supplements directive no. 9835.2 'Guidance on Draft Consent Decrees in Hazardous Waste Cases,' dated May 1, 1985.

Keywords: *Superfund, *Waste management, *Hazardous materials, Law enforcement, Penalties, Permits, Guidelines, Remedial action. *Office of Solid Waste and Emergency Response, Comprehensive Environmental Response Compensation and Liability Act.

PB91-139378/REB PC **A03**/MF **A01**
Administrative Order on Consent for Remedial Investigations/Feasibility Study.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
5 Feb 90, 34p OSWER DIRECTIVE-9835.3-1A

The directive provides a model order that is designed to replace the outdated model order that was issued prior to the CERCLA amendments. The model order is designed to facilitate settlement negotiations by serving as an opening handposition, and to facilitate national consistency. The directive supersedes directive no. 9835.3 'Model Administrative Order for Private Party Conduct for RI/FSs,' dated January 31, 1985, and supplements directive no. 9835.8 'Model Statement of Work for Remedial Investigations and Feasibility Study Conducted by Potentially Responsible Parties (PRPs),' dated June 2, 1989.

Keywords: *Remedial action, *Superfund, *Waste management, *Hazardous materials, Administrative procedures, Feasibility studies, Pollution regulations, Law enforcement, Community relations, Risk assessment, Public health, *Office of Solid Waste and Emergency Response, Potentially responsible parties, Preremedial actions, Comprehensive Environmental Response Compensation and Liability Act.

PB91-139436/REB PC **A03**/MF **A01**
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
2 Jun 89, 35p OSWER DIRECTIVE-9835.8

The directive provides potentially responsible parties with direction in performing tasks that are required to successfully complete a remedial investigation and feasibility study. The model statement of work is used in conjunction with OERR's October 1988 RI/FS guidance, and closely follows the model RI/FS administrative order on consent. The directive supplements directive no. 9355.3-01.

Keywords: *Superfund, *Waste management, *Hazardous materials, *Remedial action, Law enforcement, Pollution regulations, Feasibility study, Administrative procedures, Community relations, *Office of Solid Waste and Emergency Response, *Potentially responsible parties, Remedial response.

PB91-139477/REB PC **A09**/MF **A01**
Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89. Final rept.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
20 Jun 90, 179p OSWER DIRECTIVE-9835.13

The directive determines if there are differences between remedies selected at Fund-lead and Enforcement-lead sites. For the bulk of the analysis, sites whose remedial investigation/feasibility study (RI/FS) was conducted with Superfund money (Fund-lead) were compared with those whose RI/FS was conducted by potentially responsible parties (PRPs) (Enforcement-lead). In addition, sites whose remedial design/remedial action (RD/RA) is expected to be conducted by PRPs were compared with sites where the Fund was expected to conduct RD/RA. The latter comparison was developed to consider potential influence where PRPs do not conduct the RI/FS, but offer or are expected to conduct the RD/RA.

Keywords: *Hazardous materials, *Superfund, *Waste management, *Remedial action, Law enforcement, Feasibility studies, Comparison, Site surveys, Financial assistance, *Office of Solid Waste and Emergency Response, Remedial designs, Potentially responsible parties, Record of Decision.

PB91-139840/REB PC **A03**/MF **A01**
RCRA Section 3008(h) Interim Status Corrective Action Authority.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
16 Dec 85, 21p OSWER DIRECTIVE-9901.1
See also PB91-139857.

The directive provides the Agency's initial interpretation of the terms used in section 3008(h) of RCRA. The guidance also discusses current delegations of authority and requirements and procedures for taking administrative enforcement actions, suggests situations in which civil judicial action may be appropriate, and describes the relationship between section 3008(h) actions and other enforcement and permitting authorities relevant to corrective action. The directive is supplemented by directive no. 9901.1a, which used to be directive no. 9901.2.

Keywords: *Superfund, *Waste management, *Hazardous materials, Law enforcement, Pollution regulations, Administrative procedures, Remedial action, Law(Jurisprudence), *Resource Conservation and Recovery Act, *Remedial response, *Office of Solid Waste and Emergency Response.

PB91-139857/REB PC **A02**/MF **A01**
Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
20 Apr 87, 9p OSWER DIRECTIVE-9901.1A
See also PB91-139840.

The directive describes the process for determining whether closing RCRA treatment, storage, and disposal facilities that did not establish financial assurance may use a more flexible schedule to meet closure and post-closure costs in Part A of the document. Part B describes enforcement of liability requirements for closing treatment, storage, and disposal facilities. The directive supplements directive no. 9901.00. 'Enforcement of Liability Requirements for Operating RCRA Treatment, Storage, and Disposal Facilities,' dated October 29, 1988.

Keywords: *Superfund, *Waste management, *Hazardous materials, Law enforcement, Waste treatment, Waste storage, Waste disposal, Financing, Cost analysis, Pollution regulations, Remedial action, *Office of Solid Waste and Emergency Response, Comprehensive Environmental Response Compensation and Liability Act, Potentially responsible parties, Resource Conservation and Recovery Act, Preremedial actions.

PB91-139865/REB PC **A02**/MF **A01**
Guidance for Public Involvement in RCRA Section 3008(h) Actions. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
5 May 87, 8p OSWER DIRECTIVE-9901.3

The directive provides guidance on public involvement actions taken under section 3008(h) of RCRA.

Keywords: *Superfund, *Waste management, *Hazardous materials, Public information, Guidelines, Remedial action, Law enforcement, *Office of Solid Waste and Emergency Response, Cleanup operations, Resource Conservation and Recovery Act, Community relations.

PB91-139907/REB PC **A03**/MF **A01**
Policy for Managing Leachate at PCB Landfills. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
16 Jan 87, 18p OSWER DIRECTIVE-9903.1
Portions of this document are not fully legible.

The directive sets forth requirements that apply to owners and operators of TSCA-approved landfills with regard to the management of PCB-containing leachates.

Keywords: *Superfund, *Waste management, *Hazardous materials, Earth fills, Leaching, Operating, Law enforcement, Environmental transport, Pollution regulations, Guidelines, *Office of Solid Waste and Emergency Response, *Polychlorinated biphenyls, Toxic Substances Control Act, Resource Conservation and Recovery Act.

PB91-139915/REB PC **A03**/MF **A01**
Transmittal of the RCRA Ground-Water Enforcement Strategy. Final rept.
Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
22 Jul 85, 24p OSWER DIRECTIVE-9905.0

The directive provides strategy to improve compliance at land disposal facilities subject to ground-water monitoring requirements; and establishes a nationally consistent baseline of information on land disposal facilities and assists Regions in implementing Regionally-specific efforts.

Keywords: *Superfund, *Waste management, *Hazardous materials, Land disposal, Law enforcement, Ground water, Water pollution sampling, Standards compliance, Regional analysis, Inspections, Decision making, *Office of Solid Waste and Emergency Response, Baseline measurements, Resource Conservation and Recovery Act.

PB91-140376/REB PC **A08**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
Integrated Lab. Systems, Research Triangle Park, NC. R. R. Tice, and A. C. Pellom. Jan 91, 157p EPA/600/8-90/086
Contract EPA-68-C8-0068
Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

The user's manual provides guidance to researchers and the regulatory community for interacting with a data analysis and statistical interpretation system, designated as CA (Chromosomal Aberration). CA is dedicated to the in vivo chromosome aberration assay, a routinely used genetic toxicology assay for chemical compounds which may be of health concern. The objective in developing this system has been to promote consistency and intercomparability of assay test results across laboratories, thus providing researchers and government decision makers with a means to assure comparable analyses of test data. The CA data analysis system has been developed in consultation with a panel of biostatisticians and experts in the field of cytogenetics. Software for executing CA and two sets of test data, contained on two 5.25 inch floppy disks, accompany the user's guide.

Keywords: *Toxicology, *Chromosomes, *Chemical analysis, *Assaying, *Chemical compounds, In vivo analysis, Statistical analysis, Biomedical measurement, User manuals(Computer programs), Laboratories, Comparison, Interpretation, Regulations, Guidelines, *Genetic toxicology, *Chromosome aberration assay, Computer software, Biostatisticians.

PB91-141796/REB PC **A19**/MF **A03**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

Environmental Monitoring and Assessment Program: Ecological Indicators.
Oak Ridge National Lab., TN. Environmental Sciences Div.
C. T. Hunsaker, and D. E. Carpenter. Sep 90, 432p EPA/600/3-90/060
Contract EPA-68-02-4444
Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

EPA's Office of Research and Development initiated the Environmental Monitoring and Assessment Program (EMAP) to provide data for better assessments of the condition of the nation's ecological resources. Over the next five years, several integrated monitoring networks will be implemented to (1) estimate current status, extent, changes, and trends in indicators of ecological condition, (2) monitor indicators of pollutant exposure and habitat condition and seek associations among indicators that provide plausible explanations for adverse condition; and (3) provide periodic reports on status and trends to the EPA Administrator and the public. These networks will yield statistically unbiased estimates with quantifiable confidence limits on regional and national scales for periods of years to decades. The report presents the approach proposed to describe ecological condition; defines a common strategy within the program for selecting, prioritizing, and evaluating indicators. The report also summarizes the indicators chosen for evaluation as core indicators, which will be implemented in regional and national monitoring of six categories of resources: near-coastal waters, inland surface waters, wetlands, forests, arid lands, and agroecosystems.

Keywords: *Ecology, *Pollution, Monitoring, Indicator species, Exposure, Periodic variations, Trends, Yield, Risk assessment, Habitats.

PB91-141804/REB PC **A06**/MF **A01**
National Stream Survey Database Guide.
Corvallis Environmental Research Lab., OR.
M. E. Mitch, P. R. Kaufmann, A. T. Herlihy, W. S. Overton, and M. J. Sale. Jul 90, 104p EPA/600/8-90/055

The National Stream Survey (NSS), conducted in the spring of 1985 and 1986, is one component of the U.S. Environmental Protection Agency's National Surface Water Survey. This effort is in support of the National Acid Precipitation Assessment Program. The NSS was a synoptic, spring survey of 500 streams in regions of the Southeastern and Mid-Atlantic United States expected to contain larger numbers of low alkalinity streams. The NSS is based on a probability sample from an explicitly defined population of surface waters. In the NSS, 500 streams were sampled, representing a regional population of 64,700 stream reaches. The NSS database includes stream and watershed physical characteristics, in situ measurements, and water chemistry data. Accompanying the database is a comprehensive user's guide that provides an overview of the NSS design, database structure, and transfer media.

Keywords: *Acidification, *Surface waters, Surveys, Streams, Alkalinity, Populations, Sampling, Watersheds, Measurement, Observation, Water chemistry, Variance(Statistics), Estimates, Distribution functions, *Acid precipitation, Data base, Users guide.

PB91-141812/REB PC **A09**/MF **A02**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
Lockheed Engineering and Sciences Co., Inc., Las Vegas, NV.
M. L. Papp, and R. D. Van Remortel. Jul 90, 194p EPA/600/4-90/017
Contracts EPA-68-03-3249, EPA-68-03-3246
Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

The Mid-Appalachian soil survey was conducted in 1988-89 as part of the U.S. Environmental Protection Agency (EPA) Direct/Delayed Response Project (DDRP). The DDRP is a research program designed to predict the long-term response of watersheds and surface waters in the United States to acidic deposition. The document describes the quality assurance program and operations of the preparation laboratory during the Mid-Appalachian survey and the results of the data quality assessment. The document was prepared primarily for the data users who will utilize the data for prediction and analysis of soil and aquatic responses to acidic deposition. Data quality was evaluated by using quality evaluation and control samples to describe the precision, accuracy, completeness, representativeness, and comparability of the data.

Keywords: *Acidification, *Watersheds, *Soil surveys, Preparation, Quality control, Laboratories, Aquatic animals, Evaluation, Accuracy, Tests, Recommendations, Equipment, Soil properties, Soil water, Middle Appalachian Region(United States).

PB91-141820/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations. Final rept.
Pacific Environmental Services, Inc., Durham, NC.
K. Stroupe, S. Boone, and C. Thames. Dec 90, 37p EPA/450/4-90/013
Contract EPA-68-02-4464
See also PB89-134340. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The user's guide describes how to start, enter/edit, use help system, back up data and compile the TSCREEN model. TSCREEN is a model for estimating ambient pollutant concentrations for a variety of release scenarios from Superfund sites and other sources of air toxics releases. The computer program implements the procedures developed in a document entitled 'A Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants,' PB89-134340 and should be used in conjunction with the workbook. TSCREEN has a front-end control program that also provides, by use of interactive menus and data entry screens, the same steps as the workbook. An extensive help system is provided to guide the user. Text edit and graphical display capabilities are also provided.

Keywords: *Toxic substances, *Air pollution, *Computerized simulation, *User manuals(Computer programs), *Hazardous materials, Mathematical models, Atmospheric diffusion, Concentration(Composition), Superfund, Waste disposal, Pollution sources, Air quality display model, Meteorology, Plumes, Chemical compounds, *TSCREEN model.

PB91-141838/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
5-Methylhexanoic Acid Developmental Toxicity Testing.
ManTech Environmental Technology, Inc., Research Triangle Park, NC.
M. G. Narotsky. Jan 91, 23p EPA/600/1-91/001
Contract EPA-68-02-4450
Sponsored by Health Effects Research Lab., Research Triangle Park, NC.

As part of an investigation of the developmental effects and structure-activity relationships of aliphatic acids, 5-methylhexanoic acid was administered by gavage to Sprague-Dawley rats on gestation days 6-15 at doses of 0, 300, and 400 mg/kg/day. The dams were allowed to deliver and their litters were examined through postnatal day 6. Pups that were found dead were examined for soft-tissue alterations. On day 6, two survivors per litter were preserved for skeletal examination. Maternal toxicity was demonstrated at both 300 and 400 mg/kg by reduced weight gains, altered respiration (rales, dyspnea) and death. Body weight losses early in the treatment period were also evident at 400 mg/kg. In spite of the marked maternal toxicity present, there were no clear developmental effects; litter size, pre- and postnatal viability, and pup weights were unaffected by treatment. Skeletal examinations of selected pups also revealed no compound effects.

Keywords: *Toxicity, *Aliphatic acids, *Valproate, *Teratogens, Rats, Dose-response relationships, Females, Body weight, Tables(Data), Reproduction(Biology), Litter size, Structure-activity relationship, Parturition, *5-Methylhexanoic acid.

PB91-141846/REB PC **A05**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Compilation of Information on Alternative Barriers for Liner and Cover Systems. Interim rept.
Texas Univ. at Austin. Dept. of Civil Engineering.
D. E. Daniel, and P. M. Estornell. Oct 90, 93p EPA/600/2-91/002
Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

On June 7-8, 1990, a Workshop attended by approximately 75 people was held in Cincinnati, Ohio, to present and discuss alternative barriers for liner and cover systems. Alternative barriers include thin, manufactured, low-permeability materials that are being used and being proposed for use in liner and cover systems for landfills, waste impoundments, site remediation projects, secondary containment structures, and other facilities. In some cases, the materials are being considered as an extra component of a liner or cover system, e.g., to back up a flexible membrane liner (FML), and in other cases the alternative barriers are being considered as a substitute for a thicker layer of compacted, low-permeability soil. The report contains a compilation of information available concerning alternative barrier materials and summarizes the main points brought out in the workshop. There are four main alternative barrier materials currently being produced. Three of them consist of a thin layer of bentonite sandwiched between two geotextiles, and the fourth consists of a thin layer of bentonite glued to an FML. All of the materials appear to have a very low hydraulic conductivity to water (between 1 x 10 to the 10th power cm/s and 1 x 10 to the 8th power cm/s, depending upon the conditions of testing). All of the materials are seamed in the field by overlapping sheets of the material and relying upon the bentonite to form its own seal when it hydrates. Data on the hydraulic integrity of the seams are much less complete compared to data on the materials themselves. The expansive nature of bentonite provides the bentonitic blankets with the capability of selfhealing small punctures, cracks, or other defects. The materials have many advantages, including fast installation with lightweight equipment. The most serious shortcomings are a lack of data, particularly on field performance, and the low shear strength of bentonite.

Keywords: *Earth fills, *Barrier materials, *Linings, *Bentonite, Waste storage, Solid wastes, Graphs(Charts), Tables(Data), Remedial action, Meetings, Literature surveys, Hydraulic conductivity.

PB91-142794/REB PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Drinking Water Criteria Document for Atrazine.
Dynamac Corp., Rockville, MD.
May 90, 126p
Supersedes PB89-192082. Sponsored by Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

The document deals with the drinking water health effects of Atrazine through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Herbicides, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Neoplasms, Food, Tests, Tables(Data), Mammals, *Drinking water, *Water pollution standards, *Health assessment, *Atrazine.

PB91-142802/REB PC **A07**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Drinking Water Criteria Document for Pentachlorophenol. Final rept.
Syracuse Research Corp., NY.
D. L. Tullis, D. A. Gray, and P. R. Durkin. Jan 91, 127p ECAO-CIN-407
Contract EPA-68-03-3112
Supersedes PB89-192249.Portions of this document are not fully legible. Sponsored by Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

The document deals with the drinking water health effects of Pentachlorophenol through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Organic compounds, Pesticides, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Wood preservatives, Workers, Skin(Anatomy), Respiratory system, *Drinking water, *Water pollution standards, *Health assessment, *Pentachlorophenol.

PB91-142810/REB PC **A09**/MF **A01**
Drinking Water Criteria Document for Aldicarb. Final rept.
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
J. F. Risher. Oct 90, 178p ECAO-CIN-420
Supersedes PB89-192066.

The document deals with the drinking water health effects of Aldicarb through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Insecticides, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Dosage, Animals, Malignant neoplasms, Ingestion, Stomach, Metabolism, Tissues(Biology), Tables(Data), *Drinking water, *Water pollution standards, *Health assessment, *Aldicarb.

PB91-142828/REB PC **A09**/MF **A01**
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Drinking Water Criteria Document on Selenium. Draft rept.
Life Systems, Inc., Cleveland, OH.
31 Oct 90, 192p TR-1242-65
Contract EPA-68-C8-0033
Supersedes PB89-192264. Sponsored by Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

The document deals with the drinking water health effects of Selenium through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Selenium, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Mining, Copper, Coal, Byproducts, Air pollution, Adsorption, Gastrointestinal system, Tables(Data), *Drinking water, *Water pollution standards, *Health assessment.

PB91-142836/REB PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Drinking Water Criteria Document on Nitrate/Nitrite.
Life Systems, Inc., Cleveland, OH.
21 Dec 90, 161p TR-1242-60B
Contract EPA-68-C8-0033
Supersedes PB89-192223. Sponsored by Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

The document deals with the drinking water health effects of Nitrate/Nitrite through the review of several studies. The studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Inorganic nitrates, *Nitrites, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Reproduction(Biology), Cardiovascular system, Blood, Carcinogens, Fertilizers, Food processing, Risk, *Drinking water, *Water pollution standards, *Health assessment.

PB91-142844/REB PC **A09**/MF **A01**
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Drinking Water Criteria Document on Chromium.
Life Systems, Inc., Cleveland, OH.
20 Dec 90, 186p TR-1242-64A
Contract EPA-68-C8-0033
Supersedes PB89-192124. Sponsored by Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

The document deals with the drinking water health effects of Chromium through the review of several studies. The studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Chromium, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Carcinogens, Skin(Anatomy), Cells(Biology), Respiration, Risk, Chromates, Industrial plants, Tables(Data), *Drinking water, *Water pollution standards, *Health assessment.

PB91-142851/REB PC **A09**/MF **A02**
Drinking Water Criteria Document for Lindane. Final draft rept.
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
W. Thompson, and M. Melzer. Jan 88, 195p ECAO-CIN-402
Supersedes PB89-192199. Prepared in cooperation with Franklin Research Center, Philadelphia, PA.

The document deals with the drinking water health effects of Lindane through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Chlorobenzenes, *Pesticides, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Halohydrocarbons, Carcinogens, Adsorption, Skin(Anatomy), Blood, Immunologic diseases, *Drinking water, *Water pollution standards, *Health assessment.

PB91-142869/REB PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Drinking Water Criteria Document on Barium.
Life Systems, Inc., Cleveland, OH.
20 Dec 90, 162p TR-1242-62A
Contract EPA-68-C8-0033
Supersedes PB89-192090. Sponsored by Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

The document deals with the drinking water health effects of Barium through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Barium, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Children, Tests, Concentration(Composition), Cardiovascular system, Metabolism, *Drinking water, *Water pollution standards, *Health assessment.

PB91-142877/REB PC **A14**/MF **A02**
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane. Final rept.
Syracuse Research Corp., NY.
S. B. Wilbur, D. K. Basu, M. B. Remington, and P. Durkin. 13 Aug 90, 303p ECAO-CIN-406
Contract EPA-68-03-3112
Supersedes PB89-192157. Sponsored by Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

The document deals with the drinking water health effects of heptachlor, heptachlor epoxide and chlordane through the review of several studies. The studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Insecticides, Heptachlor, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Diets, Carcinogens, Risk, Chloradane, Reproduction(Biology), Respiration, Air pollution, Food, Animals, Tables(Data), *Drinking water, *Water pollution standards, *Health assessment.

PB91-142885/REB PC **A07**
Environmental Protection Agency, Washington, DC. Office of Drinking Water.
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989). Final rept.
Miller (Wade) Associates, Inc., Arlington, VA.
Oct 90, 126p*
See also PB89-192405.Portions of this document are not fully legible. Sponsored by Environmental Protection Agency, Washington, DC. Office of Drinking Water.

The document contains the executive summary of the number of systems affected, national cost estimates, national benefit estimates, and impacts on small systems.

Keywords: *Potable water, *Regulations, *Cost analysis, *Water pollution control, Benefit cost analysis, Water treatment, Monitoring, State government, National government, Estimates, Ground water, Tables(Data), *Synthetic organic chemicals, Small water systems, *Drinking water.

PB91-143081/REB PC **A03**/MF **A01**
Update of the Regulation and Policy Matrices Dated September 1988.
Environmental Protection Agency, Washington, DC. Office of Municipal Pollution Control.
Sep 88, 24p
See also PB89-114219.

The document is an update to the publication entitled 'Regulations and Policy Matrices - A Guide to Rules Governing Grants Awarded Under the Construction Grants Programs - Update - 1988' (September 1988) (PB89-114219/AS).

Keywords: *Grants, *Construction, *Water pollution, Regulations, Municipalities, Financing, Guidelines, *Sewage treatment plants, Construction Grants Program.

PB91-143370/REB PC **A12**/MF **A02**
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Drinking Water Criteria Document for Styrene. Final rept.
Syracuse Research Corp., NY.
B. C. Hansen, D. A. Gray, and J. Santodonato. Jan 91, 253p ECAO-CIN-409
Contract EPA-68-03-3112
Supersedes PB89-192272. Sponsored by Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

The document deals with the drinking water health effects of Styrene through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Styrene, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinet-

ics, Animals, Carcinogens, Kidney, Liver, Nervous system, Mutagens, Aliphatic hydrocarbons, *Drinking water, *Water pollution standards, *Health assessment.

PB91-143388/REB PC **A05**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Drinking Water Criteria Document for 1,2-Dichloropropane. Final rept.
Syracuse Research Corp., NY.
D. K. Basu, J. R. Anderson, and J. T. Coleman. 3 Aug 90, 99p ECAO-CIN-404
Contract EPA-68-03-3112
Supersedes PB89-192322. Sponsored by Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

The document deals with the drinking water health effects of 1,2-Dichloropropane through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Chloropropanes, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Air pollution, Fumigation, Soils, Animals, Carcinogens, Neoplasms, Tests, Dosage, Tables(Data), *Drinking water, *Water pollution standards, *Health assessment, *Dichloropropane.

PB91-143396/REB PC **A09**/MF **A02**
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
Life Systems, Inc., Cleveland, OH.
F. P. Guengerich, C. Klaassen, J. Lantz, and D. Jenkins. 19 Dec 90, 200p
Contract EPA-68-02-3659
Supersedes PB89-192512. Sponsored by Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

The document deals with the drinking water health effects of Dichloroethylenes through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Plastic coatings, Food packaging, Animals, Concentration(Composition), Tests, Kidney, Liver, Tables(Data), *Drinking water, *Water pollution standards, *Health assessment, *Dichloroethylene, *Volatile organic compounds.

PB91-143404/REB PC **A10**/MF **A02**
Drinking Water Criteria Document for Toxaphene. Final rept.
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
S. Q. Hee, and M. Radicke. Feb 87, 218p ECAO-CIN-426
Supersedes PB89-192306. Prepared in cooperation with Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

The document deals with the drinking water health effects of Toxaphene through the review of several studies. The studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Insecticides, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Birds, Residues, Liver, Blood, Metabolism, Tests, *Drinking water, *Water pollution standards, *Health assessment, *Toxaphene.

PB91-143412/REB PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Drinking Water Criteria Document on Carbofuran.
Life Systems, Inc., Cleveland, OH.
28 Jun 90, 102p TR-1242-59
Contract EPA-68-C8-0033
Supersedes PB89-192108. Sponsored by Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

The document deals with the drinking water health effects of Carbofuran through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Insecticides, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Metabolism, Carcinogens, Risk, Reproduction(Biology), Genetics, Animals, Liver, *Drinking water, *Water pollution standards, *Health assessment, *Carbofuran.

PB91-143420/REB PC **A04**/MF **A01**
Quantification of Toxicological Effects for Alachlor.
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
30 May 90, 51p
Prepared in cooperation with Dynamac Corp., Rockville, MD.

The document quantifies the drinking water health effects of Alachlor through the review of several studies. The studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies.

Keywords: *Potable water, *Water quality, *Toxicology, *Pesticides, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Concentration(Composition), Mortality, Animals, Dosage, Reproduction(Biology), Carcinogens, *Drinking water, *Water pollution standards, *Health assessment, *Alachlor.

PB91-143438/REB PC **A13**/MF **A02**
Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Sep 90, 290p*
Supersedes PB89-192363.

The document covers various types of treatment (removal) of several synthetic organic compounds and their cost for the treatment. The best available technologies are discussed in relation to their removal of organic contaminants for drinking water.

Keywords: *Potable water, *Water treatment, *Water supply, *Cost analysis, Activated carbon treatment, Pilot plants, Aeration, Fluid filtration, Herbicides, Diffusion, Ozonation, Cost estimates, Solvents, Insecticides, Chemical reactions, Ground water, Vinyl chloride, Chlorohydrocarbons, Toluene, Ultraviolet lamps, Tables(Data), *Synthetic organic compounds, Best Available Technology, Aldicarb, Case studies.

PB91-143446/REB PC **A09**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Drinking Water.
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules. Final rept.
Miller (Wade) Associates, Inc., Arlington, VA.
Oct 90, 190p
Portions of the document are illegible. Supersedes PB89-192421. Errata sheet inserted. Sponsored by Environmental Protection Agency, Washington, DC. Office of Drinking Water.

The document estimates the information burden of water systems and the states to implement the regulatory requirements.

Keywords: *Potable water, *Data acquisition, *Water treatment, Water pollution control, Constraints, States(United States), Regulations, National government, Requirements, Water supply, Statistical data, Monitoring, Laboratories, *Drinking water, Synthetic organic chemicals, Inorganic chemicals, Justification.

PB91-143453/REB PC **A12**/MF **A02**
Environmental Protection Agency, Washington, DC. Office of Drinking Water.
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989). Final rept.
Miller (Wade) Associates, Inc., Arlington, VA.
Oct 90, 271p*
See also PB89-192413. Sponsored by Environmental Protection Agency, Washington, DC. Office of Drinking Water.

The document updates the March 31, 1989 RIA to consider the revised impacts of 8 inorganic chemicals on States and water suppliers.

Keywords: *Potable water, *Regulations, *Cost analysis, *Water pollution control, Inorganic compounds, Water treatment, Monitoring, National government, State government, Water supply, Cost estimates, Tables(Data), *Inorganic chemicals, Small water systems, Drinking water.

PB91-143461/REB PC **A08**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Drinking Water Criteria Document for Methoxychlor. Final rept.
Syracuse Research Corp., NY.
S. B. Wilbur, and M. W. Neal. Aug 90, 175p ECAO-CIN-425
Contract EPA-68-03-3112
Supersedes PB89-192215. Sponsored by Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

The document deals with the drinking water health effects of Methoxychlor through the review of several studies. The studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *DDT, Chlorine organic compounds, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Inhalation, Skin(Anatomy), Carcinogens, Metabolism, Liver, Tables(Data), *Drinking water, *Water pollution standards, *Health assessment.

PB91-143479/REB PC **A03**/MF **A01**
Quantification of Toxicological Effects of Tetrachloroethylene.
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
Dec 90, 39p
Supersedes PB89-192280.

The document quantifies the drinking water health effects of tetrachloroethylene through the review of several studies. These studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies.

Keywords: *Potable water, *Water quality, *Toxicology, *Tetrachloroethylene, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Animals, Dosage, Epidemiology, Mathematical models, Risk, Ingestion(Biology), Children, Carcinogens, Inhalation, *Drinking water, *Water pollution standards, *Health assessment, Adults.

PB91-143487/REB PC **A09**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Drinking Water Criteria Document for Toluene. Final rept.
Syracuse Research Corp., NY.
J. M. Becker, and M. W. Neal. Jul 90, 187p ECAO-CIN-408
Contract EPA-68-03-3112

Supersedes PB89-192298. Sponsored by Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

The document deals with the drinking water health effects of Toluene through the review of several studies. The studies include animal and humans. Physical and chemical properties are discussed. Carcinogenicity of the compound is reviewed and evaluated through various studies. Any existing guidelines and standards are presented.

Keywords: *Potable water, *Water quality, *Toxicology, *Toluene, Physical properties, Chemical properties, Public health, Exposure, Humans, Reaction kinetics, Air pollution, Inhalation, Vapors, Headache, Fatigue(Biology), Psychoses, *Drinking water, *Water pollution standards, *Health assessment.

PB91-144667/REB PC **A06**/MF **A01**
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
R. A. Hites, and R. L. Harless. Jan 91, 123p EPA/600/3-91/002
Prepared in cooperation with Indiana Univ. at Bloomington.

Polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) are toxic compounds which are dispersed through the environment by atmospheric transport and deposition. It has been previously shown that there is a varying mixture of these compounds produced by combustion (the source of these compounds). Therefore, the goal of the project was to study PCDD/F in ambient air and rain samples (the transport media linking source to sink) in an effort to enhance the understanding of the physical/chemical parameters controlling the transformation which take place during atmospheric transport and deposition. Analytical methods included high-volume air sampling, wet-only rain sampling, column chromatographic cleanup, and an electron capture, negative ionization form of gas chromatographic mass spectrometry. Air and rain samples were divided into vaporphase and particle-bound or dissolved and particle-bound fractions, respectively. The results showed that total PCDD/F concentrations in Bloomington, Indiana, has a geometric standard deviation range from 1.4 to 4.4 pg/cu m in air and from 63 to 220 pg/L in rainwater. The vapor-to-particle ratio for individual congeners ranged from 0.01 to 30. The ratio is controlled by the individual congener's vapor pressure and the ambient air temperature. Estimates of washout and the Henry's law constants were obtained using average ambient air and rain data.

Keywords: *Dioxins, *Furans, *Deposition, *Pollution transport, Air pollution monitoring, Urban areas, Rural areas, Bloomington(Indiana), Indiannapolis(Indiana), Trout Lake(Wisconsin), Rain, Incinerators, Vapor pressure, Tables(Data), Graphs(Charts).

PB91-144675/REB PC **A06**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Evaluation of Exposure Markers.
Integrated Lab. Systems, Research Triangle Park, NC.
R. R. Tice. Dec 90, 109p EPA/600/4-90/034
Contract EPA-68-C8-0069
Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV., and Army Biomedical Research and Development Lab., Fort Detrick, MD.

The primary purpose of the research has been to determine the suitability of the single cell gel (SCG) assay technique for detecting DNA damage induced by genotoxic pollutants in cells sampled from various organs of rodents and in cells sampled from humans. The major chemicals evaluated include acrylamide, trichloroethylene, and dimethylbenzanthracene. The focus of the research has been on: (1) evaluating the specificity and sensitivity of the technique by determining the magnitude and kinetics of DNA damage induced in cultured mammalian cells by a variety of genotoxic chemicals; (2) developing appropriate methods for isolating individual cells from organs of rodents; (3) evaluating the kinetics of DNA damage induced in various organs of male mice; (4) examining the applicability of the assay to peripheral blood leukocytes obtained from humans exposed to genotoxic agents; and (5) comparing the levels of DNA damage in the organs of mice collected at an EPA Superfund site. Based on the results obtained, the technique will provide, with greater sensitivity than any other method currently available, data on the induction and persistence of organ-specific levels of DNA damage resulting from environmental exposure to genotoxic pollutants.

Keywords: *Toxicity, *Mutagenicity tests, *DNA damage, *Biological markers, *Environmental pollutants, Acrylamides, Trichloroethylene, In vivo analysis, Leukocytes, Mice, Superfund sites, Chinese hamsters, Metabolic activation, In vitro analysis, Carcinogenicity tests, Hazardous wastes, *Single gel electrophoresis, Dimethylbenzanthracenes.

PB91-144683/REB PC **A05**/MF **A01**
Catalog of Superfund Program Publications, FY-91.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Oct 90, 82p* EPA/540/8-90/015

The catalog includes the available Superfund publications for the fiscal year 1991. Includes document abstracts, ordering information, subject and numeric indexes.

Keywords: *Superfund, *Waste management, *Hazardous materials, *Catalogs(Publications), US EPA, Abstracts, Documents, Subject indexing, Remedial action, Technology utilization, Purchasing, Program management, Computer applications, Preremedial action.

PB91-144691/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC. Reproductive Toxicology Branch.
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats. Journal article.
NSI, Inc., Research Triangle Park, NC.
G. R. Klinefelter, J. W. Laskey, N. R. Roberts, V. Slott, and J. D. Suarez. c1990, 19p EPA/600/J-90/284
Contract EPA-68-02-4450
Pub. in Toxicology and Applied Pharmacology, v105 n2 p271-287 Sep 90. Sponsored by Health Effects Research Lab., Research Triangle Park, NC. Reproductive Toxicology Branch.

Ethane dimethanesulfonate (EDS), a compound cytotoxic to Leydig cells which causes transient infertility, was used in a 4 d post-exposure experimental protocol designed to identify any effects this compound might exert on the epididymis. The techniques of efferent duct ligation and testosterone(T) implantation were used to negate the role of testicular effects on the epididymal parameters. EDS was shown to affect the epididymis in a dose-dependent fashion. The action of EDS on the epididymis is in part due to the androgen deprivation caused by the elimination of Leydig cells in the testis since T implantation prevented some of the morphological changes in the epididymis, as well as some of the changes in sperm proteins and motility. However, neither efferent duct ligation nor T implanatation prevented the formation of sperm granulomas in the caput epididymis, the distinct morphological alterations of the corpus epididymis, the modification of certain sperm membrane proteins, or the decrease in the progressive motility and velocity of sperm following EDS treatment.

Keywords: *Toxicity, *Epididymis, Rats, Electron microscopy, Dose-response relationships, Spermatozoa, Cell survival, Leydig cells, Sperm motility, Morphology, Membrane proteins, Sex hormones, Testis, Organ weight, Infertility, Reprints, *Ethane dimethanesulfonate.

PB91-144709/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y. Journal article.
Indiana Univ. at Bloomington.
D. F. Charles, M. W. Binford, E. T. Furlong, R. A. Hites, and M. J. Mitchell. c1990, 49p EPA/600/J-90/266
Pub. in Jnl. of Paleolimnology 3, p195-241 1990. Prepared in cooperation with State Univ. of New York at Albany. Coll. of Environmental Science and Forestry, and Harvard Univ., Cambridge, MA. Graduate School of Design. Sponsored by Corvallis Environmental Research Lab., OR., and National Science Foundation, Washington, DC.

Paleoecological analysis of the sediment record of 12 Adirondack lakes reveals that the 8 clearwater lakes with current pH<5.5 and alkalinity <10 microeq/l have acidified recently. The onset of the acidification occurred between 1920 and 1970. Loss of alkalinity, based on quantitative analysis of diatom assemblages, ranged from 2 to 35 microeq/l. The acidification trends are substantiated by several lines of evidence including stratigraphies of diatom, chrysophyte, chironomid, and cladoceran remains, Ca:Ti and Mn:Ti ratios, sequentially extracted forms of Al, and historical fish data. Acidification trends appear to be continuing in some lakes, despite reductions in atmospheric sulfur loading that began in the early 1970s. The primary cause of the acidification trend is clearly increased atmospheric deposition of strong acids derived from the combustion of fossil fuels. Natural processes and watershed disturbances cannot account for the changes in water chemistry that have occurred, but they may play a role. Sediment core profiles of Pb, Cu, V, Zn, S, polycyclic aromatic hydrocarbons, magnetic particles, and coal and oil soot provide a clear record of increased atmospheric input of materials associated with the combustion of fossil fuels beginning in the late 1800s and early 1900s.

Keywords: *Acid rain, *Paleoecology, *Lakes, Sediments, pH, Water chemistry, Graphs(Charts), Environmental monitoring, Adirondack Mountains, Reprints.

PB91-144717/REB PC **A03**/MF **A01**
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
W. H. Snyder. c1990, 20p EPA/600/J-90/138
Pub. in Atmospheric Environment, v24A n8 p2071-2088 1990.

Wind-tunnel and towing-tank studies conducted over the past 10 years at the U.S. Environmental Protection Agency's Fluid Modeling Facility (FMF) of flow and diffusion in complex terrain are reviewed. A primary impetus for the work was EPA's Complex Terrain Model Development Program (CTMDP)--designed to develop reliable atmospheric dispersion models applicable to large pollutant sources in complex terrain, with primary emphasis on plume impaction during nighttime stable conditions. The FMF interacted closely with model developers participating in the CTMDP and provided support in various ways through the conduct of a wide range of laboratory studies. At the beginning of the program, the FMF provided direct support as an aid to planning the details and strategies of the field experiments and testing the limits of applicability of the dividing-streamline concept. Later work included exercises of 'filling in the gaps' in the field data, furthering the understanding of the physical mechanisms important to plume impaction in complex terrain and in stably stratified flows in general, testing various modeling assumptions, providing data for 'calibration' of various modeling parameters, and testing the ability of the laboratory models to simulate full-scale conditions. Simultaneously, the FMF responded to the needs of the regulatory arm of EPA, the Office of Air Quality Planning and Standards (OAQPS), by providing guidance concerning expected terrain effects and by conducting demonstration studies. These latter studies were concerned primarily with simulation of diffusion in the neutral atmospheric boundary layer. Finally, several supplemental studies were conducted, broadening and expanding upon the specific requests of the model developers and the OAQPS. The highlights of the FMF complex-terrain research work are described herein.

Keywords: *Fluid flow, *Atmospheric diffusion, *Model tests, Air pollution, Plumes, Terrain, Wind tunnels, Hills, Field tests, Streamline shape, Research projects, Reprints.

PB91-144733/REB PC **A02**/MF **A01**
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants. Journal article.
Corvallis Environmental Research Lab., OR.
J. S. Fletcher, F. L. Johnson, and J. C. McFarlane. c1988, 10p EPA/600/J-88/556
Pub. in Environmental Toxicology and Chemistry, v7 p615-622 1988. Prepared in cooperation with Oklahoma Univ., Norman. Dept. of Botany and Microbiology.

The PHYTOTOX database was analyzed to determine the taxonomic and geographical scope of information published on the toxicity of organic chemicals to terrestrial vascular plants. The data tabulated show the 20 most frequently tested chemicals, the 35 most often used plant genera and species, and the frequency of toxicity testing conducted on plants maintained under different growth conditions (greenhouse, cultivated field, wild, etc.). The information is discussed with regard to its applicability to environmental issues of concern. Examination of the data indicated that the influence of toxic waste compounds on plants is virtually unknown and that little research attention has been focused on the influence of chemical insult on the growth and development of wild plants.

Keywords: *Environmental pollutants, *Toxicity, Species diversity, Taxonomy, Toxic substances, Tables(Data), Geography, Reprints, *Terrestrial vascular plants, *PHYTOTOX database.

PB91-144741/REB PC **A03**/MF **A01**
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'. Journal article.
Environmental Research Lab.-Narragansett, Newport, OR. Mark O. Hatfield Marine Science Center.
T. H. DeWitt, G. R. Ditsworth, and R. C. Swartz. c1988, 28p EPA/600/J-88/555, ERLN-N040
Pub. in Marine Environmental Research 25, p99-124 1988. Prepared in cooperation with Oregon State Univ., Newport. Hatfield Marine Science Center.

Effects of sediment particle size and water content on the survival of the amphipod. Rhepoxynius abronius, were examined by manipulating these natural sediment features within static laboratory microcosms. Mean amphipod survival in fine, uncontaminated, field sediments (> or = to 80% silt-clay) can be 15% lower than survival in native sediment. Storage of sediments at 4 C over 7-14 days did not change sediment toxicity, but handling (i.e. elutriation and recombination) of muddy sediments increased toxicity. Sediment particle size and organic content had greater impact on the survival of R. abronius than did sediment water content in modifying amphipod survival, but one can not independently separate the effects of these two sediment variables. A new set of criteria is proposed to interpret toxicity results from the amphipod bioassay in the light of the mortality associated with fine sediment particle size.

Keywords: *Water pollution effects(Animals), *Marine biology, *Sediments, Field tests, Puget sound, Particle size, Bioassay, Environmental monitoring, Mortality, Chemical water pollutants, Reprints, *Rhepoxynius abronius.

PB91-144758/REB PC **A03**/MF **A01**
Contaminant Loading from Fox River to Lower Green Bay. Journal article.
Environmental Research Lab.-Narragansett, Newport, OR.
M. A. Abdelrhman, and J. F. Paul. c1989, 12p EPA/600/J-89/493, ERLN-1120
Pub. in Estuarine and Coastal Modeling, p452-461 1989. Prepared in cooperation with Kuwait Inst. for Scientific Research, Safat.

The heavily industrialized lower reach of the Fox River, downstream of the DePere Dam, and lower Green Bay, Lake Michigan, are modeled. Hydrodynamics and contaminant transports to the bay are obtained from three-dimensional numerical models. The effect of outfalls located on the river is included in the analysis. Model results indicate that the contaminant transport in the river is dominated by: the dam outflow, which tends to slowly flush contaminants downstream through the river and into the bay; winds which vertically mix contaminants in the river and produce uniform vertical distributions; and bay seiche activity which delays loadings to the bay during half the seiche cycle then enhances it during the other half. Wind mixing, wind-generated currents, and seiching control contaminant transport in the lower bay.

Keywords: *Mathematical models, *Environmental transport, *Water pollution, *Green Bay, Fox River, Industrial wastes, Wind(Meteorology), Hydrodynamics, Water flow, Stream flow, Lake Michigan, Currents(Water), Great Lakes, Vertical migration.

PB91-144766/REB PC **A03**/MF **A01**
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
D. W. Hand, J. C. Crittenden, H. Arora, J. M. Miller, and B. W. Lykins. Jan 89, 13p EPA/600/J-89/490
Pub. in Jnl. of American Water Works Association, p67-77 Jan 89.

A liquid-phase granular activated carbon (GAC) pilot plant and a full-scale GAC adsorber were designed, built, and operated in order to evaluate their performance for treating a groundwater contaminated with several volatile and synthetic organic chemicals. Several empty bed contact times (EBCTs) ranging from 1 to 30 min were used during the pilot-plant study, and a simple method for evaluating the GAC use rate as a function of the EBCT was developed and demonstrated for dichloroethene and trichloroethene (TCE). Pilot-plant data were compared with the pore surface diffusion model, which considers external and internal mass transfer mechanisms of pore and surface diffusion. Natural organic matter in the water was found to decrease GAC capacity and kinetics for TCE.

Keywords: *Activated carbon treatment, *Ground water, *Pilot plants, *Field tests, Graphs(Charts), Water pollution, Organic solvents, Wausdu(Wisconsin), Trichloroethene, Dichloroethene, Surface properties, Organic wastes, Adsorbents, Reprints.

PB91-144774/REB PC **A02**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane. Journal article.
RMT, Inc., Greenville, SC.
J. M. Henson, M. V. Yates, and J. W. Cochran. c1989, 9p EPA/600/J-89/489
Grant EPA-R-812220
Pub. in Jnl. of Industrial Microbiology, v4 n1 p29-35 Jan 89. Prepared in cooperation with California Univ., Riverside. Dept. of Soil and Environmental Sciences, Illinois Dept. of Energy and Natural Resources, Champaign. Hazardous Waste Research and Information Center, and Northrop Services, Inc., Ada, OK. Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

Soil was taken from the top 10 cm of a soil column that removed halogenated aliphatic hydrocarbons in the presence of natural gas. The soil was used as an enrichment inoculum to determine that the removals seen in the soil column were in fact of a microbiological nature. Methane served as the source of carbon and energy and was consumed immediately by the enrichments. After several transfers of the enrichments, a stable consortium of at least three bacterial types was obtained. The predominant bacterium was a nonmotile, gram-negative coccus. The stable consortium was able to remove chlorinated methanes, ethanes, and ethylenes when grown with methane and oxygen in the headspace. Methane was required for the removals to be observed. Acetylene inhibited th removals, which further suggests the involvement of methanotrophs. Benzene and toluene were removed by the mixed culture with or without methane in the headspace. Fatty acid analysis of the mixed culture resulted in a profile that indicated that the predominant organism was a type II methanotroph. The study provides further evidence that methanotrophic bacteria are capable of cometabolizing a wide range of chlorinated methanes, ethanes, and ethylenes. (Copyright (c) 1989 Society for Industrial Microbiology.)

Keywords: *Water pollution control, *Land pollution, *Biodeterioration, *Chlorine aliphatic compounds, Cultures(Biology), Subsurface investigations, Microorganisms, Methane, Waste disposal, Soil contamination, Ground water, Natural gas, Ethanes, Ethylenes, Reprints.

PB91-144782/REB PC **A02**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario. Journal article.
Minnesota Univ.-Duluth. Natural Resources Research Inst.
A. R. Batterman, P. M. Cook, K. B. Lodge, D. B. Lothenbach, and B. C. Butterworth. c1989, 10p EPA/600/J-89/488
Pub. in Chemosphere, v19 n1-6 p451-458 1989. Sponsored by Environmental Research Lab.-Duluth, MN.

A long-term laboratory exposure of lake trout to Lake Ontario sediment and smelt (food chain) provided comprehensive bioaccumulation relationships for 2,3,7,8-TCDD. The laboratory exposure was designed to investigate the rates of TCDD uptake via water, sediment, and food under simulated Lake Ontario conditions. Innovative methods of preparing sediment, dosing sediment, preparing food and feeding the fish were developed. Results indicated that bioaccumulation of 2,3,7,8-TCDD occurs primarily through the food chain and secondarily through contact with contaminated sediment. The water exposure route, even under simulated equilibrium conditions, and low suspended solids concentrations did not appear to make a significant contribution to 2,3,7,8-TCDD bioaccumulation.

Keywords: *Water pollution effects(Animals), *Tetrachlorodibenzodioxins, *Trout, *Lake Ontario, *Environmental exposure pathways, Food chains, Pharmacokinetics, Sediments, Chemical water pollution, Reprints.

PB91-144790/REB PC **A02**/MF **A01**
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry. Journal article.
Environmental Research Lab., Narragansett, RI.
K. A. Newman, F. M. M. Morel, and K. D. Stolzenbach. c1990, 10p EPA/600/J-90/268, ERLN-NX05
Pub. in Environmental Science and Technology, v24 n4 p506-513 1990. Prepared in cooperation with Massachusetts Inst. of Tech., Cambridge. Ralph M. Parsons Lab.

A new technique for detecting particles in natural waters relies upon analysis of fluorescent emission by flow cytometry. Fluorescent pigment particles ranging in radius from around 0.1 to 5 micrometers are available in sufficient quantity to be useful as model particles. Laboratory coagulation and settling experiments analyzed by fluorometry demonstrate that the efficiency with which the pigment particles coagulate with sewage particles is very low (less than 0.0005). Hence, in field applications these particles provide the limiting case of low-interaction behavior relative to natural particles. Removal from laboratory columns occurs primarily by noninteractive settling while thermal convection currents maintain nearly uniform particle concentration within the columns. Observed decreases in particle number are exponential (first order) for each size class as predicted for settling from well-mixed suspensions. The decrease in total suspended particle mass is higher order as a result of the difference in settling rates among particles. Thus, a system in which noninteractive settling dominates mimics systems in which coagulation processes are important. Flow cytometric analysis of particles removed by noninteractive settling shows the fluorescent emission from individual particles to be proportional to the particle surface area. These results enable flow cytometry to be used to detect, count, and size large numbers of particles rapidly. (Copyright (c) by the American Chemical Society, 1990.)

Keywords: *Particle size distribution, *Water, *Cell flow systems, *Fluorescence, *Sewage treatment, Coagulation, Settling, Laboratory tests, Reprints.

PB91-144808/REB PC **A02**/MF **A01**
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants. Journal article.
Corvallis Environmental Research Lab., OR.
C. McFarlane, T. Pfleeger, and J. Fletcher. c1990, 10p EPA/600/J-90/267
Pub. in Environmental Toxicology and Chemistry, v9 p513-520 1990. Prepared in cooperation with Oklahoma Univ., Norman. Dept. of Botany and Microbiology.

Eight species of plants were exposed to nitrobenzene in a hydroponic solution. Four species experienced no depression of either transpiration or photosynthetic rates, while one was rapidly killed and the other three were temporarily affected but recovered from the treatment. Uptake of nitrobenzene was passive and was shown to be proportional to the rate of water flux in each species. The transpiration stream concentration factor (TSCF) was 0.72. The root concentration

factor (RCF) was variable between the species and was higher than expected, presumably due to deposits of insoluble metabolic products. All of the species examined displayed a capacity to chemically alter nonpolar nitrobenzene into both polar and insoluble products. Volatilization of nitrobenzene from the leaves was a major route of chemical loss.

Keywords: *Water pollution effects(Plants), *Nitrobenzenes, *Toxicity, Pharmacokinetics, Water intake, Dose-response relationships, Plant metabolism, Photosynthesis, Species specificity, Volatilization, Reprints.

PB91-144816/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Most Dilute Lake in the World. Journal article.
E and S Environmental Chemistry, Inc., Corvallis, OR.
J. M. Eilers, T. J. Sullivan, and K. C. Hurley. c1990, 8p EPA/600/J-90/265
Contract EPA-69-03-3246
Pub. in Hydrobiologia 199, p1-6 1990. Prepared in cooperation with NSI Technology Services Corp., Corvallis, OR. Sponsored by Corvallis Environmental Research Lab., OR.

Lake Notasha, near the crest of the Oregon Cascade mountain range, is the most dilute lake known. The measured conductivity during two visits was 1.3 and 1.6 microS/cm, with a sum of base cations of 9 and 18 microequivalents/L; bicarbonate was the dominant anion. Most of the cations in the lake can be accounted for by evapoconcentration of precipitation although input of weathering products cannot be excluded as a source. The topographic watershed has a mixed coniferous forest, but the hydrologic setting of the lake apparently minimizes watershed contributions. This feature makes lakes such as Notasha appropriate receptors for monitoring atmospheric contaminants. (Copyright (c) 1990 Kluwer Academic Publishers.)

Keywords: *Lakes, Electrical resistivity, Cations, Anions, Hydrology, Precipitation(Meteorology), Evaporation, Concentrating, Air pollution monitoring, Cascade Range, Oregon, Reprints.

PB91-144824/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area. Journal article.
NSI Technology Services Corp., Corvallis, OR.
T. J. Sullivan, D. L. Kugler, M. J. Small, C. B. Johnson, and D. H. Landers. c1990, 12p EPA/600/J-90/264
Contract EPA-68-C8-0006
Pub. in Water Resources Bulletin, v26 n1 p167-176 Feb 90. Prepared in cooperation with E and S Environmental Chemistry, Inc., Corvallis, OR., Carnegie-Mellon Univ., Pittsburgh, PA., and Oregon State Univ., Corvallis. Dept. of Statistics. Sponsored by Corvallis Environmental Research Lab., OR.

Data from a recent survey conducted by the Adirondack Lake Survey Corporation were used to evaluate the influence of lake surface area on the acid-base status of lakes in Adirondack State Park, New York. Acid neutralizing capacity (ANC) in the small lakes (<4 ha) occurred more frequently at extreme values (>200, <0 microeq/L), whereas larger lakes tended to be intermediate in ANC. Consequently, acidic (ANC $=$ or <0) and lowpH lakes were typically small. The small lakes also exhibited lower Ca(2+) concentration and higher dissolved organic carbon than did larger lakes. Lakes $=$ or >4 ha were only half as likely to be acidic as were lakes $=$ or >1 ha in area. These data illustrate the dependence of lake chemistry on lake surface area and the importance of the lower lake area limit for a statistical survey of lakewater chemistry.

Keywords: *Adirondack Lake, *Water chemistry, *pH, *Acidification, Area, New York, Acid rain, Air water interactions, Deposition, Air pollution, Water pollution, Regional analysis, Statistical analysis, Reprints, *Acid neutralizing capacity.

PB91-144832/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data. Journal article.
North Carolina State Univ. at Raleigh.
M. C. Somerville, K. A. Dassle, and J. O. Rawlings. c1990, 12p EPA/600/J-90/263
Pub. in Crop Science, v30 n4 p836-844 1990. Sponsored by Corvallis Environmental Research Lab., OR.

Three methods of estimating confidence intervals for the parameters of Weibull nonlinear models are examined. These methods are based on linear approximation theory (Wald), the likelihood ratio test, and Clarke's (1987) procedures. Analyses are based on Weibull dose-response equations, developed from the National Crop Loss Assessment Network (NCLAN), that estimate yield as a function of ozone concentration. Comparisons among the three methods of confidence interval construction were also made for relative yield loss, a nonlinear function of the Weibull parameters. The results of these comparisons are considered along with the conclusions indicated using Clarke's measures of parameter-effects curvature and his seriousness criteria. Plots of the Wald and likelihood ration confidence intervals are shown for comparison. It is shown that in two cases the Wald confidence intervals are misleading, but in a third case they are entirely adequate. Clarke's methods identified the two cases where the linear approximation is inadequate and also showed whether his adjustment to the Wald would result in acceptable confidence intervals. The failure of the linear approximation appeared to be due to high variability and/or incomplete coverage of the response curve by the data. Comparisons of the Wald and likelihood ration confidence interval estimates for six other data sets showed the linear approximation to be adequate.

Keywords: *Ozone, *Plant reproduction, *Air pollution effects(Plants), *Crop yield, Mathematical models, Confidence limits, Comparative evaluations, Dose-response relationships, Reprints, *(NCLAN)National Crop Loss Assessment Network.

PB91-144840/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean. Journal article.
Agricultural Research Service, Beltsville, MD. Climate Stress Lab.
H. E. Heggestad, and V. M. Lesser. c1990, 10p EPA/600/J-90/262
Pub. in Jnl. of Environmental Quality, v19 p488-495 Jul-Sep 90. Prepared in cooperation with North Carolina Univ. at Chapel Hill. Dept. of Biostatistics. Sponsored by Corvallis Environmental Research Lab., OR.

The effects of ozone (O3) stress on bean yields and seed size of four soybean cultivars grown in open-top chambers in 1981, 1982, and 1983 are presented. The O3 treatments included charcoal filtered (CF) and nonfiltered (NF) air, and 0.03, 0.06, and 0.09 microL/L O3 added 7 h/d to NF air. The effects of SO2 in concentrations from 0.005 to 0.224 microL/L (4 h/d, 5 d/wk) from the seedling stage to maturity were studied in 1981 and 1982. In 1982 and 1983 the effects of soil moisture stress (SMS) and well-watered (WW) soil conditions on the response of soybean to O3 stress were determined. The primary objective was the evaluation of 3 yr of soybean data from the site using the nonlinear Weibull and the polynomial dose-response models to relate yield responses to O3 exposure doses. The variables also included SO2, soil moisture, and cultivar. The homogeneity of the response equations were compared to permit development of the smallest set of homogeneous equations over years. Both O3 and SO2 negatively impacted bean yields and seed size. No interactions between O3 and SO2 were indicated. With the Weibull model, interactions between O3 and soil moisture were observed with 'Forrest' in 1982 and 'Williams' in 1983. With an O3 level considered typical in soybean production areas compared to background O3 and using all data from 3 yr of experiments, the Weibull model predicted the same (15%) mean yield loss under both SMS and WW regimes.

Keywords: *Soybeans, *Ozone, *Sulfur dioxide, *Soil water, *Air pollution effects(Plants), Dose-response relationships, Mathematical models, Plant growth, Seeds, Plant reproduction, Reprints.

PB91-144857/REB PC **A03**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization. Journal article.
Stanford Univ., CA. Dept. of Civil Engineering.
P. V. Roberts, G. D. Hopkins, D. M. Mackay, and L. Semprini. c1990, 17p EPA/600/J-90/261
Pub. in Ground Water, v28 n4 p591-604 Jul/Aug 90. Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

Careful site characterization and implementation of quantitative monitoring methods are prerequisites for a convincing evaluation of enhanced biostimulation for aquifer restoration. The paper describes the characterization of a site at Moffett Naval Air Station, Mountain View, California, and the implementation of a data acquisition system suitable for real-time monitoring of subsequent aquifer restoration experiments. A shallow, confined aquifer was chosen for the enhanced biodegradation demonstration, and was shown to have suitable hydraulic and geochemical characteristics. Injection and extraction wells were installed at a distance of 6 m, with intermediate monitoring wells at distances of 1, 2.2, and 4 meters from the injection well. Bromide tracer tests revealed travel times of 8 to 27 hours from the injection well to the various monitoring wells, and 20 to 42 hours from the injection well to the extraction well. Complete breakthrough of the tracer at the monitoring wells was facilitated by choosing a line of wells aligned with the regional flow, and selecting injection and extraction flow rates of approximately 1.5 and 10 liters/min. Transport studies were conducted with selected halogenated organic compounds. The retardation factors were found to range from approximately 2 to 12. The breakthrough responses for the more strongly sorbing compounds, e.g. TCE, exhibited pronounced tailing, such that a minimum period of several weeks was required to achieve complete saturation of the aquifer.

Keywords: *Ground water, *Aquifers, *Water pollution control, *Chlorine aliphatic compounds, *Biodeterioration, Water supply, Remedial action, Water quality, Field tests, Performance evaluation, Observation wells, Environmental transport, Chlorohydrocarbons, Vinyl chloride, Tetrachloroethylene, Site characterization, Reprints, Ethylene/trichloro, Ethylene/dichloro.

PB91-144865/REB PC **A03**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water. Journal article.
Illinois State Water Survey Div., Champaign. Aquatic Chemistry Section.
T. R. Holm. c1990, 16p EPA/600/J-90/260
Pub. in Chemical Speciation and Bioavailability, v2 n2 p63-76, 6 Apr 90. Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

Ground-water samples were collected from an uncontaminated and a contaminated site. Copper complexation was characterized by ion-selective electrode (ISE), fluorescence quenching (FQ), and cathodic stripping voltammetric (CSV) titrations. All of the samples were titrated at their natural pH values and some of the samples were also titrated at other pH values. For a total Cu concentration of ten to the minus sixth M, the free Cu(2+) concentrations in the samples from the uncontaminated site were all less than ten to the minus seventh M, while free Cu(2+) in the samples from the contaminated site were all less than ten to the minus eighth M. For a particular sample and total Cu concentration, the free Cu(2+) concentration decreased as the pH increased. Relative to ISE, FQ underestimated and CSV overestimated the degree of Cu(2+) binding. The Cu(2+)-complexing properties of the ground waters are similar to many published results for the same pH and for ligand concentrations normalized to T.O.C. Chemical equilibrium computations indicate that organic complexes would dominate Cu speciation in the uncontaminated ground waters for ten to the minus seventh to ten to the minus fifth M total Cu. In the contaminated ground waters, sulfide complexes would be the predominant Cu species for total Cu less than the total S(-11) concentration. Organic complexes would dominate Cu speciation for total Cu greater than total S(-11).

Keywords: *Ground water, *Chemical water pollutants, *Copper, Electrochemistry, pH, Fluorescence, Graphs(Charts), Biological availability, Metal complexes, Reprints.

PB91-144873/REB PC **A03**/MF **A01**
Reductive Dehalogenation: A Subsurface Bioremediation Process. Journal article.
Robert S. Kerr Environmental Research Lab., Ada, OK.
J. L. Sims, J. M. Suflita, and H. H. Russell. c1990, 21p EPA/600/J-90/259
Pub. in Remediation, v1 n1 Winter 90/91. Prepared in cooperation with Utah Water Research Lab., Logan, and Oklahoma Univ., Norman. Dept. of Botany and Microbiology.

Introduction and large-scale production of synthetic halogenated organic chemicals over the last fifty years has resulted in a group of contaminants that tend to persist in the environment and resist both biotic and abiotic degradation. The low solubility of these types of contaminants, along with their toxicity and tendency to accumulate in food chains, make them particularly relevant targets for remediation activities. Among the mechanisms that result in dehalogenation of some classes of organic contaminants are stimulation of metabolic sequences through introduction of electron donor and acceptor combinations; addition of nutrients to meet the needs of dehalogenating microorganisms; possible use of engineered microorganisms; and use of enzyme systems capable of catalyzing reductive dehalogenation. The current state of research and development in the area of reductive dehalogenation is discussed along with possible technological application of relevant processes and mechanisms to remediation of soil and groundwater contaminated with chlorinated organics. In addition, an overview of research needs is suggested, which might be of interest for development of in-situ systems to reduce the mass of halogenated organic contaminants in soil and groundwater.

Keywords: *Biodeterioration, *Dehalogenation, *Remedial action, *Water pollution control, *Land pollution, Ground water, Soil contamination, Microorganisms, Research and development, Halogen organic compounds, Enzymes, Catalysis, Oxidation reduction reactions, Anaerobic processes, Subsurface investigations, Reprints, Chemical reaction mechanisms.

PB91-144881/REB PC **A02**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Adsorption of Organic Cations to Natural Materials. Journal article.
Oregon State Univ., Corvallis. Dept. of Chemistry.
B. J. Brownawell, H. Chen, J. M. Collier, and J. C. Westall. c1990, 10p EPA/600/J-90/258
Grant EPA-R-814501
Pub. in Environmental Science and Technology, v24 n8 p1234-1241 1990. Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

The factors that control the extent of adsorption of amphiphilic organic cations on environmental and pristine surfaces have been studied. The sorbents were kaolinite, montmorillonite, two aquifer materials, and a soil; solutions contained various concentrations of NaCl and CaCl2, at various pH values. The distribution ratio of the dodecylpyridinium was strongly dependent on the nature and concentration of the inorganic cations in solution, but virtually independent of solution pH. The adsorption isotherms were distinctly nonlinear, even at very low surface concentrations of organic cations. A multisite adsorption model has been developed to describe adsorption over a wide range of dodecylpridinium, NaCl, and CaCl2 concentrations. Two types of adsorption reactions were found to be significant: exchange of pyridinium with an alkali-metal cation, and adsorption of pyridinium with chloride counterion. (Copyright (c) by the American Chemical Society, 1990.)

Keywords: *Pyridinium compounds, *Cations, *Clay minerals, *Adsorption, Sorbents, Isotherms, Water, Solutions, Ion exchange, Reprints.

PB91-144899/REB PC **A03**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes. Journal article.
Texas Univ. at Austin. Bureau of Economic Geology.
C. W. Kreitler, M. S. Akhter, and A. C. A. Donnelly. c1990, 15p EPA/600/J-90/257
Grant EPA-R-812786
Pub. in Environmental Geological Water Science, v16 n2 p107-120 1990. See also PB88-242573. Prepared in cooperation with Radian Corp., Austin, TX. Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

Hydrologic-hydrochemical investigations were conducted to determine the long-term fate of hazardous chemical waste disposed in the Texas Gulf Coast Tertiary formations by deep-well injection. The study focused on the hydrostatic section of the Frio Formation because it is the host of a very large volume of injected waste and because large databases of formation pressures and water chemistry are available. Three hydrologic regimes exist within the Frio Formation: a shallow fresh to moderately saline water section in the upper 3,000 to 4,000 ft (914 to 1,219 m): an underlying 4,000- to 5,000-ft-thick (1,219 to 1,524-m) section with moderate to high salinities: and a deeper overpressured section with moderate to high salinities. The upper two sections are normally pressured and reflect either fresh-water or brine hydrostatic pressure gradients. Geopressured conditions are encountered as shallow as 6,000 ft (1,829 m). The complexity of the hydrologic environment is enhanced due to extensive depressurization in the 4,000- to 8,000-ft-depth (1,219 to 2,438-m) interval, which presumably results from the estimated production of over 10 billion barrels (208 x 10 to the power of 6 cu m) of oil equivalent and associated brines from the Frio in the past 50 yrs. Because of the higher fluid density and general depressurization in the brine hydrostatic section, upward migration of these brines to shallow fresh ground waters should not occur. Depressured oil and gas fields, however, may become sinks for the injected chemical wastes. (Copyright (c) Springer Verlag 1990.)

Keywords: *Industrial wastes, *Texas Gulf, Coastal regions, Hydrology, Hydrogeochemistry, Injection wells, Water pollution, Path of pollutants, Brines, Reprints, *Texas Gulf Coast.

PB91-144907/REB PC **A03**/MF **A01**
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms. Journal article.
Environmental Research Lab.-Duluth, MN.
D. L. DeFoe, G. W. Holcombe, D. E. Hammermeister, and K. E. Biesinger. cMay 90, 16p EPA/600/J-90/256
Pub. in Environmental Toxicology and Chemistry, v9 p623-636 1990.

Solubility values for eight phthalate esters investigated ranged from 0.020 to 121 mg/L. Acute toxicity tests were conducted with fathead minnows (Pimephales promelas) and all eight phthalate esters. Acute and chronic tests were conducted with rainbow trout (Oncorhynchus mykiss) and Japanese medaka (Oryzias latipes) using di-2-ethylhexylphthalate. In addition, the chronic toxicity of the three di-n-butylphthalates and a mixture of these three phthalates was examined using daphnids (Daphnia magna). Di-n-octyl-ortho-phthalate, di-n-octyl-iso-phthalate and di-n-octyl-tere-phthalate were not acutely toxic to fathead minnows at concentrations that exceeded the water solubility estimates for each phthalate. Di-2-ethylhexylphthalate was not acutely toxic to any tested species at the highest tested concentrations. No significant adverse effects were observed on hatchability, survival or growth of rainbow trout exposed to a mean di-2-ethylhexylphthalate concentration of 0.502 mg/L (the highest concentration tested) in a 90-d embryo-larval test. However, exposure to a mean di-2-ethylhexylphthalate concentration of 0.554 mg/L significantly reduced the growth of Japanese medaka during a 168-d larval test. Significant adverse effects on reproduction occurred in 21-d chronic tests with D. magna at concentrations of 1.91, 0.20 and 0.64 mg/L for di-n-butyl-ortho-phthalate, di-n-butyl-iso-phthalate and di-n-butyl-tere-phthalate, respectively. A daphnid mixture test with these three phthalates showed complete additivity, which suggests a similar mode of toxic action.

Keywords: *Toxicity, *Freshwater fishes, *Water pollution effects(Animals), Solubility, Dose-response relationships, Bioassay, Reprints, *Phthlate esters, Pimephales promelas, Oncorhynchus mykiss, Oryzias latipes.

PB91-144915/REB PC **A03**/MF **A01**
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised). Journal article.
Environmental Research Lab.-Duluth, MN.
R. W. Carlson. c1990, 18p EPA/600/J-90/255
Pub. in Comparative Biochemistry and Physiology, v95C n2 p181-196 1990.

Bluegill (Lepomis macrochirus) were exposed to 13 organic chemicals representing five known toxic mechanisms and their ventilatory patterns examined for differential responses related to mechanism. Two quantifiable characteristics of the ventilatory pattern, ventilatory frequency and cough frequency, had diagnostic utility as clinical signs to differentiate chemicals that killed through narcosis from those that killed by other toxic mechanisms. Bluegill were also exposed to 2-chloroethanol and 2,4-pentanedione, chemicals previously considered as narcotic poisons but tested here as unknowns. Ventilatory patterns induced by these chemicals and time to death in LC100 concentrations support current theories that they kill by mechanisms other than narcosis.

Keywords: *Water pollution effects(Animals), *Chemical water pollutants, *Freshwater fishes, *Respiration, Structure-activity relationship, Mucus membranes, Cholinesterase inhibitors, Electron transport, Cough, Reprints, *Lepomis macrochirus.

PB91-144923/REB PC **A02**/MF **A01**
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions. Journal article.
Environmental Research Lab.-Duluth, MN.
V. M. Snarski. c1990, 7p EPA/600/J-90/253
Pub. in Applied and Environmental Microbiology, v56 n9 p2618-2622 Sep 90.

Interactions between Bacillus thuringiensis subsp. israelensis and fathead minnows, Pimephales promelas, were studied in laboratory exposures to two commercial formulations, Vectobac-G and Mosquito Attack. Mortality among fatheads exposed to 2.0 x 10 to the sixth power to 6.5 x 10 to the sixth power CFU/ml with both formulations was attributed to severe dissolved oxygen depletion due to formulation ingredients rather than to direct toxicity from the parasporal crystal. No adverse effects were observed at 6.4 x 10 to the fifth power CFU/ml and below. Fathead minnows rapidly accumulated high numbers of spores with 1 h of exposure to 2.2 x 10 to the fifth power CFU of Mosquito Attack per ml, producing whole-body counts of 4.0 x 10 to the sixth power CFU per fish. Comparison of counts on gastrointestinal tract samples and whole-body samples and high numbers of spores in feces indicated that ingestion was the major route of exposure. B. thuringiensis subsp. israelensis spore counts decreased rapidly after transfer of fish to clean water, with a drop of over 3 orders of magnitude in 1 day. Spores were rarely detected in fish after 8 days but were detectable in feces for over 2 weeks. These findings suggest that fish could influence the dissemination of B. thuringiensis subsp. israelensis, and possibly other microbial agents, in the aquatic environment. (Copyright (c) 1990, American Society for Microbiology.)

Keywords: *Biological pest control, *Bacillus thuringiensis, *Water microbiology, Feces, Bacteriological techniques, Water pollution effects(Animals), Bacterial spores, Colony-forming units, Reprints, *Pimephales promelas.

PB91-144931/REB PC **A02**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection. Journal article.
Minnesota Univ.-Duluth. Dept. of Chemistry.
W. Xue, A. K. Samanta, and R. M. Carlson. c1990, 7p EPA/600/J-90/252
Grants EPA-R813144-02, EPA-R813943
Prepared in cooperation with Academia Sinica, Beijing (China). Research Center for Eco-Environmental Sciences. Sponsored by Environmental Research Lab.-Duluth, MN.

The application of UV diode array detection in high-performance liquid chromatographic (HPLC) identification and quantification of several classes of synthetic and commercially available alkylated nucleobases is investigated. Quantitative spectral overlays of these compounds to methyl standard references from a spectral library and absorbance ratios at two maximal wavelengths are found to be useful in categorizing the solutes. They can be grouped into classes of com-

pounds originating from a specific nucleobase and classes of analogs having different alkyl substituents (e.g., methyl, ethyl, propyl, allyl, and benzyl) at the same position of the heterocycle. At a selected wavelength for alkylated nucleobases in the same class, the detector response factors are independent of the alkyl group (+ or - 10%). This technique provides a practical means for both qualitative and quantitative analysis of product distribution of DNA base alkylation by using only readily obtainable methylated derivatives as the reference standards.

Keywords: *Nucleosides, *Liquid chromatography, Ultraviolet detectors, Alkylation, Molecular structure, Reprints.

PB91-144949/REB PC **A02**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates. Journal article.
Minnesota Univ.-Duluth.
R. M. Carlson. c1990, 8p EPA/600/J-90/251
Grants EPA-R813144-02, EPA-R813943
Pub. in Environmental Health Perspectives, v87 p227-232 1990. Sponsored by Environmental Research Lab.-Duluth, MN.

Electrophilic character is associated with the ability of external agents to interact with centers of electron density in biological macromolecules and to cause the interruption or alternation of normal activity. With the observation of site specificity in mutagenic events, Pearson's hard/soft acid-based (HSAB) theory is presented as a useful concept in correlating chemical observations in the absence of detailed direct knowledge of the process. Methods for the evaluation of carbon electrophiles (e.g., carbocation character) as reactants are reviewed as potential physical parameters that could be applied in developing quantitative structure-activity relationships.

Keywords: *Deoxyribonucleic acids, *Electrophilic reactions, *Chemical bonds, Carbonium ions, Molecular structure, Molecular biology, Reprints, Hard and soft acids.

PB91-144956/REB PC **A03**/MF **A01**
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures. Journal article.
Environmental Research Lab.-Duluth, MN.
J. C. Brazner, and E. R. Kline. c1990, 11p EPA/600/J-90/250
Pub. in Canadian Jnl. of Fisheries and Aquatic Science, v47 p1157-1165 Jun 90. Prepared in cooperation with Wisconsin Univ.-Superior. Center for Lake Superior Environmental Studies.

A series of 12 littoral enclosures constructed within a 2 ha, mesotrophic pond near Duluth, Minnesota were used to determine if sublethal concentrations of the insecticide chlorpyrifos (0,0,-diethyl 0-(3,5,6-trichloro-2-pyridyl) phosphorothioate) could lead to changes in the diet and growth of fathead minnow larvae. Chlorpyrifos was added to the enclosures at nominal concentrations of 0.0, 0.5, 5.0, and 20.0 microgram/L in a single application on June 16, 1986. Growth rates of larvae were significantly reduced in the treated enclosures during the 32-d study period. The most dramatic differences in the mean size of larvae from the four treatment groups were observed 15 d posttreatment. These differences corresponded to the most significant reductions in cladoceran, copepod, rotifer, and chironomid populations in the treated enclosures. These results indicate that toxicity to chlorpyrifos-sensitive invertebrate forage species forced dietary changes that led to reduced growth of native fathead minnow larvae in the treated enclosures.

Keywords: *Water pollution effects(Animals), *Dursban, *Feeding behavior, *Littoral zone, *Freshwater fishes, Growth, Larvae, Body weight, Reprints, Pimephales promelas.

PB91-144964/REB PC **A02**/MF **A01**
National Inst. of Environmental Health Sciences, Research Triangle Park, NC.
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart. Journal article.
Environmental Research Lab.-Narragansett, Newport, OR. Mark O. Hatfield Marine Science Center.
J. W. Nichols, and L. J. Weber. c1989, 7p EPA/600/J-90/248
Pub. in Canadian Jnl. of Zoology, v68 p825-829 May 90. Sponsored by National Inst. of Environmental Health Sciences, Research Triangle Park, NC.

The contribution of myoglobin to cardiac performance and O2 consumption was investigated using an isolated perfused buffalo sculpin (Enophrys bison) heart preparation. Dose-response studies at ambient (150 Torr)(1 Torr=133.322 Pa) O2 tensions were conducted as a means of selecting an oxidizing agent with high activity toward myoglobin, while minimizing the possibility of toxic side effects. Treatment with 10.0 microM phenylhydroxylamine oxidized greater than 95% of intracellular myoglobin but did not affect pulse pressure, peak dP/dt, or heart rate. The functional importance of myoglobin was investigated by perfusing electrically paced hearts with 10.0 microM phenylhydroxylamine at physiological (32 Torr) O2 tensions. Inactivation of myoglobin by oxidation with phenylhydroxylamine had no effect on cardiac performance or O2 consumption.

Keywords: *Myoglobin, *Heart, *Buffaloes, Oxygen consumption, Heart function tests, In vitro analysis, Dose-response relationships, Heart rate, Reprints, *Enophrys bison, Phenylhydroxylamine.

PB91-144972/REB PC **A02**/MF **A01**
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents. Journal article.
Environmental Research Lab.-Duluth, MN.
G. T. Ankley, G. S. Peterson, J. R. Amato, and J. J. Jenson. c1990, 8p EPA/600/J-90/210
Pub. in Environmental Toxicology and Chemistry, v9 p1305-1310 1990. Prepared in cooperation with AScI Corp., Duluth, MN.

The toxicity of 44 freshwater effluents was evaluated using the fathead minnow (Pimephales promelas), a cladoceran (Ceriodaphnia dubia) and Microtox (Photobacterium phosphoreum). The latter assay was conducted with both sodium chloride (NaCl) and sucrose for osmotic protection of the bacteria in an effort to determine whether the use of sucrose increased the sensitivity of Microtox to samples exhibiting toxicity to the fish and cladoceran species. Twenty-three of the effluents tested were toxic to fathead minnows and/or C. dubia; of these, Microtox was sensitive to 10 when tested in NaCl and seven when tested in sucrose. In one instance testing in sucrose predicted toxicity to the fish and cladoceran species when testing in NaCl did not. Single chemical tests demonstrated that Microtox sensitivity was greater to zinc chloride, nickel chloride and methanol when tested in sucrose as opposed to NaCl, about equal to copper sulfate and phenol in sucrose and NaCl, and was far greater to chlorine when tested in NaCl than in sucrose. These results, as well as data from Microtox assays with effluents containing known toxicants, suggest that the use of sucrose, in conjunction with NaCl, for osmotic adjustment in the assay could be helpful as part of a suite of tests for identifying general classes of compounds responsible for toxicity in freshwater effluents.

Keywords: *Aquatic biology, *Mutagenicity tests, *Sucrose, *Sodium chloride, *Toxic substances, Water pollution effects(Animals), Industrial effluents, Reprints, *Microtox assay, Pimephales promelas, Ceriodaphnia dubia.

PB91-144980/REB PC **A03**/MF **A01**
Sorption of Organic Acid Compounds to Sediments: Initial Model Development. Journal article.
Environmental Research Lab., Athens, GA. Office of Research and Development.
C. T. Jafvert. c1990, 12p EPA/600/J-90/172
Pub. in Environmental Toxicology and Chemistry, v9 n10 p1259-1268 Oct 90.

The adsorption to sediments and soils of selected organic acid compounds was examined as a function of compound and sediment properties. Intrinsic compound properties examined included the dissociation constant (pKa) and hydrophobic character. Properties of the sediment examined included ionic strength and composition, organic carbon content and aqueous phase pH. By varying these properties, adsorption of both the neutral and anionic forms of these compounds was shown to occur. Adsorption of the neutral species occurs similarly to that of other hydrophobic compounds that do not contain acidic functional groups. Adsorption of the anionic species was influenced, however, by intrinsic chemical as well as electostatic factors. Adsorption of the anionic species to a specific sediment was modeled as a linearly dependent function of pH. Compounds used in this study included 2,4-dinitro-o-cresol (DNOC), 2-(2,4,5-trichlorophenoxy)propanoic acid (silvex), pentachlorophenol (PCP), 4-chloro-alpha-(4-chlorophenyl)benzeneacetic acid (DDA) and 4-(2,4-dichlorophenoxy-butyric acid (2,4-DB).

Keywords: *Organic acids, *Sediments, *Sorption, *Chemical water pollutants, pH, Chemical properties, Reprints, Dinitro-o-cresols, Trichlorophenoxy propanoic acid, Pentachlorophenol, Chloro-alpha-chlorophenyl benzeneacetic acid, Dichlorophenoxybutyric acid, DDA insecticide, Silvex, PCP herbicide, DNOC herbicide.

PB91-144998/REB PC **A02**/MF **A01**
Characteristics of Surfactants in Toxicity Identification Evaluations. Journal article.
Environmental Research Lab.-Duluth, MN.
G. T. Ankley, G. S. Peterson, M. T. Lukasewycz, and D. A. Jensen. c1990, 10p EPA/600/J-90/254
Pub. in Chemosphere, v21 n1-2 p3-12 1990. Prepared in cooperation with AScI Corp., Duluth, MN.

The behavior of a number of anionic, nonionic and cationic surfactants in manipulations associated with toxicity identification evaluations was studied. It was found that toxicity of the surfactants could be removed from aqueous samples via aeration, apparently through sublation. Filtration through a 1 micron glass fiber filter also effectively removed certain surfactants; the removal process appeared to be enhanced by the presence of particulate matter in samples. A final manipulation which efficiently removed toxicity caused by all three classes of surfactants was passage over a C18 solid phase exchange column; however, recovery of different types of surfactants from the C18 column with methanol/water elutions was quite variable.

Keywords: *Surfactants, *Toxicity, *Water pollution, Anions, Cations, Particle identification, Extraction, Filtration, Reprints.

PB91-145003/REB PC **A02**/MF **A01**
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas'). Journal article.
Environmental Research Lab.-Duluth, Monticello, MN. Monticello Ecological Research Station.
R. Schultz, and R. Hermanutz. c1990, 8p EPA/600/J-90/249
Pub. in Bulletin of Environmental Contamination and Toxicology 45, p568-573 1990.

Selenium, an essential trace element, may become concentrated in aquatic ecosystems to levels that are toxic to fish. Finley (1985) and Gillespie and Baumann (1986) have shown that selenium in overflow water from coal burning power plant settling basins contributed to a decline in fish populations. The leaching of selenium from the soil into water systems used for irrigation in highly seleniferous areas of the country poses another serious problem. Studies demonstrated that female bluegill sunfish transfer selenium to their progeny. The objective of the study was to determine whether the selenium levels within fathead minnow embryos in a semi-natural ecosystem resulted from direct uptake by the embryos following spawning, from female-to-progeny transferral, or from some combination of these two occurrences.

Keywords: *Minnows, *Toxicity, *Selenium, *Environmental monitoring, *Water pollution effects(Animals), Maternal-fetal exchange, Edema, Lordosis, Reprints, *Pimephales promelas.

PB91-145011/REB PC **A03**/MF **A01**
Development of Chicken Embryos in a Pulsed Magnetic Field. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Reproductive Toxicology Branch.
E. Berman, L. Chacon, D. House, B. A. Koch, and W. E. Koch. c1990, 14p EPA/600/J-90/287
Pub. in Bioelectromagnetics, v11 n2 p168-187 May 90. Prepared in cooperation with Centro Ramon y Cajal, Madrid (Spain). Dept. de Investigacion, North Carolina Univ. at Chapel Hill, Umea Univ. (Sweden), and University of Western Ontario, London.

Six independent experiments of common design were performed in laboratories in Canada, Spain, Sweden, and the United States of America. Fertilized eggs of domestic chickens were incubated as controls or in a pulsed magnetic field (PMF); embryos were then examined for developmental anomalies. Identical equipment in each laboratory consisted of two incubators, each containing a Helmholtz coil and electronic devices to develop, control, and monitor the pulsed field and to monitor temperature, relative humidity and vibrations. A unipolar, pulsed, magnetic field was applied to experimental eggs during 48 h of incubation. In each laboratory, ten eggs were simultaneously sham exposed in a control incubator (pulse generator not activated) while the PMF was applied to ten eggs in the other incubator. The procedure was repeated ten times in each laboratory, and incubators were alternately used as a control device or as an active source of the PMF. After a 48-h exposure, the eggs were evaluated for fertility. All embryos were then assayed in the blind for development, morphology, and stage of maturity. In five of six laboratories, more exposed embryos exhibited structural anomalies than did controls, although puntatively significant differences were observed in only two laboratories, and the significance of the difference in a third laboratory was only marginal.

Keywords: *Chickens, *Embryo, *Magnetic fields, Eggs, Morphology, Incubators, Abnormalities, Reprints, Helmholtz coil.

PB91-145029/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised). Journal article.
Lawrence Livermore National Lab., CA. Biomedical Sciences Div.
W. L. Bigbee, A. J. Wyrobek, R. G. Langlois, R. H. Jensen, and R. B. Everson. c1990, 14p EPA/600/J-90/286
Grants EPA-R-808642-01, EPA-R-811819-02-0
Pub. in Mutation Research, v240 n3 p165-175 Mar 90. Sponsored in part by contract DE-W-7405-ENG-48. Prepared in cooperation with National Inst. of Environmental Health Sciences, Research Triangle Park, NC. Epidemiology Branch. Sponsored by Health Effects Research Lab., Research Triangle Park, NC., and Department of Energy, Washington, DC.

A human in vivo somatic cell assay based on the enumeration of variant erythrocytes lacking expression of an allelic form of the cell-surface sialoglycoprotein, glycophorin A, was applied to the study of blood samples from patients obtained prior to, during, and following chemotherapy for malignant disease in order to determine the effect of mutagenic chemical agents on the frequency of variant cells. Significant elevations in the mean frequency of variant cells over pre-therapy and normal levels were observed in samples obtained during and after therapy. In a time-series study; 14 breast cancer patients treated with CAF (cyclophosphamide, adriamycin, 5-fluorouracil), CMF (cyclophosphamide, methotrexate, 5-fluorouracil), or VMF (vinblastine, methotrexate, 5-fluorouacil) adjuvant chemotherapy were sampled repeatedly during and after therapy. For the CAF and CMF patients an increase in the frequency of variant cells was observed with a lag in the appearance of induced variants after initiation of therapy; variant frequencies gradually increased during therapy reaching a maximum at or shortly after the end of therapy, then declined to near pre-therapy levels within 6 months. The maximum level of induced variants ranged from 2- to 7-fold over pre-therapy or normal levels depending on the combination of agents used.

Keywords: *Combined antineoplastic agents, *Toxicity, *Mutagenicity tests, *Erythrocytes, 8Glycophorin, Alleles, Breast neoplasms, Cross-sectional studies, Reprints.

PB91-145037/REB PC **A02**/MF **A01**
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Neurotoxicology Div.
C. J. Gordon, and F. S. Mohler. c1990, 7p EPA/600/J-90/285
Pub. in Alcohol, v7 n6 p551-555 Nov 90.

The study was designed to assess the thermoregulatory mechanisms responsible for the elevation in body temperature following ethanol administration when exposed to a high ambient temperature (Ta). Male rats of the Fischer 344 strain were gavaged with 20% ethanol at doses of 0, 2.0, 4.0, 6.0, or 8.0 g/kg and were then placed in an environmental chamber set at a Ta of 37 C. Oxygen consumption (metabolic rate), evaporative water loss (EWL), and activity recorded for 60 min. Colonic temperature was measured at the end of the 60 min period. Ethanol at doses of 2.0 g/kg and greater caused significant reductions in activity. EWL was significantly depressed at doses > 4.0 g/kg. Colonic temperature of animals given 6.0 and 8.0 g/kg was significantly greater than controls. Oxygen consumption was unaffected by ethanol dose. Visual observation of the behavior of the ethanol treated rats indicated that animals given doses > 4.0 g/kg were unable to groom saliva onto their fur which would contribute to the reduction in EWL in the heat.

Keywords: *Body temperature regulation, *Ethanol, *Toxicity, Heat stress, Rats, Oxygen consumption, Animal behavior, Oral administration, Metabolism, Reprints.

PB91-145045/REB PC **A02**/MF **A01**
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP. Journal article.
Health Effects Research Lab., Research Triangle Park, NC.
J. P. O'Callaghan, D. B. Miller, and J. F. Reinhard. c1990, 8p EPA/600/J-90/283
Pub. in Neuroscience Letters, v117 n1 and 2 p228-233 9 Apr 90. Prepared in cooperation with Wellcome Research Labs., Research Triangle Park, NC.

Acute administration of the dopaminergic neurotoxicant, 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) to the C57B1/6 mouse caused a rapid decrease in the amount of striatal tyrosine hydroxylase (TH), a marker of dopaminergic neurons, followed by a large increase in the astrocyte protein, glial fibrillary acidic protein (GFAP). The astrocyte (GFAP) response declined to baseline 3 weeks after administration of MPTP. Administration of a second dosage of MPTP at this time evoked a second GFAP response. The magnitude of the second response, however, was decreased in comparison to the response seen after only a single exposure to MPTP. Increasing the initial dosage of MPTP resulted in greater reductions of the second GFAP response. These data indicate that damage to striatal dopaminergic neurons reduces the signal available for initiating a second astrocyte response to MPTP.

Keywords: *Toxicity, *Corpus striatum, *Dopamine receptors, *Astrocytes, Glial fibrillary acidic protein, Tyrosine hydroxylase, Nerve cells, Mice, Dose-response relationships, Reprints, *Methyl phenyl tetrahydropyridine.

PB91-145052/REB PC **A03**/MF **A01**
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo. Journal article.
Health Effects Research Lab., Research Triangle Park, NC.
C. F. Blackman, S. G. Benane, D. E. House, and D. J. Elliott. c1990, 11p EPA/600/J-90/282
Pub. in Bioelectromagnetics, v11 p159-167 Sep 90. Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC.

The same underlying mechanism was initially considered to be responsible for the influence of the local geomagnetic field (LGF) in the in vitro chick-brain experiments of Blackman et al and the in vivo rat behavioral experiments of Thomas et al. However, subsequent work with the chick brain model showed that the effective LGF vector was effective only when there was a component orthogonal to the alternating field, while recently published results with an in vivo diatom model showed that a parallel orientation was required. A review of the exposure conditions in the rat behavioral experiments provides evidence that supports both the orthogonal and the parallel field components as potential bases for the phenomenon. Investigators who attempt to replicate the rat behavioral experiments must be aware of the conflicting exposure conditions that can be assumed to be operative, and design their experiments accordingly. Further testing is necessary to resolve the issue.

Keywords: *Magnetic fields, *Brain, In vivo analysis, In vitro analysis, Animal behavior, Chickens, Rats, Tissues(Biology), Oscillations, Reprints.

PB91-145060/REB PC **A02**/MF **A01**
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage. Journal article.
Health Effects Research Lab., Research Triangle Park, NC.
D. E. Graham, and H. S. Koren. cJun 89, 7p EPA/600/J-90/280
Pub. in American Review of Respiratory Disease, v142 n1 p152-156 Jul 90.

An influx of neutrophils (PMNs), a primary feature of acute inflammation, has been associated with the development of lower lung disorders, such as emphysema and idiopathic fibrosis, as well as airway hyperreactivity and increased mucus secretion. It was previously established that an acute inflammatory response in the upper respiratory tract of humans could be studied by analysis of nasal lavages (NL), which is inexpensive, non-invasive, and atraumatic. However, the relationship of the cellular changes in the upper respiratory tract to changes in the lower airways has not been thoroughly investigated in humans. Here the cellular changes detected in the NL with those detected in the bronchoalveolar lavage (BAL) taken from the same individual have been compared. Ten subjects were exposed to either filtered air or 0.4 ppm ozone (O3), with exercise, for 2 hrs. The NL was done prior to, immediately following an 18 hr post exposure, while the BAL was done only at 18 hr post exposure. A significant increase in PMNs was detected in the NL immediately post exposure to 03, (7.7-fold increase; $p = .003$), and remained elevated in the 18 hr post-03 NL (6.1-fold increase; $p < .001$).

Keywords: *Ozone, *Toxicity, *Air pollution effects(Humans), *Bronchoalveolar lavage fluid, *Inflammation, Biological markers, Nose(Anatomy), Emphysema, Fibrosis, Neutrophils, Reprints.

PB91-145078/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC. Neurotoxicology Div.
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile. Journal article.
NSI Technology Services Corp., Research Triangle Park, NC.
D. B. Peele, S. D. Allison, and K. M. Crofton. c1990, 14p EPA/600/J-90/279
Contract EPA-68-02-4450
Pub. in Toxicology and Applied Pharmacology, v105 n2 p321-332 Sep 90. Sponsored by Health Effects Research Lab., Research Triangle Park, NC. Neurotoxicology Div.

The effects on learning and memory produced by beta, beta prime-iminodipropionitrile (IDPN) were examined in rats 4 weeks after dosing. IDPN (600 mg/kg) prevented acquisition of a olfactory discrimination task and disrupted performance of passive avoidance conditioning in separate groups of animals. The disruptive effects on passive avoidance conditioning were dosage dependent. Rats from both control and treated groups were then tested using a standard hot-plate test. The results suggest that treatment with IDPN did not produce the observed effects on learning and memory by altering sensitivity to painful, external stimuli. In summary, administration of IDPN is capable of producing profound and long lasting disruption of learning and memory in rats. (Copyright (c) 1990 by Academic Press, Inc.)

Keywords: *Toxicity, *Learning disorder, *Memory, Avoidance learning, Pain, Rats, Smell, Taste, Reprints, *Iminodipropionitriles.

PB91-145086/REB PC **A02**/MF **A01**
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
D. G. Korich, J. R. Mead, M. S. Madore, N. A. Sinclair, and C. R. Sterling. c1990, 9p EPA/600/J-90/278

Pub. in Jnl of Applied and Environmental Microbiology, v56 n5 p1423-1428, May 90. Prepared in cooperation with Arizona Univ., Tucson.

Purified Cryptosporidium parvum oocysts were exposed to ozone, chlorine dioxide, chlorine, and monochloramine. Excystation and mouse infectivity were comparatively evaluated to assess oocyst viability. Ozone and chlorine dioxide more effectively inactivated oocysts than chlorine and monochloramine did. Greater than 90% inactivation as measured by infectivity was achieved by treating oocysts with 1 ppm of ozone (1 mg/liter) for 5 min. Exposure to 1.3 ppm of chlorine dioxide yielded 90% inactivation after 1 h, while 80 ppm of monochloramine required approximately 90 min. for 90% inactivation. The data indicate that C.parvum oocysts are 30 times more resistant to ozone and 14 times more resistant to chlorine dioxide than Giardia cysts exposed to these disinfectants under the same conditions. With the possible exception of ozone, the use of disinfectants alone should not be expected to inactivate C. parvum oocysts in drinking water. (Copyright (c) 1990, American Society for Microbiology.)

Keywords: *Ozone, *Chlorine, *Parasitic diseases, *Cryptosporidium, Giardia, Potable water, Disinfection, Kinetics, Mice, Reprints, *Chlorine dioxide, *Monochloramine, Oocysts.

PB91-145094/REB PC **A01**/MF **A01**
Research to Support the SDWA: Pushing Back the Envelope. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. M. Clark. c1990, 3p EPA/600/J-90/277
Pub. in AWWARF (American Water Works Association Research Foundation) Water Research Quarterly, v8 n2.

Changes in the drinking water utility industry are being driven by state and federal regulations and general advances in science and technology. These changes are forcing the industry to reexamine much of the knowledge one has taken for granted especially when writing or rewriting regulations. The need for sound information presents a real challenge to the research community. Establishments of a new type of relationship between federal and non-federal organizations has been made possible by the passage of the Federal Technology Transfer Act of 1986. The stakes are so high and time so short, and the consequence of error so great that ultimately USEPA and the water utilities will be forced to work together to solve these difficult problems.

Keywords: *Potable water, *Safe Drinking Water Act of 1974, *Research projects, Regulations, Technology transfer, National government, State government, US EPA, Water supply, Water utilities, Water treatment, Federal Technology Transfer Act of 1986.

PB91-145102/REB PC **A02**/MF **A01**
Update on Building and Structure Decontamination. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
N. P. Barkley. cJun 90, 7p EPA/600/J-90/276
Pub. in Jnl. of the Air and Waste Management Association, 1990.

Cleanup of the nation's hazardous waste sites is one of the top environmental priorities. Since the ultimate objective of many cleanup programs is to return the contaminated site and buildings on the site to active use, additional information regarding both established and emerging technologies for building decontamination is needed. A pilot scale study was performed at an actual Superfund Site to evaluate, side by side, the efficiency of PCB removal using two decontamination processes. One process entails the use of a shotblasting technique in which contaminated concrete surfaces are cut away and physically removed. The other process involves application of an alkali metal/polyethylene glycolate mixture directly to contaminated concrete surfaces for insitu degradation of PCB's. (Copyright (c) 1990--Air & Waste Management Association.)

Keywords: *Hazardous materials, *Buildings, *Decontamination, Concretes, Removal, Shot blasting, Structures, Comparison, Prototypes, Waste treatment, Floors, Concentration(Composition), Tests, Sampling, *Superfund, Cleanup, *Polychlorinated biphenyls, Alcali metals, Polyethylene glycolate.

PB91-145110/REB PC **A02**/MF **A01**
SITE Demonstration of the CF Systems Organics Extraction System. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. Valentinetti, J. McPherson, and L. Staley. c1990, 8p EPA/600/J-90/275
Pub. in Jnl. of Air and Waste Management Association, v40 n6 p926-931 Jun 90. Prepared in cooperation with Science Applications International Corp., McLean, VA., and Vermont Agency of Natural Resources, Waterbury.

The CF Systems Organic Extraction System was used to remove PCBs from contaminated sediment dredged from the New Bedford Harbor. This work was done as part of a field demonstration under the Superfund Innovative Technology Evaluation (SITE) program. The purpose of the SITE program is to provide an independent and objective evaluation of innovative processes. The purpose of this paper is to present the results of the SITE demonstration of this technology. Results of the demonstration tests show that the system, which uses high pressure liquefied propane, successfully removed PCBs from contaminated sediments in New Bedford Harbor. Removal efficiencies for all test runs exceeded 70%. Some operational problems occured during the demonstration which may have affected the efficiency with which PCBs were removed from the dredged sediment. Large amounts of residues were generated from the demonstration. Costs for using this process are estimated to be between $150/ton and $450/ton. (Copyright (c) 1990--Air & Waste Management Association.)

Keywords: *Superfund, *Waste treatment, *Dredge spoil, *Water pollution control, *Solvent extraction, Sediments, New Bedford Harbor, Performance evaluation, Remedial action, Hazardous materials, Technology utilization, Separation, Reprints, *Polychlorinated biphenyls.

PB91-145128/REB PC **A03**/MF **A01**
Incineration Research Facility. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. C. Thurnau, and C. R. Dempsey. c1990, 11p EPA/600/J-90/274
Pub. in Waste Management and Research, v8 1990.

The Cincinnati-based Risk Reduction Engineering Laboratory, Office of Research and Development, U.S. EPA operates the Incineration Research Facility (IRF) in Jefferson, Arkansas. The facility's pilot-scale experimental incineration systems include a Rotary Kiln System and a Liquid Injection System. Each system incorporates primary and secondary combustors and associated waste handling equipment, process controllers, safety equipment and air pollution control devices. These 'state-of-practice' incinerators are fully permitted to test the entire range of RCRA hazardous wastes normally encountered in the hazardous waste treatment industry. Due to the magnitude of hazardous waste disposal problems that might be managed by thermal destruction and the unique capabilities of the facility, it is believed that the utilization of the IRF should be expanded and made available to industry, academia, and other governmental agencies to pursue cooperative studies that would be of mutual benefit. The Stevenson-Wydler Technology Innovation Act, as amended by the Federal Technology Transfer Act of 1986, provides a great deal of flexibility for the Federal Government to develop and fund cooperative studies that were previously not possible. The purpose of the article is to briefly describe the facility and its capabilities, and to make it known to potential third-party users that one is interested in conducting cooperative research at the IRF.

Keywords: *Incinerators, Hazardous materials, Waste treatment, Jefferson(Arkansas), Environmental protection, Kilns, Reprints, Risk reduction.

PB91-145136/REB PC **A02**/MF **A01**
Airborne Asbestos Levels Measured Before, during and After Abatement. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
J. R. Kominsky, R. W. Freyberg, T. J. Powers, R. C. Wilmoth, and C. P. Frebis. c1990, 7p EPA/600/J-90/273
Pub. in NAC (National Asbestos Council) Jnl., p29-33, Spring 1990. Presented at the National Asbestos Council Conference, Anaheim, CA., March 29-31, 1989. Prepared in cooperation with PEI Associates, Inc., Cincinnati, OH.

Airborne asbestos concentrations were measured before, during, and after removal of asbestos-containing fireproofing at three university buildings. These three abatement studies were not subject to the AHERA regulations and the procedures followed were not necessarily in compliance with AHERA; however, to the extent that the data allowed, post abatement airborne asbestos concentrations were evaluated with the AHERA Z-test. Of the three sites studied, all would have passed the AHERA X-test when the work area asbestos levels were compared to perimeter levels (outside the abatement area but inside the building). Two sites also would have passed the Z-test when work area and outdoor air levels were compared. At one site, contamination of the perimeter area occurred at some point during the abatement project. Had this area been used in the Z-test clearance comparison, a contaminated site would have been falsely released.

Keywords: *Asbestos, *Abatement, *Air pollution monitoring, Electron microscopy, Indoor air pollution, Buildings, Universities, Regulations, Statistical analysis, Reprints.

PB91-145144/REB PC **A03**/MF **A01**
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. C. Thurnau. c1990, 13p EPA/600/J-90/272
Pub. in Waste Management, v10 p185-195 1990. See also PB89-223663. Presented at the International Conference on Incineration of Hazardous, Radioactive, Infectious and Mixed Wastes (8th), Knoxville, TN., May 1-5, 1989.

A series of ten incineration tests were performed on a synthetic hazardous waste containing tetrachloroethylene, toluene, chlorobenzene, and pentachlorobenzene as principal organic hazardous components (POHCs). Sulfur hexafluoride (SF6) was also injected into the mixture just prior to incineration and the resulting destruction removal efficiencies (DRE) were measured. Primary combustion chamber temperature was varied from 871C to 1249C and the oxygen concentration from 1.3 to 9.2 percent. The test data indicated poor correlations between the variables of temperature and oxygen with POHC DRE. A temperature/SF6 DRE linear relationship was observed. The research also indicated that SF6 was more difficult to incinerate than any of the other POHCs, and might represent a lower boundary for evaluating incinerator performance.

Keywords: *Incinerators, *Waste disposal, *Combustion efficiency, *Chlorobenzenes, *Toluene, *Tetrachloroethylene, *Sulfur hexafluoride, *Air pollution control, *Performance evaluation, Hazardous materials, Oxygen, Temperature, Graphs(Charts), Reprints.

PB91-145151/REB PC **A02**/MF **A01**
Seaming of Geosynthetics. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. E. Landreth. c1990, 7p EPA/600/J-90/271
Pub. in Geotextiles and Geomembranes, v9 p481-485 1990.

Owners of containment facilities are using geosynthetics at an increased rate. A major concern in their use is the ability to field seam the materials such that the design function of the geosynthetic is transferred through the seam. The paper discusses potential concerns and describes quality assurance techniques that will, when utilized, help ensure that the facility will be constructed according to the design. (Copyright (c) 1990 Elsevier Science Publishers Ltd, England.)

Keywords: *Geotechnical fabrics, *Seaming, *Inspection, Sampling, Nondestructive tests, Seams(Joints), Quality assurance, Defects, Folding, Pollution abatement, Reprints, *Geosynthetic materials.

PB91-145169/REB PC **A02**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PEI Associates, Inc., Cincinnati, OH.
J. R. Kominsky, R. W. Freyberg, J. Chesson, W. C. Cain, and T. J. Powers. c1990, 7p EPA/600/J-90/270
Pub. in Jnl. of American Industrial Hygiene Association, v51 n9 p500-504 Sep 90. See also PB91-125740. Presented at National Asbestos Council Conference, Indianapolis, IN., September 9-28, 1990. Prepared in cooperation with Chesson Consulting, Washington, DC. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

The research study examined the effectiveness of dry vacuuming and wet cleaning for the removal of asbestos fibers from carpet, and evaluated the potential for fiber reentrainment during carpet cleaning activities. Routine carpet cleaning operations using high-efficiency particulate air (HEPA) filtered dry vacuum cleaners and HEPA-filtered hot-water extraction cleaners were simulated on carpet artificially contaminated with asbestos fibers. Overall, wet cleaning the carpet with a hot-water extraction cleaner reduced the level of asbestos contamination by approximately 70 percent. There was no significant evidence of either an increase or a decrease in the asbestos concentration after dry vacuuming. The level of asbestos contamination had no significant effect on the difference between the carpet asbestos concentrations before and after cleaning. Airborne asbestos concentrations were between two and four times greater during the carpet cleaning activities. The level of asbestos contamination in the carpet cleaning activities. The level of asbestos contamination in the carpet and the type of cleaning method used had no statistically significant effect on the difference between the airborne asbestos concentrations before and during cleaning.

Keywords: *Asbestos, *Removal, *Carpets, *Dry cleaning, *Wetting, Vacuum cleaners, Indoor air pollution, Air pollution monitoring, Electron microscopy, Laboratory tests, Reprints.

PB91-145177/REB PC **A02**/MF **A01**
Environmental Research Lab., Narragansett, RI.
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
Journal article.
Massachusetts Inst. of Tech., Cambridge. Ralph M. Parsons Lab.
K. A. Newman, S. L. Frankel, and K. D. Stolenbach. c1990, 9p EPA/600/J-90/269, ERLN-NX06
Pub. in Environmental Science and Technology, v24 n4 p513-519 1990. Sponsored by Environmental Research Lab., Narragansett, RI.

A suspension of fluorescent pigment particles (total mass, 120 kg) was injected over a period of several hours into a sewage outfall discharging into Salem Sound, MA. Flow cytometric analysis was successfully used to identify, quantify, and size the fluorescent pigment particles in bottom sediment and sediment trap samples collected 1-8 days after their release. Typical areal concentrations after 8 days were 1000 micrograms/cu m (or roughly 100 ppb in the top 0.5 cm of sediment cores) corresponding to approximately 7% of the total released. The size distributions of recovered pigment particles are identical with the size distribution in the initial suspension, indicating that, despite their exceptionally low coagulation efficiency, net deposition of the pigment particles is effected by coagulation with other solids either in the water column or at the sediment-water interface. (Copyright (c) by the American Chemical Society, 1990.)

Keywords: *Particle size distribution, *Cell flow systems, *Fluorescence, *Sewage treatment, Water pollution, Coagulation, Settling, Field tests, Massachusetts, Reprints, Salem Sound.

PB91-145433/REB PC **A11**/MF **A02**
Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information.
Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PEER Consultants, Inc., Dayton, OH.
Apr 90, 243p CERI-90-16
Also available from Supt. of Docs. Sponsored by Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information.

Contents: Process-Based Treatment Decision Making; Treatability Studies and Data Quality Objectives; Material Handling Including Debris Separation and Decontamination; Separation of Inorganic Contaminants from Soils and Sludges; Separation and Treatment of Inorganics in Aqueous Matrices; Separation of Organic Contaminants from Soils and Sludges; Separation and Treatment of Organics in Liquids; Collection and Treatment of Gases; Databases Supporting Technology Selections.

Keywords: *Hazardous materials, *Separation, *Waste treatment, *Meetings, Organic compounds, Decision making, Inorganic compounds, Materials handling, Volume, Soils, Liquids, Debris, Precipitation(Concentration), Neutralizing, Incinerators, Capping, Solidification, Dewatering, Solvent extraction, Diagrams, Waste minimization, Superfund, Recycling, Reverse osmosis.

PB91-145441/REB PC **A08**/MF **A01**
Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Dec 89, 172p
Also available from Supt. of Docs.

The National Pretreatment Program establishes an overall strategy for controlling the introduction of nondomestic wastes to publicly owned treatment works (POTWs) in accordance with the overall objectives of the Clean Water Act. The manual provides guidance to POTWs on the implementation and enforcement of the categorical pretreatment standards for the aluminum forming, copper forming, and nonferrous metals forming and metal powders categories. This guidance is based primarily on two sources: Federal Register notices, which contain the official announcements of the categorical standards, and the final development documents for aluminum forming, copper forming, and nonferrous metals forming and metal powders categories, which provide a summary of the technical support for the regulations.

Keywords: *Aluminum, *Water treatment, *Metal working, Manuals, Standards, Copper, Metal powder, Casting, Waste water, Oils, Metal rolling, Metal pressing, Berillium alloys, Operations, Extruding, Lubricants, Coatings, Zinc, Cyanides, Tables(Data), Pretreatment(Water), *Nonferrous metals, Discharge(Water).

PB91-145458/REB PC **A13**/MF **A02**
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jun 90, 280p EPA/560/7-90/003
Also available from Supt. of Docs. See also PB85-204592.

The 1990 Supplement to EPA's 1985 Edition of the Toxic Substances Control Act (TSCA) Chemical Substance Inventory covers approximately 5,000 substances that have been added to the Inventory since the 1985 publication. However, substances that were added to the Inventory after February 1, 1990 are not included in the publication. Together, the 1985 Edition and the 1990 Supplement constitute a revised Inventory representing a total of 68,000 chemical substances. From a regulatory standpoint, the Inventory defines what chemical substances are 'existing' in U.S. commerce for purposes of implementing TSCA. Substances that are not included on the Inventory are considered 'new' by EPA and are subject to the Premanufacture Notification (PMN) requirements under Section 5(a) of TSCA.

Keywords: *Toxic substances, *Inventories, Indexes, Definitions, Registries, *Toxic Substances Control Act, CAS numbers, Chemical Registry Numbers.

PB91-145466/REB PC **A08**/MF **A01**
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Aug 90, 151p EPA/540/G-90/007
Also available from Supt. of Docs.

The document describes the recommended approach for evaluating and remediating Superfund sites with PCB contamination. It provides starting point cleanup levels for various media that may become contaminated and identifies other considerations important to ensuring protection of human health and the environment that these cleanup levels may not address. The guidance also describes how to develop remedial alternatives for PCB contaminated materials that are consistent with Superfund program expectations and requirements. The guidance concludes with a discussion of considerations unique to PCBs that should be considered in the nine criteria evaluation and likely tradeoffs between options that are likely to occur.

Keywords: *Chlorine organic compounds, *Hazardous materials, *Pollution control, Investigations, Feasibility studies, Guidelines, Sites, Concentration(Composition), Biphenyl, Dechlorination, Incinerators, Regulations, Waste treatment, Solvent extraction, Licenses, Removal, Cost estimates, Remedial Action, *Superfund, Polychlorinated biphenyls, Cleanup, Alternative planning.

PB91-145474/REB PC **A08**/MF **A01**
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Aug 89, 173p EPA/503/8-89/001
Also available from Supt. of Docs.

Contents: National Estuary Program: An Overview; The Planning Initiative: Building a Management Framework; Characterization and Problem Definition; The Comprehensive Conservation and Management Plan; and Implementing the CCMP.

Keywords: *Bays(Topographic Features), *Estuaries, *Coasts, *Conservation, *Water quality management, Project planning, History, Chesapeake Bay, Local government, Government policies, National government, Water pollution, Sources, Aquatic plants, Aquatic animals, Citizens participation, Protection, Technical assistance, Water Quality Act of 1987, Organic loading.

PB91-145482/REB PC **A03**/MF **A01**
ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
Environmental Protection Agency, Washington, DC. Office of Research and Development.
Sep 90, 18p EPA/600/9-90/042
Also available from Supt. of Docs.

Ground water research at EPA encompasses several different ORD programs which are contributing to the body of knowledge in this emerging science. Efforts are focused on serving EPA programs which are requiring an increasingly sophisticated knowledge base and greater technical assistance in order to develop and implement environmental programs. Two major themes or objectives for future research are prevention and remediation of ground water contamination. These objectives can continue to be met through focused research products for EPA program clients, supported by basic research on subsurface processes, monitoring and remediation methods, while evaluating and refining research results based on field experience.

Keywords: *Research projects, *Ground water, *Water pollution, Technical assistance, Monitoring, Prevention, Technology transfer, Proposals, Project planning, Remedial action.

PB91-145490/REB PC **A03**/MF **A01**
Cross-Connection Control Manual.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Jun 89, 50p EPA/570/9-89/007
Also available from Supt. of Docs.

Plumbing cross-connections, which are defined as actual or potential connections between a potable and

non-potable water supply, constitute a serious public health hazard. There are numerous, well-documented cases where cross-connections have been responsible for contamination of drinking water, and have resulted in the spread of disease. The Manual has been designed as a tool for health officials, waterworks personnel, plumbers, and any others involved directly or indirectly in water supply distribution systems.

Keywords: *Plumbing, *Water pipelines, *Water supply, *Water pollution, Manuals, Connectors, Public health, Hazards, Installing, Water distribution, Distribution systems, Test methods, Prevention, Drinking water, Backflow.

PB91-145508/REB PC **A12**/MF **A02**
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
May 90, 256p EPA/505/8-90/001
Also available from Supt. of Docs.

Contents: Applicability of this Guidance; Overview of Sludge Treatment Processes and Their Effect on Sludge Properties; Summary of Permitting Procedures and Requirements; Landfilling; Land Application; Distribution and Marketing; Incineration; Surface Disposal.

Keywords: *Licenses, *Requirements, *Sludge disposal, *Pollution control, Manuals, Utilization, Law(Jurisprudence), History, Toxicity, National government, State government, Earth fills, Incinerators, Operations, Sewage treatment, Concentration(Composition), Disease vectors, Air pollution, Ground water, Standards, Acceptability, Case by state basis, Clean Water Act, *Land application, Chemicals.

PB91-145516/REB PC **A09**/MF **A02**
Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
Environmental Protection Agency, Washington, DC.
Mar 90, 200p
Also available from Supt. of Docs.

The Office of Water Accountability System (OWAS) consists of a set of qualitative and quantitative measures that provide the basis for evaluating Regional Office performance against National program objectives. The measures in the system include all measures included in the Agency's Strategic Targeted Activities for Results System (STARS; formerly referred to as SPMS) as well as additional qualitative and quantitative measures which are needed to evaluate fully performance against the Office of Water's FY 1991 National program objectives. In general, the measures from the STARS relate to selected areas of the Agency's Priority List and are among the highest priority program activities.

Keywords: *National government, *Water supply, *Water pollution, *Accountability, Regional analysis, Performance evaluation, Project planning, Sewers, Water distribution, Distribution systems, Injection wells, Estuaries, Protection, Ground water, Standards, *Water projects, *Priorities, Wetlands.

PB91-145524/REB PC **A99**/MF **A04**
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Feb 90, 612p EPA/600/9-90/006
Also available from Supt. of Docs. Prepared in cooperation with JACA Corp., Fort Washington, PA., and PEI Associates, Inc., Cincinnati, OH.

The purpose of the Symposium was to present the latest significant research findings from ongoing and recently completed projects funded by the Risk Reduction Engineering Laboratory (RREL). These Proceedings are organized in four sections: Sessions A, B, and A/B consist of paper presentations. Session C contains the poster abstracts. Subjects include remedial action treatment and control technologies for waste disposal, landfill liner and cover systems, personnel protection, underground storage tanks, and demonstration and development of innovative/alternative treatment technologies for hazardous waste. Alternative technology subjects include thermal destruction of hazardous wastes, field evaluations, existing treatment options, emerging treatment processes, waste minimization, and biosystems for hazardous waste destruction.

Keywords: *Hazardous materials, *Waste treatment, *Waste disposal, *Meetings, Abstracts, Pyrolysis, Organic compounds, Thermal degradation, Incinerators, Sampling, Prototypes, Underground storage, Storage tanks, Cyanides, Oxidation reduction reactions, Electroplating, Anaerobic processes, Digestion(Decomposition), Remedial action, Waste minimization.

PB91-145631/REB PC **A06**/MF **A01**
Environmental Research Inst., Ada, OK.
Injection Well Mechanical Integrity.
Robert S. Kerr Environmental Research Lab., Ada, OK.
J. T. Thornhill, and B. G. Benefield. Feb 90, 123p EPA/625/9-89/007
Also available from Supt. of Docs. Sponsored by Environmental Research Inst., Ada, OK.

The initial research project examining the question of mechanical injection well integrity, was conducted by the Robert S. Kerr Environmental Research Laboratory and funded in 1981. The first phase of the project resulted in a separate report entitled, 'Methods for Determining the Mechanical Integrity of Class II Injection Wells,' EPA 600/2-84-121. The report represented state-of-the-art methods available for determining mechanical integrity of Class II wells. The technology described may also be applied to other classes of injection wells. The second and third phases of study involved test wells constructed for mechanical integrity testing: 'Logging Well No. 1' to test for channels in the cement behind the casing; 'Logging Well No. 2' to test fr channels in the cement behind the casing and to evaluate cement behind fiberglass casing; 'Fiberglass Calibration Well' for use in calibrating tools to free fiberglass casing; 'Leak Test Well' for developing methods for testing the integrity of the tubing, casing and packer as well as locating fluid movement in channels behind the casing; and three monitoring wells to determine fluid movement and pressure buildup as a result of injection.

Keywords: *Injection wells, *Leak testing, US EPA, Well logging, Mechanical tests, Packings, Linings, Reliability, Pressurizing, Well tests, Fibergass, Oklahoma.

PB91-145649/REB PC **A04**/MF **A01**
Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Sep 90, 65p EPA/540/2-90/009
Also available from Supt. of Docs.

Contents: Physical Chemical Treatment Methods; Thermal Treatment; Biological Treatment; Solidification/Stabilization Treatment; and Poster Presentations.

Keywords: *Hazardous materials, *Waste treatment, *Meetings, Abstracts, Soils, Extraction, Ground water, Ultraviolet spectrum, Irradiation, Thermal degradation, Ion exchanging, Removal, Washiing, Incinerators, Pyrolysis, Solidification, Stabilization, Activated sludge process, Ozonization, Superfund, RCRA, Cleanup.

PB91-145656/REB PC **A10**/MF **A02**
Recognition and Management of Pesticide Poisonings. Fourth Edition.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
D. P. Morgan. 1989, 216p EPA/540/9-88/001
Also available from Supt. of Docs. Prepared in cooperation with Iowa Univ., Iowa City. Coll. of Medicine.

The fourth edition of Recognition and Management of Pesticide Poisonings is an update and expansion of the 1982 third edition. The purpose of the fourth edition is to provide health professionals with recently available information on the health hazards of pesticides currently in use, and current consensus recommendations for management of poisonings and injuries caused by them. The book deals almost entirely with short-term (acute) harmful effects of pesticides.

Keywords: *Pesticides, *Poisoning, *Emergency medical services, Insecticides, Herbicides, Toxic substances, Health hazards, Fungicides, Diagnosis, Toxicology, Fumigants, Signs and symptoms, Antidotes.

PB91-145664/REB PC **A04**/MF **A01**
Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information.
Apr 90, 66p CERI-90-04
Also available from Supt. of Docs. Prepared in cooperation with PEI Associates, Inc., Cincinnati, OH., and JACA Corp., Fort Washington, PA.

The report includes different processes for treatment of waste. Some of these papers include: Thermal degradation, waste minimization; Biological and chemcial treatment, ozone/ultraviolet light, steam stripping, and solvent washing of contaminated soil.

Keywords: *Hazardous materials, *Waste treatment, *Waste disposal, *Meetings, Incinerators, Biodeterioration, Chlorine organic compounds, Sludge disposal, Fluidized bed process, Solid waste disposal, Earth fills, Linings, Microorganism Control(Sewage), Genetics, Remedial action, Polychlorinated biphenyls, Leachage.

PB91-145672/REB PC **A05**/MF **A01**
NPDES Compliance Monitoring Inspector Training: Overview.
Environmental Protection Agency, Washington, DC. Office of Water Enforcement and Permits.
Aug 90, 92p
Also available from Supt. of Docs.

The document is one of five training modules developed by the Office of Water Enforcement and Permits(OWEP), U.S. Environmental Protection Agency (EPA) to introduce the National Pollutant Discharge Elimination System (NPDES) program to new inspectors. Information in each module provides training to an inspector unfamiliar with the NPDES program. The moddules address the following topics: The Overview Module; The Legal Issues Module; The Biomonitoring Module; The Sampling Procedures Module; and the Laboratory Analysis Module.

Keywords: *Licenses, *Water pollution control, *Inspection, Manuals, Regulations, Law enforcement, Legislation, Sampling, Evaluation, Laboratories, Instructions, Training, *Training modules.

PB91-145680/REB PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Water Enforcement and Permits.
NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
Science Applications International Corp., McLean, VA.
Aug 90, 123p*
Contracts EPA-68-01-7050, EPA-68-C8-0066
Also available from Supt. of Docs. See also PB88-221098. Sponsored by Environmental Protection Agency, Washington, DC. Office of Water Enforcement and Permits.

To familiarize new NPDES inspectors with the legal aspects of compliance monitoring, the module discusses how the law should be taken into account during NPDES inspections as well as hearings or trials arising from such inspections. The module begins with a short review of sources of statutory authority and briefly describes the legal basis for NPDES inspections. It then emphasizes the legal considerations which facilitate the inspector's ability to perform his/her prescribed functions--namely, to gain access and to identify, gather, preserve, and present evidence.

Keywords: *Instructional materials, *Legal aspects, *Water pollution control, *Water pollution abatement, *Environmental monitoring, Pollution regulations, Standards compliance, Law(Jurisprudence), Law enforcement, US EPA, Permits, Decisions and orders, Warranties, Administrative procedures, Liabilities, *National Pollutant Discharge Elimination System, Clean

Water Act of 1977, Water Quality Act of 1987, Testimony.

PB91-145698/REB PC **A05**/MF **A01**
Program Recommendations for State Section 313 Program Coordinators.
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Sep 90, 84p EPA/560/1-90/001
Also available from Supt. of Docs.

Acting out of concern for the public's exposure to potentially harmful chemicals the U.S. Congress passed the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA, also referred to as Title III of the Superfund Amendments and Reauthorization Act). State-level Section 313 programs are in the best position to play an essential role in providing release information to, and interpreting the information for, the public. By providing information and references, the manual is intended to help state Section 313 Program Coordinators enhance the basic elements of their existing programs and to help states set up programs where none currently exist.

Keywords: *Hazardous materials, *Program management, Manuals, State government, Personnel, Project planning, Reporting, Public health, Accidents, Emergency Planning and Community Right To Know Act of 1986, *Superfund.

PB91-145706/REB PC **A09**/MF **A02**
Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information.
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
Eastern Research Group, Inc., Arlington, MA.
J. R. Boulding, and A. C. Jones. Jun 90, 200p EPA/625/6-89/025A
Also available from Supt. of Docs. Sponsored by Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information.

The geochemical fate of deep-well-injected wastes must be thoroughly understood to help avoid problems when incompatibility between the injected wastes and the injection-zone formation is a possibility. An understanding of geochemical fate also will be useful when a geochemical no-migration demonstration must be made. This reference guide was written to address both of these needs by presenting state-of-the-art information on the geochemical fate of hazardous deep-well-injected wastes. Furthermore, operators of any new industrial-waste injection well who must consider the possibility of incompatibility will find this guide helpful in identifying geochemical reactions of potential concern and methods for testing incompatibility.

Keywords: *Geochemistry, *Hazardous materials, *Injection wells, *United States, Guidelines, Identifying, Sources, Geography, Waste disposal, Adsorption, Precipitation(Chemistry), Neutralizing, Hydrolysis, Thermal degradation, Environmental transport, pH, Salinity, Chemical properties, Hydrocarbons, Mathematical models, Maps, Deep wells, Case studies.

PB91-145714/REB PC **A03**/MF **A01**
Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
Environmental Protection Agency, Washington, DC.
May 90, 48p
Also available from Supt. of Docs.

The guide is primarily designed to give local officials the key information necessary to establish public-private partnerships. Specifically, the guide provides: a primer on what public-private partnerships are and the benefits that can be gained by working with the private sector; an action checklist, explained how to build a partnership; a review of financing, procurement, and the service agreement that binds public and private interests; and a list of potential contacts and information related to municipal services, finance, and public-private partnerships. The document was written for local governmental officials (e.g., mayors, city managers, department heads, and city council members) who are interested in developing public-private partnerships; state governmental officials who need information on how to put together a partnership to use in working with local government officials; and leaders in business, finance, banking, and industry who need to understand the constraints under which local officials must operate in implementing a public-private partnership.

Keywords: *Environmental protection, *Public relations, *Private organizations, *Government/industry relations, Guidelines, Case studies, Local government, Coordinated procurement, Information transfer, *Cooperative agreement.

PB91-145722/REB PC **A05**/MF **A01**
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
Environmental Protection Agency, Washington, DC. Office of Drinking Water.
Jun 90, 90p EPA/625/4-89/024
Also available from Supt. of Docs.

The topic of the publication is how one identifies, assesses, and manages the occurrence of potentially toxic chemicals in drinking water. Obviously one cannot become an expert in toxicology, chemistry, and drinking water treatment by attending a workshop or reading the publication. The purpose of the document is to present a broad range of relevant information from the fields of toxicology, chemistry, and engineering, thus assisting the reader in assessing and managing drinking water contamination problems. Technical information is presented on U.S. EPA programs, toxicology, chemistry, treatment principles, and media coverage and risk communication during an emergency.

Keywords: *Management, *Hazardous materials, *Water pollution control, *Meetings, Standards, Public health, Dosage, Humans, Exposure, Carcinogens, Toxicity, Adsorption, Metabolism, Chemical analysis, Water treatment, Activated carbon process, Pesticides, Aeration, Mass communication, Diagrams, *Drinking water, *Risk assessment. Safe Drinking Water Act of 1986 and Volatile Organic Compounds, Amendments.

PB91-145730/REB PC **A12**/MF **A02**
National Water Quality Inventory. 1988 Report to Congress.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Apr 90, 259p EPA/440/4-90/003
Also available from Supt. of Docs.

Contents: Part One: Introduction; Part Two: Surface Water Quality; (Rivers and Streams, Lakes and Reservoirs, The Great Lakes, Estuaries and Coastal Waters, Wetlands, Public Health/Aquatic Life Concerns); Part Three: Ground-Water Quality; (Current Ground-Water Use, Ground-Water Protection Programs); Part Four: Water Pollution Control Programs; (Point Source Control Program, Nonpoint Source Control Program, Surface Water Monitoring, Costs and Benefits of Pollution Control, and State Recommendations).

Keywords: *Water pollution control, *Water quality management, *States(United States), Inventories, Assessments, Surface waters, Rivers, Lakes, Estuaries, Public health, Aquatic biology, Fisheries, Industrial wastes, Coasts, Benefit cost analysis, State government, Monitoring, Recommendations, Tables(Data), Clean Water Act, Wetlands, Point sources, Nonpoint sources.

PB91-145755/REB PC **A07**/MF **A01**
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
Environmental Protection Agency, Washington, DC. Office of Ground-Water Protection.
May 90, 148p EPA/440/6-90/003
Also available from Supt. of Docs.

The purpose of the Technical Assistance Document is to assist States and local communities in establishing, providing, maintaining, and updating certain emergency response procedures that may become necessary if a partial or total loss of public water supply service occurs. The development and integration of these emergency response procedures into a workable plan constitutes the Contingency Planning Process. The Wellhead Protection Program was developed primarily to protect the ground waters that supply wells and wellfields that contribute drinking water to public water supply systems. The periodic occurrence of natural disasters, chemical contamination, physical disruptions, and civil disorders all threaten the supply and distribution network of public drinking water supplies to some degree.

Keywords: *Ground water, *Management planning, *Water supply, *Emergencies, Guidelines, Response, Personnel, Legislation, Water distribution, Distribution systems, Local government, Replacing, Sources, Financing, State government, Water consumption, Reduction, *Wellhead Protection Program.

PB91-145847/REB PC **A04**/MF **A01**
Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
Environmental Protection Agency, Washington, DC.
May 90, 58p*
Also available from Supt. of Docs.

The study documents the costs of environmental protection for the U.S. Environmental Protection Agency (EPA), the states, and local governments and uses these data to: Examine differences between current expenditures and future costs of environmental protection; Assess trends in the distribution of costs among EPA, the states, and local governments; and Identify the cost impact of environmental policies on local governments, capital markets, and households. The report examines the public costs of environmental protection over the period 1981-1987 and projects them to the year 2000. These projections are estimates of the future costs of maintaining existing environmental standards, assuming the same level of quality as in 1987. In addition, the report examines the local costs of selected new environmental regulations and programs that local governments will bear in the future.

Keywords: *Economic analysis, *Costs, *Programs, *US EPA, State government, Local government, Economic impact, Expenses, Government policies, Capital, Households, Methodology, Regulations, Trends.

PB91-145854/REB PC **A05**/MF **A01**
NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
Environmental Protection Agency, Washington, DC. Office of Water Enforcement and Permits.
Aug 90, 86p*
Also available from Supt. of Docs. See also PB82-136367.

The document is one of five training modules developed by the Office of Water Enforcement and Permits, U.S. Environmental Protection Agency (EPA) to introduce the National Pollutant Discharge Elimination System (NPDES) program to new inspectors. Information in each module provides training to an inspector unfamiliar with the NPDES program. The modules address the following topics: The Overview presents an overview of the entire NPDES program and briefly summarizes different types of inspections conducted under the program; Legal issues discusses the legal issues which must be addressed during an inspection and provides legal information to assist inspectors in performing their duties; Biomonitoring outlines the principles of biomonitoring and the role of biological testing in the inspection program; Sampling procedures details procedures to be used when conducting a sampling inspection; and Laboratory analysis outlines procedures and information necessary to perform an effective evaluation of a permittee's laboratory. The module is designed to introduce new inspectors to the concepts and practices of toxicity testing as it relates to CBIs (Compliance Biomonitoring Inspections). It is not intended to be a definitive source of material on toxicity testing; rather, its focus is on explaining the points pertinent to CBIs. After mastering the material in the module, an inspector should be able to define terms used in whole effluent toxicity testing, describe whole effluent toxicity testing procedures, list key aspects of toxicity critical to interpretation of results, and list guidance documents that can be used to implement CBIs. Appendix A contains questions and answers that an inspector can use to self-test him/herself after completing the module.

Keywords: *Water pollution control, *Instructional materials, *Inspection, *Bioindicators, *Environmental monitoring, *Water pollution abatement, Toxicity, Personnel development, Legal aspects, Water pollution sampling, Pollution regulations, Laboratory tests, Permits, Bioassay, Ecosystems, Toxicity, Standards compliance, *National Pollutant Discharge Elimination

System, Clean Water Act of 1977, Water Quality Act of 1987.

PB91-145870/REB PC **A07**/MF **A01**
NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
Environmental Protection Agency, Washington, DC. Office of Water Enforcement and Permits.
Aug 90, 139p*
Also available from Supt. of Docs. See also PB82-136383.

The document is one of five training modules developed by the Office of Water Enforcement and Permits, U.S. Environmental Protection Agency to introduce the National Pollutant Discharge Elimination System (NPDES) program to new inspectors. This module has been organized to highlight the major components involved in a laboratory evaluation conducted as part of a CEI, (Compliance Evaluation Inspection) and in a more comprehensive laboratory evaluation conducted during a PAI (Performance Audit Inspection). The module discusses the following subjects for the two types of inspections: Performance Audit Inspection--(completing preinspection planning, conducting the initial meeting, observing sampling techniques, assessing the laboratory's sample control, reviewing the laboratory's analytical methods, evaluating the laboratory's Quality Assurance/Quality Control (QA/QC) techniques, reviewing the laboratory's Discharge Monitoring Reports (DMR) QA lab data and records, conducting an audit of the laboratory's facilities and equipment, conducting the exit meeting, and preparing the final report). Compliance Evaluation Inspection--(reviewing records and reports, completing a review of self-monitoring data and procedures, and conducting a review of the laboratory facilities). The objective of the module is to provide the inspector with background information necessary to conduct an appropriate evaluation of the permittee's laboratory procedures for sample control, sample analysis, and quality assurance, as well as to assess the adequacy of the laboratory facilities and equipment. Additional sources of information are provided in the references identified throughout the text of the module and summarized in Appendix A. A glossary of terms used in the module appears as Appendix B.

Keywords: *Instructional materials, *Water pollution control, *Water pollution abatement, *Laboratory tests, *Inspection, *Environmental monitoring, Water analysis, Chemical analysis, Performance standards, Auditing, Standards compliance, Water pollution detection, Water pollution sampling, Quality assurance, Quality control, *National Pollutant Discharge Elimination System Program, Clean Water Act of 1977, Water Quality Act of 1987.

PB91-145888/REB PC **A10**/MF **A02**
RCRA Orientation Manual 1990 Edition.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
D. R. Clay. 1990, 212p EPA/530/SW-90/036
Also available from Supt. of Docs. See also PB89-213169. Prepared in cooperation with Booz-Allen and Hamilton, Inc., Washington, DC., and ICF, Inc., Washington, DC.

The U.S. Environmental Protection Agency (EPA) developed the manual to provide introductory information on the solid and hazardous waste management programs under the Resource Conservation and Recovery Act (RCRA). The manual outlines the basic framework of the regulatory program for new EPA and State employees, those persons new to RCRA assignments, and others interested in the Act. The manual is not, however, meant to replace in-depth analysis of the statute and its associated regulations and Agency guidance. The manual is an update of the original RCRA Orientation Manual issued in 1986. Revisions contained in the update reflect the many regulatory changes that have resulted from both the Hazardous and Solid Waste Amendments (HSWA) of 1984 and the Medical Waste Tracking Act of 1988 (RCRA Subtitle J).

Keywords: *Manuals, *Hazardous materials, *Solid waste disposal, Law enforcement, Licenses, State government, Local government, Regulations, Storage tanks, Underground storage, *Resource Conservation and Recovery Act, Medical wastes.

PB91-145896/REB PC **A10**/MF **A02**
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
Environmental Protection Agency, Washington, DC.
Jun 90, 214p EPA/400/7-90/005
Also available from Supt. of Docs. Prepared in cooperation with NATO Committee on the Challenges of Modern Society, Brussels (Belgium).

Contents: Quantifying Future Trends Of Indoor Air Quality As A Basis For Government Policy Plans; Assessing Indoor Air Quality Risks of Pesticides; Formaldehyde Emission Standards In The Federal Republic of Germany; Orientations and Actions of the European Community in the Assessment and Prevention of Indoor Air Pollution; EPA and Indoor Air Quality; The Non-Regulatory Approach to Reducing Risks from Radon Exposure; U.S. Consumer Product Safety Commission; A Builders Guide to Healthy Homes; WHO Air Quality Guidelines for Europe; The Approach to Control Indoor Air Quality in Italy; Guidelines - Ventilation Classes; Energy Consequences of Upgrading Indoor Air Quality; Canada's Guidelines for Residential Indoor Air Quality: Rationale and Scope; Canadian Ventilation and Venting Standards; Indoor Air Quality Building Surveys Case Studies; Design of Indoor Air Quality Studies; Summary Findings of Inter-Ministerial Committee On Indoor Air Quality (Ontario); The Quebec Approach; Employee Survey EPA Headquarters; Pollution in Closed Spaces and Its Consequences in Conservation of Works of Art; How Norwegian Health Authorities Will Handle Indoor Air Quality Problems.

Keywords: *Indoor air pollution, *Meetings, *Houses, *Risk assessment, *Buildings, Air quality, Regulations, Radon, Formaldehyde, Field tests, Europe, Ventilation, Standards, Canada, Tables(Data), Graphs(Charts), Construction materials, Air pollution monitoring.

PB91-145904/REB PC **A06**/MF **A01**
Public-Private Partnership Case Studies: Profiles of Success in Providing Environmental Services.
Environmental Protection Agency, Washington, DC.
Sep 89, 110p
Also available from Supt. of Docs.

The goal of the Public-Private Partnerships initiative is to bring together public and private interests to meet the demands of future environmental protection. The case studies report provides concrete examples to local officials of how successful partnerships can be formed and work for the benefit of both the public and private sectors. Many municipalities around the country already have extensive experience and expertise in the formation and implementation of public-private partnerships. The purpose of the report is to provide examples of how partnerships work and how they are developed, to indicate lessons learned in implementing partnerships and why they are successful, and to provide local communities useful information on developing or choosing partnership options.

Keywords: *Environmental protection, Cost analysis, Forecasting, Case studies, Local government, Information transfer, Technology transfer, Private organizations, Public relations, US EPA, Waste management, Water pollution, Air pollution, Potable water, *Public-private partnerships, Cooperative agreements.

PB91-145912/REB PC **A03**/MF **A01**
Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
May 90, 27p EPA/440/4-90/005
Also available from Supt. of Docs.

Contents: The Quality of Our Nation's Water; Our Nation's Water Resources; What Is Water Pollution; Monitoring Our Nation's Waters; Rivers and Streams; Lakes and Reservoirs; The Great Lakes; Estuaries; Coastal Waters; Wetlands; Ground Water; Water Quality Protection; and You Can Make a Difference.

Keywords: *Water resources, *Water pollution, *United States, Surface waters, Streams, Rivers, Lakes, Estuaries, Coasts, Ground water, Protection, Maps, Booklet, Wetlands.

PB91-145920/REB PC **A03**/MF **A01**
Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jul 90, 50p
Also available from Supt. of Docs.

The guide is primarily directed to owners and managers of office buildings, shopping centers, apartment buildings, hospitals, and similar facilities which may contain asbestos materials. Managers of industrial plants and other types of structures may need to supplement the information with additional specialized guidance. The document gives building owners, managers, workers, and other key building staff basic information on how to develop and carry out high-quality operations and maintenance programs for managing asbestos in place to safeguard the health of all building occupants. An operations and maintenance program can be defined as a formulated plan of training, cleaning, work practices, and surveillance to maintain asbestos-containing materials in good condition.

Keywords: *Air pollution control, *Asbestos, *Buildings, Guidelines, Maintenance, Construction materials, Management, Workers, Cleaning, Inspection, Industrial plants, Commercial buildings, Education, Cost effectiveness.

PB91-145938/REB PC **A04**/MF **A01**
Review of Sources of Ground-Water Contamination from Light Industry.
Environmental Protection Agency, Washington, DC. Office of Ground-Water Protection.
May 90, 56p EPA/440/6-90/005
Also available from Supt. of Docs.

The document addresses the potential impact of light industrial activities on wellhead protection areas. The term 'light industry' refers to industrial, commercial, or retail establishments that manage substances or engage in manufacturing, fabrication, or service activities that are one step or more removed from the production of primary products from raw material. These activities, which may pose a potential threat to groundwater quality, are minimally-regulated or non-regulated by Federal laws. Several States and local governments have adopted innovative approaches for controlling light industries. These approaches may involve source identification, zoning and other controls to limit land uses in wellhead areas, and public education and technology transfer to encourage industries to adopt management controls. Other jurisdictions have also placed strict prohibitions on activities that are allowed in wellhead areas, including restricting specific light industry types.

Keywords: *Ground water, *Water pollution, Businesses, Water wells, Protection, Sites, State government, Local government, Protection, Regulations, Land use, Classifying, Education, Technical assistance, Small industries.

PB91-145953/REB PC **A03**/MF **A01**
Citizen's Guide to Pesticides (Fourth Edition).
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Apr 90, 28p
Also available from Supt. of Docs.

The United States Environmental Protection Agency has published a citizen's guide for the correct use of pesticides in the home. The guide provides tips on selecting the pesticide that is best to use, information on the correct dosage, instructions on storage and disposal, ways to choose a pest control company, and how to reduce personal exposure to pesticides. Finally, advice on what to do if someone is inadvertently poisoned is provided.

Keywords: *Pesticides, *Gardening, Toxic substances, Dose rates, Storage, Waste disposal, Guidelines, Poisoning, *Foreign technology, *Home usage.

PB91-145961/REB PC **A05**/MF **A01**
Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information.
Apr 90, 85p EPA/625/5-90/025

Also available from Supt. of Docs.

The document provides information for small system owners, operators, managers, and local decision makers, such as town officials, regarding drinking water treatment requirements and the treatment technologies suitable for small systems. It is not intended to be a comprehensive manual for water treatment and protection of public water supplies from sources of contamination. Rather, it is designed to give an overview of the problems a small system may face, treatment options that are available to solve specific problems, and resources that can provide further information and assistance. For the purpose of the document, small systems are defined as systems that serve 25 to 1,000 people, or that have a flow of 9,500 to 380,000 liters (2,500 to 100,000 gallons) per day. They include small community systems as well as noncommunity systems, such as campgrounds and restaurants.

Keywords: *Water treatment, *Potable water, *Water pollution abatement, Water pollution control, Substitutes, Pollution regulations, Filtration, Disinfection, Organic compounds, Inorganic compounds, Performance evaluation, Small systems.

PB91-145979/REB PC **A05**/MF **A01**
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information.
T. Dux, P. Gilford, F. Bergman, B. Boomer, and D. Hooton. Jan 90, 84p EPA/625/6-89/023
Also available from Supt. of Docs.

The Environmental Protection Agency (EPA) has promulgated regulations for hazardous waste incinerators under the Resource Conservation and Recovery Act. These regulations require the permit applicant to conduct trial burns to demonstrate compliance with the regulatory limits and provide data needed to write the individual permits. Trial burns require a Quality Assurance Project Plan (QAPjP) with quality assurance/quality control (QA/QC) procedures to control and evaluate data quality. The primary focus of the handbook is the trial burn itself; however, a discussion of the QA/QC for routine incinerator monitoring and permit compliance is included in a separate chapter. The area has slightly different requirements and objectives from those of the trial burn. The trial burn should be viewed as a short-term project with a defined beginning and end, while compliance monitoring is considered an ongoing process.

Keywords: *Handbooks, *Hazardous materials, *Incineration, *Air pollution standards, *Waste disposal, Quality assurance, Quality control, Standards compliance, Air pollution sampling, Permits, Operating, Continuous sampling, Pollution regulations, Combustion products, Air pollution control equipment, Chemical analysis, Air pollution detection.

PB91-146027/REB PC **A11**/MF **A02**
Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
Environmental Monitoring Systems Lab., Cincinnati, OH.
Jul 90, 241p EPA/600/4-90/020
Supersedes PB91-108266.

Nine analytical methods covering 54 organic contaminants which may be present in drinking water or drinking water sources are described in detail. Seven of these methods cover compounds designated for regulation under the Safe Drinking Water Act Amendments of 1986. Regulations for the group are in the proposal stages with promulgation scheduled for June 1992. The other two methods are for chlorination disinfection byproducts and may be regulated as part of EPA's disinfectants and disinfectant byproducts rule scheduled for proposal early in 1992. Most of the analytes may be classified as non-volatile and three of the methods entail separations by high performance liquid chromatography. The remainder employ capillary column gas chromatography. One of these requires detection of a potentially very toxic contaminant, 2,3,7,8-tetrachlorodibenzo-p-dioxin, at the low parts per trillion level. Labeled isotopes of the analyte are employed as tracers and high resolution mass spectrometry is required for detection and identification. Three of the methods herein offer new and simplified liquid-solid extraction procedures.

Keywords: *Organic compounds, *Chemical analysis, *Water pollution, Regulations, Test methods, Chlorination, Monitoring, Separation, Gas chromatography, Liquids, Chlorine organic compounds, Herbicides, Concentration(Composition), Columns(Process engineering), Isotope labeling, Mass spectroscopy, Extraction, *Drinking water, Safe Drinking Water Act, Chemicals, Listings, Synthetic organic compounds, Dioxin/tetrachloro-dibenzo.

PB91-146308/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants. Journal article.
Delaware Univ., Newark. Coll. of Marine Studies.
D. M. Seliskar. c1987, 12p EPA/600/J-87/539
Grant EPA-R806013010
Pub. in Jnl. of Experimental Botany, v38 n192 p1193-1202 1987. Sponsored by Corvallis Environmental Research Lab., OR.

In a controlled greenhouse experiment young Deschampsia cespitosa, Grindelia integrifolia, Distichlis spicata and Salicornia virginica plants were subjected to dry, field capacity, and saturated soil conditions. Plant height, stem diameter, stem density, number of leaves, number and length of internodes, and number of primary and secondary branches varied among the three treatments. The quantity of aerenchyma in S. virginica was greatest in the saturated treatment. In G. integrifolia the amount of secondary xylem was greatest in the dry treatment. Maximum above-and below-ground biomass occurred under field capacity conditions for the four species. Root to shoot ratios of D. cespitosa and S. virginica were not affected by changes in soil moistre while that of D. spicata was lowest in the saturated treatment and that of G. integrifolia was lowest in the dry treatment. (Copyright (c) Oxford University Press 1989.)

Keywords: *Soil water, *Plants(Botany), *Horticulture, *Marine biology, Comparative evaluation, Plant anatomy, Biomass, Morphology, Reprints, *Salt marsh plants, Deschampsia cespitosa, Grindelia integrifolia, Distichlis spicata, Salicornia virginica.

PB91-146316/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water. Journal article.
Michigan State Univ., East Lansing.
D. W. Kononen, J. R. Hochstein, and R. K. Ringer. c1987, 10p EPA/600/J-87/540
Pub. in Environmental Toxicology and Chemistry, v6 p41-50 1987. Sponsored by Corvallis Environmental Research Lab., OR.

Food and water avoidance experiments were conducted on mallards (Anas platyrhynchos L.) and northern bobwhite (Colinus virginianus L.) exposed to a range of dietary carbofuran concentrations. A dietary avoidance concentration 50 (analogous to an LC50) was calculated for each avoidance experiment. The statistic describes the dietary toxicant concentration threshold at which, when exceeded, exposed animals are likely to discriminate between untreated and treated feed or water. The food avoidance concentration 50s (FAC50s) for mallards and bobwhite were 10 and 159 ppm, respectively. The water avoidance concentration 50(WAC50) for mallards was 3 ppm. For bobwhite the WAC50 for carbofuran was estimated to exceed 50 ppm. (Copyright (c) 1987 SETAC.)

Keywords: *Animal behavior, *Toxicology, *Carbofuran, *Avoidance learning, Dose-response relationships, Tables(Data), Food contamination, Potable water, Reprints, *Northern bobwhite, *Mallards, Colinus virginianus, Anas platyrhynchos.

PB91-146324/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'. Journal article.
California Univ., Davis. Dept. of Land, Air and Water Resources.
P. Kosalwat, and A. W. Knight. c1987, 10p EPA/600/J-87/541
Pub. in Archives of Environmental Contamination and Toxicology, v16 p275-282 1987. See also PB91-146332. Sponsored by Corvallis Environmental Research Lab., OR., and Lawrence Livermore National Lab., CA.

Fourth instar larvae of the midge, Chironomus decorus, were exposed to copper in water and copper in food and substrate (bound forms). Copper present in aqueous forms was more toxic than when it was present in bound forms. The relationship between copper in water and copper in midges could be described by an exponential equation while the relationship between copper in substrate and midges was best described by a simple linear regression equation. Midge larvae accumulated copper from water and possessed some mechanisms to regulate copper uptake and excretion when exposed to copper concentrations of 0.05-1.0 mg/L(aqueous forms) and lost that ability when the concentration exceeded 1.0 mg/L. On the contrary, the midge larvae were unable to accumulate copper from food, since the estimated bioconcentration factor was between 0.10 and 0.16. When the midge larvae were exposed to copper in water, the uptake rate increased rapidly from 0-10 hr and then the rate increased very slowly or in some cases it reached a steady state after 10 hr. The steady state was attained within 1 to 3 hr when the midges were exposed to copper in food and substrate. (Copyright (c) Springer-Verlag New York Inc.)

Keywords: *Toxicity, *Copper, *Chemical water pollution, Dose-response relationships, Larvae, Environmental monitoring, Bioassay, Reprints, *Chironomus decorus.

PB91-146332/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'. Journal article.
California Univ., Davis. Dept. of Land, Air and Water Resources.
P. Kosalwat, and A. W. Knight. c1987, 10p EPA/600/J-87/542
Pub. in Archives of Environmental Contamination and Toxicology, v16 p283-290 1987. See also PB91-146324. Sponsored by Corvallis Environmental Research Lab., OR., and Lawrence Livermore National Lab., CA.

The development and hatchability of Chironomus decorus eggs were not affected by 0.1 to 5 mg/L of copper in water. The embryos developed normally and hatched at about the same time (after 55 hrs of incubation). All larvae survived the duration of the test (72 hr) except those subjected to 5 mg/L of copper in water, which died after only partial emergence from the egg shell. Apparently eggs were protected by their shell from copper. Growth of C. decorus larvae was reduced significantly when they were reared in copper-spiked food-substrate (bound copper) from the age 1 to 15 days old (900-4,500 mg/kg of copper). The substrate copper concentration at which larval growth was reduced to 50% (EC50) was 1,602 mg/kg. Substrate copper caused deformities in the epipharyngeal plate of larval mouthparts and copper concentration higher than 1,800 mg/kg delayed adult emergence. The copper concentration in pupal exuviae and adults were positively correlated to copper concentration in the substrate in which they had been reared as larvae. Larval stage appeared to be the most sensitive to copper toxicity, while eggs were the least sensitive. Larval growth was the best indicator in detecting copper pollution, since it could detect copper at relatively low concentrations. The time to adult emergence was not considered a very good indicator, while larval deformities offered a quick tool to evaluate copper pollution. (Copyright (c) 1987 Springer-Verlag New York, Inc.)

Keywords: *Toxicity, *Copper, *Chemical water pollutants, Larvae, Substrate specificity, Bioassay, Teratogens, Reprints, *Chironomus decorus, *Egg hatchability.

PB91-146340/REB PC **A02**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling. Journal article.
Geological Survey, Denver, CO.
W. L. Anderson. c1989, 6p EPA/600/J-89/495
Pub. in Geophysics, v54 n2 p263-266 Feb 89. Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

A hybrid fast Hankel transform algorithm has been developed that uses several complementary features of two existing algorithms: Anderson's digital filtering or fast Hankel transform (FHT) algorithm and Chave's quadrature and continued fraction algorithm. A hybrid FHT subprogram (called HYBFHT) written in standard Fortran-77 provides a simple user interface to call either subalgorithm. The hybrid approach is an attempt to combine the best features of the two subalgorithms in order to minimize the user's coding requirements and to provide fast execution and good accuracy for a large class of electromagnetic problems involving various related Hankel transform sets with multiple arguments. Special cases of Hankel transforms of double-order and double-argument are discussed, where use of HYBFHT is shown to be advantageous for oscillatory kernel functions.

Keywords: *Electromagnetic fields, *Models, *Hankel transformation, *Algorithms, Hankel functions, Digital filters, Electromagnetic testing, Fourier transformation, Reprints, HYBFHT computer program.

PB91-146357/REB PC **A02**/MF **A01**
Field Strategy for Sorting Volatile Organics into Source-Related Groups. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
W. A. McClenny, K. D. Oliver, and J. D. Pleil. c1989, 9p EPA/600/J-89/496
Pub. in Environmental Science and Technology, v23 n11 p1373-1379 Nov 89. Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC.

A new monitoring strategy, referred to as temporal profile analysis (TPA), has been developed. TPA uses fixed-site, ambient air monitoring of volatile organic compounds (VOCs) to determine the number, VOC composition, and approximate trajectories of nearby source-related emissions. The strategy involves the interpretation of sequential ambient air gas chromatograms generated with sufficient frequency (hourly) to reveal the pronounced temporal variability of individual compounds. VOCs were monitored at a fixed site in the Richmond-Hopewell area of the Commonwealth of Virginia in September 1987 as a demonstration of TPA. The emissions from each of 12 nearby sources or source types were identified by comparing the prominent features in concentration time profiles. Two compound groups contain compounds usually associated with automotive emissions and as such constitute a VOC background that is generally prevalent in urban areas. All other groups, including one composed of Freon 12 and ethylene oxide, and a second composed of Freon 11, acetone, carbon tetrachloride, and sometimes chloroform are site specific. This monitoring strategy appears to be a direct and practical means to identify site-specific local sources and to improve mortality risk assessment. (Copyright (c) 1989 American Chemical Society.)

Keywords: *Air pollution monitoring, *Gas chromatography, *Hydrocarbons, *Chlorine organic compounds, Data processing, Risk assessment, Atmospheric circulation, Field tests, Reprints, *TPA(Temporal profile analysis), Richmond(Virginia), Hopewell(Virginia), Richmond-Hopewell Demonstration Study.

PB91-146365/REB PC **A03**/MF **A01**
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
W. G. Glen, M. Sarker, W. J. Dunn, and D. R. Scott. c1990, 22p EPA/600/J-89/497
Pub. in Tetrahedron Computer Methodology, v2 n6 p377-396 1989. Prepared in cooperation with Illinois Univ. at Chicago.

Software for the analysis of multivariate chemical data by principal components and partial least squares methods is included on disk. The methods extract latent variables from the chemical data with the UNIversal PArtial Lease Squares (UNIPALS) algorithm. The software is written in BASIC, provides a number of editing and preprocessing options and is interactive. The method provided here is limited to the analysis of 20 x 20 matrices. It contains options for the graphical display of scores and loadings for interpretation of the results of analyses. (Copyright (c) 1990 Pergamon Press plc.)

Keywords: *Multivariate analysis, *Data analysis, *Chemical analysis, *Computer applications, Computer software, Least squares method, Regression analysis, Algorithms, Interactive systems, Data processing, Preprocessing, Reprints, Principal components analysis, Partial least squares, UNIPALS computer program.

PB91-146373/REB PC **A03**/MF **A01**
Principal Components Analysis and Partial Least Squares Regression. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
W. G. Glen, W. J. Dunn, and D. R. Scott. c1989, 28p EPA/600/J-89/498
Pub. in Tetrahedron Computer Methodology, v2 n6 p349-376 1989. Prepared in cooperation with Illinois Univ. at Chicago.

The mathematics behind the techniques of principal component analysis and partial least squares regression is presented in detail, starting from the appropriate extrema conditions. The meaning of the resultant vectors and many of their mathematical interrelationships are also presented. Also, partial least squares is developed as a 'modification' of principal component analysis to underline the relationship between these two techniques.

Keywords: *Multivariate analysis, *Data analysis, Pattern recognition, Classifying, Algorithms, Mathematical models, Correlation, Regression analysis, Variance(Statistics), Reprints, *Principal component analysis, *Partial least squares regression.

PB91-146381/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings. Journal article.
Maryland Univ., College Park. Dept. of Botany.
J. H. Sullivan, and A. H. Teramura. c1989, 8p EPA/600/J-89/499
Grant EPA-R-814-017-01-0
Pub. in Physiologia Plantarum, v77 p202-207 1989. Sponsored by Corvallis Environmental Research Lab., OR.

One-year old loblolly pine(Pinus taeda L.) seedlings were grown in an unshaded greenhouse for seven months under four levels of ultraviolet-B(UV-B) radiation simulating stratospheric ozone reductions of 16, 25, and 40% and included a control with no UV-B radiation. Seedlings receiving the lowest supplemental UV-B irradiance showed reductions in growth and photosynthetic capacity after only one month of irradiation. These reductions persisted and resulted in lower biomass production, while no increases in UV-B-adsorbing compounds in needles were observed. Seedlings receiving UV-B radiation which simulated a 25% stratospheric ozone reduction showed an increase in UV-B-absorbing-compound concentrations after six months, which paralleled a recovery in photosynthesis and growth after an initial decrease in these characteristics. The seedlings grown at the highest UV-B irradiance (40% stratospheric ozone reduction) showed a more rapid increase in the concentration of UV-B-absorbing compounds and no effects of UV-B radiation on growth or phtosynthetic capacity until after four months at this irradiance. Changes in photosynthetic capacity were probably the result of direct effects on light-dependent processes, since no effects were observed on either needle chlorophyll concentrations or stomatal conductance.

Keywords: *Solar ultraviolet radiation, *Pine trees, Photosynthesis, Plant tissues, Dose-response relationships, Plant growth, Seedlings, Ozone, Seasonal variations, Reprints, *Ultraviolet B, *Pinus taeda L., Loblolly pine trees.

PB91-146399/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
UV-B Effects on Terrestrial Plants. Journal article.
Karlsruhe Univ. (Germany, F.R.). Botanisches Inst. und Botanischer Garten.
M. Tevini, and A. H. Teramura. c1989, 11p EPA/600/J-89/500
Pub. in Photochemistry and Photobiology, v50 n4 p479-487 1989. Prepared in cooperation with Maryland Univ., College Park. Dept. of Botany. Sponsored by Corvallis Environmental Research Lab., OR.

The potential impacts of an increase in solar UV-B radiation reaching the Earth's surface due to stratospheric ozone depletion have been investigated by several research groups during the last 15 years. Overall, the effectiveness of UV-B varies both among species and among cultivars of a given species. Sensitive plants often exhibit reduced growth (plant height, dry weight, leaf area, etc.), photosynthetic activity and flowering. Competitive interactions may also be altered indirectly by differential growth responses. Photosynthetic activity may be reduced by direct effects on phtosynthetic enzymes, metabolic pathways or indirectly through effects on photosynthetic pigments or stomatal function. The fluence response of these changes has yet to be clearly demonstrated in most cases. Plants sensitive to UV-B may also respond by accumulating UV-absorbing compounds in their outer tissue layers, which presumably protect sensitive targets from UV damage. Several key enzymes in the biosynthetic pathways of these compounds have been shown to be specifically induced by UV-B irradiation. Further studies are needed to understand the mechanisms of UV-B effects and the interactions with present stresses and future projected changes in the environment.

Keywords: *Solar ultraviolet radiation, *Terrestrial ecosystems, *Ultraviolet divergences, *Plants(Botany), Photosynthesis, Dose-response relationships, Stomata, Plant growth, Pigments, Ozone, Reprints, *Biological effects(Plants), *Ultraviolet B.

PB91-146407/REB PC **A02**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Functional Bioassays Utilizing Zooplankton: A Comparison. Journal article.
Minnesota Univ., Minneapolis. Dept. of Ecology and Behavioral Biology.
D. C. McNaught. c1989, 7p EPA/600/J-89/501
Grant EPA-R-810775
Pub. in Hydrobiologia 188/189, p117-121 1989. Sponsored by Environmental Research Lab.-Duluth, MN.

Functional zooplankton bioassays based on ingestion, reproduction and respiration are described, with methods for a new ingestion bioassay included. All bioassays are compared using three indices, including the variability of controls, the range of experimental responses, and a listing of contaminants causing inhibition/stimulation of response. The ingestion bioassay showed the greatest range of response, and was sensitive to pesticides, PCBs and heavy metals. It was also commonly characterized by a hormesis response. The reproduction bioassay showed the lowest variability, illustrated a reduced range of response, and was sensitive to nutrients and heavy metals. In one study, the respiration bioassay was sensitive only to PCBs. (Copyright (c) 1989 Kluwer Academic Publishers.)

Keywords: *Toxicity, *Zooplankton, *Chemical water pollutants, Bioassay, Polychlorobiphenyl compounds, Heavy metals, Pesticides, Respiration, Reproduction(Biology), Reprints.

PB91-146415/REB PC **A02**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment. Journal article.
Minnesota Univ.-Duluth. Natural Resources Research Inst.
K. B. Lodge, and P. M. Cook. c1989, 8p EPA/600/J-89/502
Pub. in Chemosphere, v19 n1-6 p439-444 1989. Sponsored by Environmental Research Lab.-Duluth, MN.

A desorption experiment is described in which the sediment-to-water partition coefficient for 2,3,7,8-tetrachlorodibenzo-p-dioxin is measured for a sample from Lake Ontario. After a contact period of 4 days, the logarithm of the partition coefficient on an organic carbon basis, LogKoc, ranges from 7.25 to 7.59. Information on the partitioning behavior of dioxin between water and dissolved or suspended matter derived from the sediment is provided.

Keywords: *Lake Ontario, *Water pollution sampling, *Sediment water interfaces, *Desorption,

Concentration(Composition), Soil analysis, Adsorption, Organic matter, Land pollution, Carbon, Experimental design, Chlorine organic compounds, Linear regression, Soil contamination, Reprints, *Dibenzodioxin/tetrachloro, *Partition coefficient, Organic carbon, Dioxins.

PB91-146423/REB PC **A03**/MF **A01**
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity. Journal article.
Environmental Research Lab.-Duluth, MN.
T. J. Norberg-King. c1989, 17p EPA/600/J-89/503
Pub. in Environmental Toxicology and Chemistry, v8 p1075-1089 1989.

Renewal and flow-through subchronic tests were conducted on fathead minnows (Pimephales promelas) with nine chemicals and the results compared to early life stage (ELS) or life cycle toxicity values for one water type. In addition, ELS tests were conducted simultaneously with four chemicals to compare 7-d and 32-d test values. Reproducibility of the 7-d test was high. The no observable effect concentrations (NOECs) and lowest observed effect concentrations (LOECs) of the 7-d tests agreed with those of the life cycle test for 60% of the chemicals tested, similar to the agreement of the ELS tests to the life cycle tests for the same chemicals. ELS and 7-d NOECs and LOECs for seven of the nine chemicals agreed within a factor of two. For four chemicals, embryos exposed before the 7-d renewal test did not show greater sensitivity than unexposed embryos; with carbaryl, exposed embryos were less sensitive than the unexposed fish. Renewal and flow-through tests agreed well. Growth was the most sensitive parameter for 59% of the tests and survival was the most sensitive for only 11%.

Keywords: *Toxicity, *Water pollution effects(Animals), Life cycles(Biology), Embryo, Chemical water pollutants, Reprints, *Pimephales promelase, *No observable effect concentration(NOEC), *Lowest observed effect concentration(LOEC), *Fathead minnows.

PB91-146431/REB PC **A03**/MF **A01**
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States. Journal article.
Environmental Research Lab.-Duluth, MN.
D. W. Kuehl, B. C. Butterworth, A. McBride, S. Kroner, and D. Bahnick. c1989, 20p EPA/600/J-89/504
Pub. in Chemosphere, v18 n9/10 p1997-2014 1989. Prepared in cooperation with Wisconsin Univ.-Superior. Center for Lake Superior Environmental Studies.

A survey of contamination of fish from major watersheds in the United States by 2.3.7.8-TCDD has been conducted by the U.S. EPA. Bottom feeding and predator fish were collected at 90 statistically selected and 305 regionally selected sites and analyzed by GC/MS. It was found that 19% of the statistically sampled sites and 31% of the regionally selected sites were contaminated at or above a minimum level of detection varying from 0.5 to 2.0 pg/g. Ten percent of all samples were contaminated at levels greater than 5.0 pg/g. It was also observed that a subset of samples collected at sites near discharge from pulp/paper manufacture (N=28) had a higher frequency of TCDD contamination above 5.0 pg/g (38%). The subset of samples also contained the sample of the greatest level of TCDD contamination (85 pg/g).

Keywords: *Water pollution effects(Animals), *Tetrachlorodibenzodioxins, *Toxicity, Mass spectroscopy, Sediments, Soil contamination, Quality assurance, Quality control, United States, Reprints, *Watersheds.

PB91-146449/REB PC **A02**/MF **A01**
Corvallis Environmental Research Lab., OR.
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test. Journal article.
NSI Technology Services Corp., Corvallis, OR.
S. M. Meyers. c1990, 10p EPA/600/J-90/296
Contract EPA-68C8000G
Pub. in Bulletin of Environmental Contamination Toxicology, v45 p667-674 1990. Sponsored by Corvallis Environmental Research Lab., OR.

The question of test animal age is not new in wildlife toxicology. Researchers at the U.S. Environmental Protection Agency, Environmental Research Laboratory in Corvallis, OR have noted that LC50 values also increased with test animal weight. Previous studies reported that food consumption in proportion to body weight decreased with increased age and that the natural reduction in food consumption could reduce potential exposure by 60%. They did not attribute the phenomenon to differences in body weight among different aged birds. Rather, they attributed it to maturation of biochemical and physiological processes associated with increased age. The study investigated how age and body weight and the interaction of these two factors of northern bobwhite affected results of the avian dietary toxicity test.

Keywords: *Birds, *Wildlife, *Aging(Physiology), *Body weight, Diet, Food consumption, Biochemistry, Physiology, Mortality, Insecticides, Reprints, *Northern bobwhite, *Colinus virginianus, *Avian dietary toxicity test.

PB91-146456/REB PC **A02**/MF **A01**
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction. Journal article.
Corvallis Environmental Research Lab., OR.
G. Reams, and M. M. P. Huso. c1989, 6p EPA/600/J-90/297
Summary in French. Pub. in Canadian Jnl. of Forest Research 20, p250-253 1990. Prepared in cooperation with Oregon State Univ., Corvallis. Dept. of Forest Resources.

Red spruce (Picea rubens Sarg.) sites from northern Maine was classified by radial growth release history. Two major releases were apparent for a majority of the sites. The first was a reduction and subsequent increase in radial increment in 1920. The second was an increase in radial increment from 1935 to 1955. Red spruce radial growth reduction in the 1960s is apparent only for sites released from 1935 to 1955 (approximately 54% of the sites in the study). These sites are now approaching the radial growth rates of the unreleased stands. Birch dieback is suggested as a probable contributor to the 1935-1955 red spruce growth increase and subsequent 1960s growth reduction.

Keywords: *Plant growth, *Forestry, *Defoliation, Canada, Longitudinal studies, Reprints, *Red spruce, *Radical growth reduction, Picea rubens Sarg.

PB91-146472/REB PC **A02**/MF **A01**
Electric Power Research Inst., Palo Alto, CA.
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project. Journal article.
Corvallis Environmental Research Lab., OR.
D. R. Whitehead, D. F. Charles, and R. A. Goldstein. c1990, 10p EPA/600/J-90/291
Pub. in Jnl. of Paleolimnology, v3 p187-194 1990. Prepared in cooperation with Indiana Univ. at Bloomington. Dept. of Biology. Sponsored by Electric Power Research Inst., Palo Alto, CA., and National Science Foundation, Washington, DC.

Collected sets of papers synthesizing data derived from the PIRLA project (Paleoecological Investigation of Recent Lake Acidification) will appear in coming issues of the Journal of Paleolimnology. The paper is designed to highlight these forthcoming papers, review the development and objectives of PIRLA, and acknowledge the many who have supported PIRLA in so many crucial ways. (Copyright (c) 1990 Kluwer Academic Publishers. Printed in Belgium.)

Keywords: *Lakes, *Acidification, *Aquatic ecosystems, *Paleontology, *Limnology, Air water interations, Long term effects, Precipitation(Meteorology), Biogeochemistry, pH, Water pollution, Deposition, Air pollution, Acid rain, Reprints, *Paleoecological Investigation of Recent Lake Acidification Project.

PB91-146480/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Regional Framework for Establishing Recovery Criteria. Journal article.
NSI Technology Services Corp., Corvallis, OR.
R. M. Hughes, T. R. Whittier, C. M. Rohm, and D. P. Larsen. c1990, 13p
Contract EPA-68-C8-0006
Pub. in Environmental Management, v14 n5 p673-683 1990. Sponsored by Corvallis Environmental Research Lab., OR.

Effective assessments of aquatic ecosystem recovery require ecologically sound endpoints against which progress can be measured. Site-by-site assessments of end points and potential recovery trajectories are impractical for water resource agencies. Because of the natural variation among ecosystems, applying a single set of criteria nationwide is not appropriate either. The article demonstrates the use of a regional framework for stratifying natural variation and for determining realistic biological criteria. A map of ecoregions, drawn from landscape characteristics, formed the framework for three statewide case studies and three separate studies at the river basin scale. Statewide studies of Arkansas, Ohio, and Oregon, USA, streams demonstrated patterns in fish assemblages corresponding to ecoregions. The river basin study in Oregon revealed a distinct change at the ecoregion boundary; those in Ohio and Montana demonstrated the value of regional reference sites for assessing recovery. Ecoregions can be used to facilitate the application of ecological theory and to set recovery criteria for various regions of states or of the country. Such a framework provides an important alternative between site-specific and national approaches for assessing recovery rates and conditions. (Copyright (c) 1990 Springer-Verlag New York Inc.)

Keywords: *Aquatic ecosystems, *Water quality, *Biological effects, *Water pollution control, Water resources, Natural resources management, Regional analysis, Standards compliance, Water pollution standards, State government, Pollution regulations, Arkansas, Ohio, Oregon, Reprints.

PB91-146498/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest. Journal article.
NSI Technology Services Corp., Corvallis, OR.
C. E. Peterson, and J. W. Hazard. c1990, 18p EPA/600/J-90/293
Pub. in Forest Science, v36 n3 p625-640 Sep 90. Sponsored by Corvallis Environmental Research Lab., OR.

Hypothesis-testing for differences in growth responses among physiographic strata, thinning levels, and fertilizer dosage levels resulted in a set of empirical models for predicting volume increment response of even-aged coastal Douglas-fir to nitrogen fertilizer. Absolute and percent responses are estimated for stands both thinned and unthinned, as a function of dosage levels and physiographic provinces. Although not 'highly' significant, the physiographic factor was retained in the models for purposes of refinement.

Keywords: *Plant growth, *Forestry, Dose-response relationships, Coastal regions, Comparative evaluation, Tables(Data), Graphs(Charts), *Nitrogen fertilizers, Reprints, *Douglas fir, Pseudotsuga menziesii, Tsuga heterophylla, Pacific Northwest Region(United States).

PB91-146506/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression. Journal article.
NSI Technology Services Corp., Corvallis, OR.
E. H. Lee, D. T. Tingey, and W. E. Hogsett. c1990, 22p EPA/600/J-90/294
Contract EPA-68-C8-0006
Pub. in Communications in Statistics (Simulation and Computation), v19 n3 p951-970 1990. Sponsored by Corvallis Environmental Research Lab., OR.

Quantifying the relationship between chronic pollutant exposure and the ensuring biological response requires consideration of nonlinear functions that are flexible enough to generate a wide range of response curves. The linear approximation (i.e., Wald's) interval estimates for ozone-induced relative crop yield loss are sensitive to parameter curvature effects in nonlinear regression. The adequacy of Wald's confidence interval for proportional response is studied using the nonlinearity measures proposed by Bates and Watts (1980), Cook and Goldberg (1986), and Clarke (1987a & b) and the profile t plots of Bates and Watts (1988). Numerical examples comparing Wald's, likelihood ratio, the bootstrap, and Clarke's adjusted 95% confidence intervals for relative crop yield loss are presented for a number of ozone exposure studies conducted by the National Crop Loss Assessment Network

(NCLAN) program. At ambient levels of ozone concentration, the effects of nonlinearity were significant and invalidated the adequacy of Wald's confidence interval. Depending upon the severity of the curvature effects, an alternative interval (i.e., Clarke's adjustment to Wald's interval or the likelihood ratio interval) for proportional yield loss should be considered. (Copyright (c) 1990 Marcel Dekker, Inc.)

Keywords: *Ozone, *Air pollution effect(Plants), *Farm crops, *Confidence limits, Seasonal variations, Mathematical models, Dose-response relationships, Plant growth, Reprints, *Crop yield.

PB91-146514/REB PC **A01**/MF **A01**
Climatically Induced Rapid Acidification of a Softwater Seepage Lake. Journal article.
Corvallis Environmental Research Lab., OR.
K. E. Webster, A. D. Newell, L. A. Baker, and P. L. Brezonik. c1990, 4p EPA/600/J-90/295
Pub. in Nature, v347 n6291 p374-376, 27 Sep 90. Prepared in cooperation with Wisconsin Dept. of Natural Resources, Madison, NSI Technology Services Corp., Corvallis, OR., and Minnesota Univ., Minneapolis.

To establish a relationship between levels of atmospheric pollutants such as SO2 and the acid-base chemistry of lakes is an important but elusive goal of studies on acid precipitation. But the direct effect of acid deposition on the acid-neutralizing capacity (ANC) of lake waters is difficult to isolate, because rates of change of the latter are small and ANC is also influenced by other factors. The authors report here the observation of changes in the ANC of a seepage lake in Michigan driven by the effects of drought on the local hydrology. While levels of acidic wet deposition at the lake remained at a constant, moderate level over a five-year period, a rapid, major loss of ANC occurred because of changes in the input of ANC-rich groundwater. Thus even modest climate fluctuations can have substantial affect on lake chemistry, and must be taken into account when interpreting temporal trends. Sustained drought conditions might similarly alter the acidbase chemistry of other softwater systems. (Copyright (c) Macmillan Magazines Ltd., 1990.)

Keywords: *Water pollution, *Acidification, *Water chemistry, *Lakes, *Climatic changes, Air water interactions, Air pollution, Sulfur dioxide, pH, Acid rain, Deposition, Hydrology, Michigan, Temporal distribution, Reprints, Acid neutralizing capacity.

PB91-146522/REB PC **A03**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity. Journal article Jan-Feb 90.
Nevada Univ. System, Reno. Desert Research Inst.
K. Taylor, S. Wheatcraft, J. Hess, J. Hayworth, and F. Molz. c1990, 14p EPA/600/J-90/298
Grant EPA-R-812713
Pub. in Groundwater, v28 n1 Jan/Feb 90. Prepared in cooperation with Auburn Univ., AL. Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

Six borehole methods for determining the vertical distribution of hydraulic conductivity in unconsolidated geologic formations are evaluated. Staddle packer tests are inappropriate if there is a hydraulic path around the packer on the outside of the well screen. Methods based on grainsize analysis fail to incorporate the influence of small-scale structure and packing. Methods based on relationships between electrical and hydraulic conductivity require special conditions and are site- and formation-specific. Borehole effects invalidate methods based on the natural flow of fluid through a well bore. Stoneley wave attenuation methods are not effective in unconsolidated formations. A single-well electrical tracer test is effective, but requires the injection of significant volumes of fluid.

Keywords: *Boreholes, *Hydraulic conductivity, *Ground water, *Contamination, Formation tests, Reservoir engineering, Electrical conductivity, Well logging, Well tests, Electrical prospecting, Fluid flow, Reprints.

PB91-146530/REB PC **A03**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus. Journal article.
Nevada Univ. System, Reno. Desert Research Inst.
K. Taylor, and F. Molz. c1990, 17p EPA/600/J-90/299
Grant EPA-R-812713
Pub. in Jnl. of Contaminant Hydrology, v5 p317-332 1990. Prepared in cooperation with Auburn Univ., AL. Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

A method is developed to determine the Hydraulic conductivity and porosity of the formation surrounding a well as a function of depth. An electrically anomalous fluid is injected into a fully screened well and the radius of invasion is determined by induction logging. The radius of invasion is determined at several times so that the rate of invasion and the hydraulic head required to inject the tracer, a hydraulic conductivity log can be calculated. A porosity log can be obtained using Archie's rule and a model of formation electrical conductivity that accounts for the influence of the electrical conductivity of the formation matrix. The logs calculated by this method are insensitive to near-hole drilling disturbances. Field trials demonstrate that the results of the method agree well with other methods. (Copyright (c) 1990 Elsevier Science Publishers B.V.)

Keywords: *Porosity, *Ground water, *Hydraulic conductivity, *Formation tests, *Contamination, Electrical prospecting, Transport properties, Well tests, Well logging, Reservoir engineering, Electrical conductivity, Reprints.

PB91-146548/REB PC **A02**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment. Journal article.
Lockheed Engineering and Sciences Co., Inc., Las Vegas, NV.
J. R. Donnelly, A. H. Grange, N. J. Nunn, G. W. Sovocool, and J. J. Breen. c1990, 10p EPA/600/J-90/300
Contract EPA-68-03-3249
Pub. in Chemosphere, v20 n10-12 p1423-1430 1990. Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

At least 36 million pounds of brominated flame retardants are used in the U.S. annually. Most if not all of these materials enter the waste stream via landfilled plastic waste, municipal incinerator fly ash, or automotive fluff waste. Analytical methodology is summarized which is suitable for environmental monitoring of these wastes, and the significance of the analytical results is discussed.

Keywords: *Environmental monitoring, *Waste management, Bromine organic compounds, Earth fills, Waste disposal, Plastics, Municipal wastes, Fly ash, Automobiles, Reprints, *Dibenzodioxin/bromo, *Dibenzofuran/bromo, *Dibenzodioxin/bromochloro, *Dibenzofuran/bromochloro.

PB91-146555/REB PC **A03**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry. Journal article.
Lockheed Engineering and Sciences Co., Inc., Las Vegas, NV.
J. R. Donnelly, L. A. Drewes, R. L. Johnson, W. D. Munslow, and K. K. Knapp. c1990, 35p EPA/600/J-90/301
Contract EPA-68-03-3249
Pub. in Thermochimica Acta, v167 p155-187 1990. Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

Differential scanning calorimetry (DSC) has been applied to 273 environmental standards, including pesticides, herbicides and related compounds. Members of the following chemical classes were analyzed: organophosphorus, organochlorine, phenol, triazine, uracil, phenoxy acid, urea, carboxylic acid, amide, and others including amines, organometallics, esters and heterocycles. Values for the heat of fusion, experimental temperature onset, theoretical temperature onset for 100% pure compound, and percent purity are presented. DSC was found to be a widely applicable method to most classes of organic environmental standards and their metabolites.

Keywords: *Differential thermal analysis, *Heat of fusion, *Herbicides, *Pesticides, *Organic compounds, *Calorimetry, Purity, Data acquisition, Temperature, Reprints, *Environmental standards.

PB91-146563/REB PC **A03**/MF **A01**
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
P. A. Gabele. c1990, 11p EPA/600/J-90/302
Pub. in Jnl. Air and Waste Management Association, v40 n3 Mar 90.

In response to the occurrence of the increasingly severe ambient ozone exceedances, regional environmental managers are examining the possibility of a cleaner fuel for automobiles. At this time the leading candidate is methanol. In anticipation of a shift to methanol, variable-fueled automobiles capable of operating on gasoline and/or methanol are being developed. The study examines both the exhaust and evaporative emissions from a prototype General Motors Variable Fuel Corsica. Results are reported for tests conducted at temperatures of 40, 75, and 90 f, and for fuels M0, M25, M50, M85, and M100. In addition to regulated emissions and fuel economy, emission rates for methanol, aldehydes, and a large number of hydrocarbon compounds were determined. The data indicate that increasing the fuel's methanol content does not affect the exhaust organic emission rate (calculated in accordance with the regulation) from variable-fueled cars, but formaldehyde and methanol comprise increasingly greater portions of the organic material while hydrocarbons comprise less. The effect of ambient temperature on both exhaust and evaporative emissions is similar to its effect on gasoline cars: organic and carbon monoxide exhaust emissions increase substantially at the lower temperatures, and evaporative emissions increase steadily with increases in temperature. (Copyright (c) 1990 Air & Waste Management Association.)

Keywords: *Air pollution abatement, *Alternative fuels, *Methanol fuels, *Gasohol, Internal combustion engines, Ozone, Air pollution control, Carbinols, Alcohol fuels, Test chambers, Experimental design, Performance standards, Mobile pollutant sources, Evaporation, Air pollution sampling, Fugitive emissions, Exhaust emissions, Formaldehyde, Reprints.

PB91-146571/REB PC **A03**/MF **A01**
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
F. D. Stump, K. T. Knapp, and W. D. Ray. c1990, 11p EPA/600/J-90/303
Pub. in Jnl. Air and Waste Management Association, v40 n6 p872-880 Jun 90.

The evaporative and exhaust emissions from a 1988 GM Corsica with adaptive learning were measured with 4 fuels at 40F, 75F, and 90F. Test fuels were unleaded summer grade gasoline and a blend of this gasoline containing 8.1% ethanol. A refiner's blend stock and the blend stock containing 16.2 % methyl tertiary butyl ether (MTBE) were also included in the study. Regulated emissions (total hydrocarbons, CO, and NOx), detailed aldehydes, detailed hydrocarbons, ethanol, MTBE, benzene, and 1,3-butadiene were determined. Results indicated that higher levels of regulated emissions were produced at low temperatures. The blended fuels produced almost twice the evaporative hydrocarbon emissions at high temperatures as did the base fuels. 1,3-butadiene emissions decreased slightly with increasing temperatures. Ethanol and MTBE evaporative and exhaust emissions were greater at higher test temperatures. Acetaldehyde emissions from the use of ethanol fuel blend doubled. The MTBE fuel blend appeared to offer the most reduction in total hydrocarbon, carbon monoxide, and oxides of nitrogen for the fuels and temperatures tested.

Keywords: *Exhaust emissions, *Fugitive emissions, *Air pollution abatement, *Unleaded gasoline, *Gasohol, Seasonal variations, Ethanol fuels, Alternative fuels, Evaporation, Performance standards, Air pollution sampling, High temperature tests, Mobile pollutant

sources, Fuel additives, Blends, Test chambers, Experimental design, Reprints, Ether/methyl-butyl.

PB91-146589/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Wind Tunnel Evaluation of PM10 Samplers. Journal article.
Research Triangle Inst., Research Triangle Park, NC.
M. B. Ranade, M. C. Woods, F. L. Chen, L. J. Purdue, and K. A. Rehme. c1990, 21p EPA/600/J-90/304
Contract EPA-68-02-4550
Pub. in Aerosol Science and Technology, v13 p54-71 1990. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The Environmental Protection Agency (EPA) has promulgated new national ambient air quality standards for PM10 (particles smaller than 10 micrometers aerodynamic diameter). Samplers used to collect PM10 must be subjected to wind tunnel tests before they can be approved as part of a designated reference or equivalent method. Monodisperse liquid and solid particles are used over a range of particle sizes and windspeeds to characterize the sampling effectiveness and 50 percent cutpoint of candidate samplers. The paper describes an EPA wind tunnel test facility, sampler test procedures, and results of selected sampler tests with liquid and solid test particles. The agreement between wind tunnel results and observations from field measurements of ambient particulate matter is also discussed. (Copyright (c) 1990 Elsevier Science Publishing Co., Inc.)

Keywords: *Air samplers, *Particles, *Air pollution sampling, Wind tunnels, Test chambers, Performance evaluation, Field tests, Particle size, Concentration(Composition), Solids, Federal test procedure, Design criteria, Specifications, Aerosols, Liquids, Reprints.

PB91-146597/REB PC **A03**/MF **A01**
Dense Gas Removal from a Valley by Crosswinds. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
G. A. Briggs, R. S. Thompson, and W. H. Snyder.
c1990, 40p EPA/600/J-90/305
Pub. in Jnl. of Hazardous Materials, v24 p1-38 1990.

Wind tunnel experiments were made to determine how rapidly dense gas trapped in a topographic depression could be removed by an entraining crosswind. The two-dimensional outflow volume flux, vo, was assumed equal to the inflow rate during 92 steady-state experiments with CO2 continuously supplied into the bottom of two-dimensional, V-shaped valleys. As predicted by theory, at large Reynolds numbers it was found that vo is approximately equal to Us(3)/gi, where Us is the speed just above the dense gas pool and gi' is gravity times the relative density difference. The width of the pool, w, does not affect vo when the primary Froude number < 1, except at low Reynolds numbers; in this case the data suggest vo is approximately equal to (Us wK)1/2 as an asymptote, where k is the molecular diffusivity. A universal relationship is suggested for vo bridging these two asymptotes. Transient experiments were conducted by filling a valley with dense gas, turning it off, then quickly removing a sliding cover; vo was measured as a function of time with an array of samplers downwind. These experiments essentially confirmed predictions based on the steady-state results, even when SF6 was substituted for CO2.

Keywords: *Dissipation, *Valleys, *Wind effects, *Gases, *Hazardous materials, Wind tunnels, Simulation, Topographic features, Air pollution, Carbon dioxide, Sulfur fluorides, Reynolds numbers, Froude number, Reprints.

PB91-146605/REB PC **A01**/MF **A01**
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
S. M. Bromberg. c1990, 5p EPA/600/J-90/306
Pub. in Jnl. of the Air and Waste Management Association, v40 n7 Jul 90.

The U.S. Environmental Protection Agency is initiating an Environmental Monitoring and Assessment Program (EMAP) to monitor the status and trends of the nation's near coastal waters, forests, freshwater wetlands, surface waters, agrosystems, and arid lands. The program is intended to evaluate the effectiveness of Agency policies at protecting ecological resources occurring in these systems. Monitoring data collected for all ecosystems will be integrated for national status and trends assessments.

Keywords: *Research program administration, *Pollution control, *Ecology, *Natural resources, Monitoring, Coasts, Surface waters, Agriculture, Arid land, Program evaluation, Government policies, Effectiveness, Protection, Trends, Forest land, Quality assurance, Reprints, *Ecosystems, Wetlands, Habitats.

PB91-146613/REB PC **A02**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding. Journal article.
Hebrew Univ. of Jerusalem (Israel). Inst. of Earth Sciences.
D. Sharon. c1990, 9p EPA/600/J-90/307
Pub. in Jnl. of Applied Meteorology, v29 n5 May 90. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

A frequent problem in the statistical analysis of data in environmental sciences is the synthesis of results obtained independently from various sets of data such as from different measuring points or from replicated experiments, etc. Unlike the analysis of the separate sets themselves, their ultimate combined evaluation has been mostly given in descriptive terms only. It is that critical final stage of data synthesis where meta-analysis comes in. Some principles of the method are presented and their usefulness is discussed. The approach is illustrated using previously published results on the hydrological effect of rainfall enhancement in Israel. It is shown that while the resulting increase in discharge from separate hydrologic zones is statistically insignificant, the integrated totality of results (assuming independence) is significant at less than 5 percent.

Keywords: *Statistical analysis, *Hydrologic cycle, *Cloud seeding, *Mathematical models, Air water interactions, Water resources, Water runoff, Case studies, Rainfall, Data processing, Discharge(Water), Reprints, *Meta-analysis.

PB91-146621/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy. Journal article.
Atmospheric Environment Service, Downsview (Ontario).
H. A. Wiebe, K. G. Anlauf, E. C. Tuazon, A. M. Winer, and H. W. Biermann. c1990, 12p EPA/600/J-90/308
Pub. in Atmospheric Environment, v24A n5 p1019-1028 1990. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

Using data obtained during the 1985 Nitrogen Species Methods Comparison Study (Atmos. Environ. 22, 1517 (1988)), several measurement methods for sampling ambient ammonia are compared. Eight days of continuous measurements at Pomona College, a smog receptor site in Los Angeles, provided an extensive data base for assessment of the following methods: Fourier transform infrared spectroscopy (FTIR), three filter pack configurations, a simple and an annular denuder, and the transition flow reactor. FTIR was defined as the reference method and it reported hourly NH3 concentrations ranging from >60 to 2280 nM/cu m (>1.5 - 57 ppb) during the course of the study, the highest values coming from the influence of nearby livestock operations. Although only limited quality assurance procedures were carried out, the following conclusions can, nevertheless, be drawn: relative to the FTIR average values, (1) for 4-6 h sampling periods, the averages of the three filter packs from three research groups were 83-130% and the annular denuder average was 87%, and (2) for 10-12 h sampling periods, the simple denuder averaged 90% and the two transition flow reactors were 77-98%. Possible reasons for the reported systematic biases are presented, but these are not able to fully explain the large range of differences reported by the various methods.

Keywords: *Air pollution sampling, *Ammonia, *Air pollution detection, Aerosols, Comparison, Quality assurance, Fourier transform spectrometers, Infrared spectroscopy, Continuous sampling, Concentration(Composition), Livestock, Filters, Agricultural products, Reactors, Reprints, Annular denuders, Los Angeles(California).

PB91-146639/REB PC **A02**/MF **A01**
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems. Journal article Sep-Nov 89.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
T. G. Brna, and J. D. Kilgroe. c1990, 10p EPA/600/J-90/310
Pub. in Chemosphere, v20 n10-12 p1875-1882 1990.

The article gives results of tests on five modern municipal waste combustors (MWCs) to characterize or determine the performance of representative combustor types and associated air emission control systems in the regulatory development process. Test results for uncontrolled (combustor outlet) and controlled (flue gas cleaning system outlet) polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) are reported, along with pertinent information on other tests. The EPA is revising air pollutant emission rules for new MWCs and preparing guidelines for existing MWCs. These rules will limit emissions of PCDDs, PCDFs, CO2, and acid gases (HCl and SO2) as well as require tighter control of particulate matter emissions.

Keywords: *Air pollution control, *Incinerators, Municipal wastes, Waste disposal, Performance evaluation, Flue gases, Particles, Pollution regulations, Air pollution standards, Reprints, *Polychlorinated dibenzodioxins, *Polychlorinated dibenzofurans.

PB91-146647/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors. Journal article Oct 88-Oct 89.
Acurex Corp., Research Triangle Park, NC.
B. K. Gullett, K. R. Bruce, and L. O. Beach. c1990, 11p EPA/600/J-90/309
Contract EPA-68-02-4701
Pub. in Chemosphere, v20 n10-12 p1945-1952 1990. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The paper gives results of an examination of the catalytic effects of copper and iron compounds for their behavior in promoting formation of chlorine (C12), the major chlorinating agent of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), in an environment simulating that of municipal waste fly ash. C12 formed as a result of a metal-catalyzed reaction of HC1 with O2. Catalytic activity was greatest at a temperature of about 400 C, supporting a theory of de novo synthesis of PCDDs and PCDFs on fly ash particles downstream of waste combustion.

Keywords: *Catalysis, *Fly ash, *Chlorine, *Synthesis(Chemistry), *Air pollution control, Metals, Municipal wastes, Waste disposal, Copper compounds, Experimental design, Toxic substances, Reprints, *Polychlorinated dibenzodioxins, *Polychlorinated dibenzofurans, Chemical reaction mechanisms.

PB91-146654/REB PC **A02**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters. Journal article Jul 88-Apr 89.
John B. Pierce Foundation Lab., New Haven, CT.
B. P. Leaderer, P. M. Boone, and S. K. Hammond.
c1990, 8p EPA/600/J-90/311
Grant EPA-R-813594-020

Pub. in Environmental Science and Technology, v24 n6 p908-912 1990. Prepared in cooperation with Yale Univ., New Haven, CT. School of Medicine, and Massachusetts Univ. Medical School, Worcester. Dept. of Community and Family Medicine. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The article discusses chamber studies of four unvented kerosene space heaters to assess emissions of total particle, sulfate, and acidic aerosol. The heaters tested represented four burner designs currently in use by the public. Kerosene space heaters are a potential source of fine particles (= or < 2.5 micrometer diameter), sulfate, and acidic aerosol indoors. Fine particle concentrations in houses in which the heaters are used may be increased in excess of 20 micrograms/m3 over background levels. Sulfate and acidic aerosol levels in such houses could exceed average and peak outdoor concentrations. Maltuned heaters could produce exceptionally high levels of all air contaminants measured. (Copyright (c) 1990 American Chemical Society.)

Keywords: *Air pollution sampling, *Combustion products, *Indoor air pollution, *Space heaters, Test chambers, Particles, Aerosols, Sulfates, Kerosene, Heating fuels, Fines, Acidification, Concentration(Composition), Residential buildings, Reprints.

PB91-146662/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions. Journal article Mar 87-May 88.
OMNI Environmental Services, Inc., Beaverton, OR.
R. C. McCrillis, and P. G. Burnet. c1990, 11p EPA/600/J-90/312
Contract EPA-68-02-4277
Pub. in Toxicology and Industrial Health, v6 n5 p95-102 1990. Presented at Workshop on Air Toxics, Amersfoort, The Netherlands, May 16-18, 1988. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The paper discusses an emission measurement program in Boise, ID, designed to identify the potential mutagenic impact of residential wood burning on ambient and indoor air. One facet of this field sampling involved obtaining emission samples from chimneys serving wood burning appliances in Boise. A parallel project was undertaken in an instrumented woodstove test laboratory to quantify woodstove emissions during operations typical of Boise usage. Test results showed wide variability probably due primarily to the difficulty in duplicating conditions during stove start-up. Total woodstove dilution sampling system (WSDSS) emissions showed the expected inverse correlation with burnrate for the conventional stove and nearly flat for the catalytic stove. While there appeared to be little or no correlation of total WSDSS emissions with altitude, the sum of the 16 polynuclear aromatic hydrocarbons (PAHs) quantified showed a direct correlation with altitude: higher PAH emissions at the higher altitude. Two woodstoves were operated in the test laboratory over a range of burnrates, burning either eastern oak or white pine from the Boise area. A conventional stove, manufactured in the Boise area, was tested at altitudes of 90 and 825 m. A catalytic stove was tested only at the high altitude. Pine produced a higher PAH emission rate than oak.

Keywords: *Air pollution sampling, *Wood burning appliances, *Stoves, Burn rate, Combustion efficiency, Wood fuels, Altitude, Aromatic polycyclic hydrocarbons, Residential buildings, Indoor air pollution, Mutagens, Reprints.

PB91-146670/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions. Journal article Mar 87-Mar 89.
Utah Univ., Salt Lake City. Dept. of Chemical Engineering.
C. R. Milne, G. D. Silcox, D. W. Pershing, and D. A. Kirchgessner. c1990, 17p EPA/600/J-90/313
Grant EPA-R-811001
Pub. in Industrial and Engineering Chemistry Research, v29 p2201-2214 1990. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The paper gives results of an analysis of the fundamental processes for the injection of CaCO3 and Ca(OH)2 for the removal of SO2 from combustion gases of coal-fired boilers, on the basis of experimental data and a comprehensive theoretical model. Sulfation data were obtained in a 30-kW isothermal gas-particle transport reactor at conditions simulating those of upper-furnace injection. The theoretical model accounts for particle structure, calcination, sintering, sulfation, and heat and mass transfer. Pore diffusion, product-layer diffusion, and sintering appear to be the principal processes that govern the rate of SO2 capture for the hydrate particles of interest for commercial dry sorbent injection. (Copyright (c) 1990 American Chemical Society.)

Keywords: *Air pollution control, *Sorbents, *Injection, *Sulfation, Mathematical models, Experimental design, High temperature tests, Heat transfer, Mass transfer, Sulfur dioxide, Diffusion, Dry methods, Thermodynamics, Calcium carbonates, Calcium hydroxides, Reprints, *Flue gas desulfurization.

PB91-146688/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model. Journal article Mar 87-Mar 89.
Utah Univ., Salt Lake City. Dept. of Chemical Engineering.
C. R. Milne, G. D. Silcox, D. W. Pershing, and D. A. Kirchgessner. c1990, 13p EPA/600/J-90/314
Grant EPA-R811001
Pub. in Industrial Engineering Chemical Research, v29 n11 p2192-2201 1990. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The paper discusses a mathematical model for the sulfation of CaO, developed around the overlapping grain concept. The potential influence of high mass-transfer rates from simultaneous calcination of CaCO3 or Ca(OH)2 is incorporated in the mass-transfer coefficient for SO2 diffusion to the particle. A solution scheme for the nonlinear differential equation governing pore diffusion with changing particle structure is developed. The influence of grain overlap on product-layer diffusion is quantified. The model predictions show good agreement with published, fundamental differential reactor data which include the influences of surface area, temperature, and SO2 partial pressure. (Copyright (c) 1990 American Chemical Society.)

Keywords: *Air pollution control, *Sorbents, *Injection, *Sulfation, *Mathematical models, Sulfur dioxide, Calcium carbonates, Calcium hydroxides, High temperature tests, Roasting, Diffusion, Area, Temperature, Partial pressure, Porosity, Reprints.

PB91-146696/REB PC **A02**/MF **A01**
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions. Journal article Feb-Mar 90.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
T. G. Brna, and J. D. Kilgroe. c1990, 10p EPA/600/J-90/315
Pub. in Jnl. of Air and Waste Management Association, v40 n9 p1324-1330 Sep 90.

On December 20, 1989, the Environmental Protection Agency (EPA) proposed revised new source performance standards for new municipal waste combustion (MWC) units and guidelines for existing sources. The proposed national regulations require tighter particulate matter control and address precombustion, combustion, and post-combustion controls, the latter two depending on capacity and age of the facility. The air pollutants of concern when municipal solid waste (MSW) is burned will be discussed. Generally, particulate control is an inherent part of the systems used to limit the emissions of these air pollutants. The relationships between MWC air emissions (acid gases, trace organics, and trace heavy metals) control and particulate control will be discussed. Test results to quantify air pollutant emissions from MWC units and their control will be presented and compared with the proposed regulations. (Copyright (c) 1990--Air & Waste Management Association.)

Keywords: *Air pollution control, *New Source Performance Standards, *Air pollution abatement, *Municipal wastes, Air pollution standards, Pollution regulations, Waste disposal, Particles, Standards compliance, Organic compounds, Combustion products, Trace amounts, Heavy metals, Acids, Reprints.

PB91-146704/REB PC **A03**/MF **A01**
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application. Journal article.
Environmental Research Lab.-Duluth, MN.
J. D. Yount, and G. J. Niemi. c1990, 28p EPA/600/J-90/316
Pub. in Environmental Management, v14 n5 p547-569 1990. Prepared in cooperation with Minnesota Univ.-Duluth. Natural Resources Research Inst.

The authors present a narrative account of case studies of the recoveryof flowing water systems from disturbance, focusing on the investigators' conclusions about recovery time and the factors contributing to recovery. They restrict their attention to case studies in which the recovery of some biological property of the system has been examined, excluding those that deal only with physical or chemical properties. Although natural processes and rates of recovery are emphasized, studies of reclamation or restoration of damaged ecosystems are included where they contribute to an understanding of recovery processes. For the majority of studies examined, the systems recovered quite rapidly. In general, longer recovery times were observed in disturbances, such as channelization, that resulted in alterations to physical conditions. The review also indicates that much of their knowledge if recovery in lotic ecosystems is fragmented and uncoordinated. In addition to establishing the bounds of recovery time, their review identifies some research gaps that need to be filled.

Keywords: *Ecosystems, *Water flow, *Biological communities, *Recovery, *Reclamation, Water pollution, Ecological distribution, Case studies, Reviews, Environment managment, Flooding, Thermal pollution, Acid mine drainage, Biota, Pesticides, Streams, Drought, Damage assessment, Fish management, Chemical spills, Reprints.

PB91-146712/REB PC **A03**/MF **A01**
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes. Journal article.
Environmental Research Lab.-Duluth, MN.
J. A. Sorensen, G. E. Glass, K. W. Schmidt, J. K. Huber, and G. R. Rapp. c1990, 14p EPA/600/J-90/317
Pub. in Environmental Science and Technology, v24 n11 p1716-1727 1990. Prepared in cooperation with Minnesota Univ., Duluth. Coll. of Science and Engineering.

In light of increasing fish consumption advisories in several states, a comprehensive multimedia database was created to answer a variety of questions. Mercury concentrations in precipitation, lake water and sediment, zooplankton, and fish were measured and analyzed together with extensive watershed and lake chemistry data for 80 lake watersheds in the study region of northeastern Minnesota including the Superior National Forest, Voyageurs National Park, and Boundary Waters Canoe Area Wilderness. Atmospheric deposition of mercury, transport, water column lifetimes, and sedimentation in lakes are determined. The factors relating mercury concentrations within the lake watershed components are analyzed and discussed. The notable correlates with mercury residue levels in northern pike of a standard length and weight (55 cm, 1.0 kg) were mercury concentrations in zooplankton and water, total organic carbon concentration, and pH. The primary source of mercury was found to be of atmospheric origin. (Copyright (c) 1990 American Chemical Society.)

Keywords: *Watersheds, *Mercury(Metal), *Water pollution sampling, Biological effects, Air water interactions, Deposition, Air pollution, Sediments, Plankton, Fishes, Wildlife, Pollution sources, Aquatic ecosystems, Minnesota, Lakes, Precipitation(Meteorology),

Environmental transport, Atmospheric diffusion, Reprints, Northeast Region(Minnesota).

PB91-146720/REB PC **A02**/MF **A01**
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills. Journal article.
Environmental Research Lab.-Duluth, MN.
R. J. Erickson, and J. M. McKim. c1990, 9p EPA/600/J-90/318
Pub. in Environmental Toxicology and Chemistry, v9 p159-165 1990. Presented at the Symposium on Toxicokinetics, Annual Meeting of the Society of Environmental Toxicology and Chemistry (8th), Pensacola, FL., November 9-12, 1987.

A mathematical model for the exchange of organic chemicals by fish gills was formulated based solely on the limitations imposed by the flows of water and blood into the gills. For large rainbow trout, the model was found to closely follow the magnitude and trends of observed gill uptake rates over a range of octanol/water partition coefficient from 1 to ten to the sixth power. Observations averaged only about 30% less than model predictions. The modest lack-of-fit is presumably due to the effects of diffusional barriers and ionization which would further limit uptake, although uncertainties in model parameters and data are likely also partly responsible. The analysis suggests that these basic physiologicalparameters are of major importance in the regulation of exchange at fish gills and should be accounted for in more detailed toxicokinetic models. Also, the simple model could by itself be useful for approximate assessments of accumulation of organic chemicals by fish.

Keywords: *Pharmacokinetics, *Toxic substances, *Gills, *Trout, Mathematical models, Biological transport, Reprints.

PB91-148262/REB PC **A13**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Urban Air Toxics Monitoring Program, 1989.
Radian Corp., Research Triangle Park, NC.
R. A. McAllister, W. H. Moore, J. Rice, E. Bowles, and D. P. Dayton. Oct 90, 278p EPA/450/4-91/001
Contract EPA-68D80014
See also PB88-148556. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

From January 1989 through January 1990 samples of ambient air were collected at 14 sites in the eastern part of the U.S. Every 12 days, air was integrated over 24-hour periods into passivated stainless steel canisters. Simultaneously, air was drawn through cartridges containing dinitrophenylhydrazine to collect carbonyl compounds. The samples were analyzed at a central laboratory for a total of 37 halogenated and aromatic hydrocarbons, formaldehyde, acetaldehyde, and other oxygenated species. The hydrocarbon species were analyzed by gas chromatography/multiple detectors and gas chromatography/mass spectrometry, while the carbonyl species were analyzed by liquid chromatography. An extensive quality assurance program was carried on to secure high quality data. Complete data for all the carbonyl samples are presented in the report.

Keywords: *Air pollution monitoring, *Air pollution detection, *Toxic substances, *Urban areas, Air samplers, Carbonyl compounds, Site surveys, Concentration(Composition), Chemical analysis, Gas chromatography, Aldehydes, Oxygen organic compounds, Mass spectroscopy, Quality assurance, Liquid chromatography, Halohydrocarbons, Formaldehyde, Acetaldehyde, Aromatic hydrocarbons.

PB91-148270/REB PC **A09**/MF **A01**
Alternative Control Technology Document: Organic Waste Process Vents. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Dec 90, 189p EPA/450/3-91/007

The purpose of the Alternative Control Technology (ACT) document is to provide technical information to address air emissions of volatile organic compounds (VOC) from organic process vents on waste management units treating organic-containing wastes that are exempted from the RCRA process vent air emission standards (40 CFR Parts 264 and 265, Subpart AA). The document contains technical information on air emission rates, control technologies, and environmental and cost impacts of alternative control technologies.

Keywords: *Hazardous materials, *Waste treatment, *Air pollution control, Vents, Exhaust gases, Standards, Air pollution, Cost analysis, Economic impact, Exclusion, Technical assistance, Storage, *Volatile organic compounds, Alternative planning, Resource Conservation and Recovery Act.

PB91-148288/REB PC **A07**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Urban Air Toxics Monitoring Program Aldehyde Results, 1989. Final rept.
Radian Corp., Research Triangle Park, NC.
R. A. McAllister, D. L. Epperson, and R. F. Jongleux. Jan 91, 149p DCN-90-262-045-09, EPA/450/4-91/006
Contract EPA-68D80014
See also PB91-148262. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The U.S. Environmental Protection Agency (EPA) developed the Urban Air Toxics Monitoring Program (UATMP) to help state and local agencies assess the nature and magnitude of their air toxics problems. The UATMP sampler collects ambient air samples at urban sites in 6-liter (L) SUMMA -treated stainless steel canisters. At the same time, through a separate heated sample line, ambient air samples are drawn in parallel through duplicate cartridges which trap the carbonyl compounds from the ambient air. The aldehyde cartridges collected at the UATMP sites for 1989 were extracted and analyzed by the Atmospheric Research and Exposure Assessment Laboratory (AREAL) of the U.S. EPA at Research Triangle Park, NC for formaldehyde, acetaldehyde, and acetone. These carbonyls were selected as target compounds for the 1989 UATMP. The report presents the data summaries and other data assessments for the carbonyl samples collected during the 1989 UATMP season. The air toxics compounds collected in canisters for the 1989 UATMP season are reported separately.

Keywords: *Air pollution monitoring, *Air pollution detection, *Aldehydes, *Toxic substances, *Urban areas, Acetone, Formaldehyde, Acetaldehyde, Air samplers, Site surveys, Concentration(Composition), Chemical analysis, Sample preparation, Liquid chromatography, Carbonyl compounds, Quality assurance, Data processing.

PB91-148296/REB PC **A04**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report. Rept. for Apr-Jul 90.
PEI Associates, Inc., Cincinnati, OH.
R. B. Sukol. Nov 90, 59p EPA/600/2-90/054
Contract EPA-68-03-3413
Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

The Workshop on Innovative Technologies for Treatment of Contaminated Sediments was held in Cincinnati, Ohio June 13-14, 1990. Its twofold purpose was: (1) to provide interested individuals and organizations with current information on innovative treatment technologies for contaminated sediments, and (2) to provide Risk Reduction Engineering Laboratory staff with an opportunity to increase their understanding of the problems associated with the management of contaminated sediments at various locations throughout the United States. The Workshop was organized into six segments related to policy and technology development. 'Setting the Scene' included presentations by representatives from RREL, Office of Water Regulations and Standards (OWRS), EPA's Great Lakes National Program Office (GLNPO), Environment Canada, and the U.S. Army Corps of Engineers (COE). The succeeding four segments were entitled 'Dredged Materials Removal, Pretreatment and Disposal', 'Extraction Technologies', 'Biological/Chemical Treatment Technologies', and 'Other Technologies of Interest'. The Workshop Summary Report contains summaries of each presentation and panel discussion. The final segment of the workshop consisted of an open discussion on 'Future Direction for Contaminated Sediments Treatment'. The questions raised by attendees covered overall approaches to pollution prevention and forthcoming strategies, development of criteria for action and target levels, monitoring requirements, cost/benefit concerns, short-term versus long-term considerations, and characterization of ecosystems. The open discussion is summarized in the final report section.

Keywords: *Meetings, *Technology utilization, *Sediments, *Dredged spoil, *Water pollution control, Biological treatment, Waste disposal, Pollution abatement, Benefit cost analysis, Sediment water interfaces, Aquatic ecosystems, Extraction, *Cleanup operations, Chemical treatment.

PB91-148304/REB PC **A10**/MF **A02**
Polymer Manufacturing Industry - Background Information for Promulgated Standards. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Oct 90, 215p EPA/450/3-83/019B
See also PB88-114996.

Standards of performance for the control of volatile organic compoud emissions from the polymer manufacturing industry are being promulgated under Section 111 of the Clean Air Act. These standards apply to new, modified, and reconstructed facilities that manufacture polypropylene, polyethylene, polystyrene, or poly(ethylene terephthalate). The document contains a summary of public comments, EPA responses, and a discussion of differences between the proposed and promulgated standard.

Keywords: *Environmental impact statements-Final, *Air pollution control, *Volatile organic compounds, *Plastics industry, *Rubber industry, Performance standards, Air pollution standards, Industrial wastes, Polymerization, Polypropylene, Polyethylene, Polystyrene, Polyethylene terephthalate, Composite materials, Clean Air Act.

PB91-148312/REB PC **A04**/MF **A01**
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
G. F. Simes. Feb 91, 75p EPA/600/8-91/003

Data collection activities performed for the Risk Reduction Engineering Laboratory (RREL) of the U.S. Environmental Protection Agency are divided into four categories, depending on the intended use of the data. Quality Assurance (QA) Project Plans are written to ensure that project needs will be met and that quality control procedures are sufficient for obtaining data of known quality. The level of QA required, however, depends on the project category selected for a given project. Projects that are of sufficient scope and substance that their results could be used directly, without additional support, for compliance or other litigation are identified as Category I projects. Such projects are of critical importance to the Agency goals and must be able to withstand legal challenge. Accordingly, the QA requirements will be the most rigorous and detailed in order to ensure that such goals are met. To assist professional scientists and engineers in preparing QA Project Plans, separate guidance manuals in an easy-to-read format have been developed for each category. The Category I manual contains detailed descriptions of each of the 15 required elements of a Category I QA Project Plan. Also included are definitions and explanations of frequently used terms, examples of QA forms and charts, sample equations and numerous types of tables suggested for summarizing information.

Keywords: *Manuals, *Environmental surveys, *Project planning, *Environmental protection, Management planning, Pollution regulations, Law enforcement, Risk assessment, Data processing, Standards compliance, Sampling, Quality control, Performance evaluation, Records management, *Quality Assurance Project Plans.

PB91-148320/REB PC **A05**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
Denver Univ., CO. Dept. of Chemistry.
D. H. Stedman, G. A. Bishop, and M. L. Pitchford. Jan 91, 92p EPA/600/4-90/032

Contract EPA-R-815778-01-0
Portions of this document are not fully legible. Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

Carbon monoxide (CO) emission measurements of thousands of vehicles per day are possible with a recently evaluated remote sensor (Fuel Efficiency Automobile Test) developed at the University of Denver. Funded by the Environmental Monitoring Systems Laboratory - Las Vegas (EMSL-LV) Innovative Research Program, the evaluation has demonstrated the comparability of volume concentration measurements made by the method with traditional emission monitoring instrumentation. Measurements are made unobtrusively as vehicles pass through an infrared light beam directed across one traffic lane about 25 centimeters above the pavement. A video camera records the vehicle registration number of each vehicle as its CO emissions are measured so that characteristics of individual vehicles and vehicle fleet categories can be associated with each measurement. Determining appropriate applications and monitoring protocols for the technology is the second phase of the Innovative Research Project. Similar remote sensing technology for monitoring mobile hydrocarbon and nitrogen oxide emissions can be developed to address the urban ozone non-attainment problem.

Keywords: *Air pollution monitors, *Remote sensing, *Carbon monoxide, *Mobile pollutant sources, Exhaust emissions, Concentration(Composition), Hydrocarbons, Nitrogen oxides, Ozone, Computer systems performance, Combustion efficiency, Urban areas, Performance evaluation, Design criteria, Tables(Data), Carbon dioxide, *Fuel Efficiency Automobile Test.

PB91-148338/REB PC **A05**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance. Final rept.
PEI Associates, Inc., Cincinnati, OH.
Jan 91, 86p EPA/600/2-91/003
Contract EPA-68-03-4006
Prepared in cooperation with Computer Sciences Corp., Cincinnati, OH. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

A statistical evaluation of airborne asbestos data collected before, during, and after removal of spray-applied asbestos-containing fireproofing at three university buildings is presented. Each abatement project was conducted in accordance with the work practices and procedures recommended by the U.S. Environmental Protection Agency in 'Guidance for Controlling Asbestos-Containing Materials in Buildings,' (the Purple Book). Containment barriers should be designed to effectively prevent a significant increase in airborne concentrations outside the work area during and after abatement. An increase in asbestos concentration outside the work area could allow an abatement site to be cleared when the level inside the containment is similarly elevated. This holds true whether PCM or TEM is used for the clearance. This weakness in the guidance for location of sampling outside of the containment barrier is one of the major findings of the study. A requirement to monitor the concentration of asbestos outside the work area before and after abatement is recommended to be added to the clearance procedure.

Keywords: *Asbestos, *Removal, *Construction materials, *Air pollution monitoring, Recommendations, Buildings, Microscopy, Statistical analysis, Indoor air pollution, Graphs(Charts), Tables(Data).

PB91-148346/REB PC **A06**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions. Research rept. Aug 89-Nov 90.
Stanford Univ., CA. Dept. of Civil Engineering.
L. Semprini, G. D. Hopkins, D. B. Janssen, M. Lang, and P. V. Roberts. Jan 91, 107p EPA/600/2-90/060
Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

A field and laboratory project evaluated the possibility of stimulating a native bacterial population to biotransform carbon tetrachloride (CT) under anoxic conditions. In addition, the transformation of 1,1,1-trichloroethane (TCA), Freon-11, and Freon-113 present as background contaminants in the test zone groundwater were also evaluated. After biostimulation by injection of acetate into a shallow confined aquifer consisting of unconsolidated alluvial sand, the following degrees of transformation were observed: CT, 95%; TCA, 15%; Freon-11, 68%; Freon-113, 20%. These biotransformations were achieved in a biostimulated zone within 2 meters of the injection point. Laboratory and mathematical modeling were also considered. Mathematical modeling of the transport and transformation process confirmed that the behavior observed in the field demonstration was consistent with the results of the laboratory research and theoretical expectations.

Keywords: *Carbon tetrachloride, *Biotransformation, *Anaerobic bacteria, Chemical water pollutants, Field tests, Mathematical models, Trichloroethanes, Freons, Ground water, Graphs(Charts), Soil contamination, Aquifers, Gas chromatography.

PB91-148353/REB PC **A06**/MF **A01**
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
Environmental Monitoring Systems Lab., Cincinnati, OH.
D. J. Klemm, L. B. Lobring, and W. H. Horning. Oct 90, 119p EPA/600/4-90/031
See also PB85-205383, PB89-220503, and PB89-207013.

The manual describes guidelines and standardized procedures for conducting on-site audits and evaluations of laboratories performing toxicity tests. Included are pre-survey information activities, on-site evaluation activities, evaluation criteria, organizational history and laboratory staff, facilities, equipment, instruments, supplies, culturing and testing methodology, sample collection, handling, preservation, preparation, quality assurance and data handling, safety and general practices, evaluation report and performance rating. Supplementary information on chain-of-custody guidelines, quality control checklist for self-biomonitoring toxicity tests, standard operating procedures (SOPs) format, culturing criteria SOP format, pre-survey information forms, on-site laboratory evaluation forms and checklists, and on-site toxicity test conditions and test acceptability criteria checklists is provided in the Appendices.

Keywords: *Aquatic biology, *Water pollution effects(Animals), *Toxicity, Test methods, Manuals, Quality assurance, Environmental monitoring, Bioassay, *Laboratory evaluation, Standard operating procedures manuals.

PB91-148361/REB PC **A03**/MF **A01**
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
Environmental Research Lab., Athens, GA.
J. J. Ellington, C. T. Jafvert, H. P. Kollig, E. J. Weber, and N. L. Wolfe. Jan 91, 26p EPA/600/3-91/004

Acid, base, and neutral hydrolysis rate constants and partition coefficients are given for 44 toxicity characteristic contaminants. Both calculated and laboratory-determined octanol/water partition coefficient (K(ow)) and organic-carbon-normalized partition coefficient (K(oc)) values are included. Log (K(oc)) values were calculated at pH 7 for ten ionizable acids and one ionizable base.

Keywords: *Chemical properties, *Toxicity, *Chemical water pollution, Aromatic hydrocarbons, Phenols, Halohydrocarbons, pH, Hydrolysis, Volatile organic compounds.

PB91-148379/REB PC **A99**/MF **A04**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PEI Associates, Inc., Cincinnati, OH.
Aug 90, 668p EPA/600/9-90/037
Contract EPA-68-03-3413
See also PB89-174403. Prepared in cooperation with JACA Corp., Fort Washington, PA. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

The purpose of the Symposium was to present the latest significant research findings from ongoing and recently completed projects funded by the Risk Reduction Engineering Laboratory. These Proceedings are organized in three sections: Sessions A and B consist of paper presentations. Session C contains the poster abstracts. Subjects include remedial action treatment and control technologies for waste disposal, landfill liner and cover systems, underground storage tanks, and demonstration and development of innovative/alternative treatment technologies for hazardous waste. Alternative technology subjects include thermal destruction of hazardous wastes, field evaluations, existing treatment options, emerging treatment processes, waste minimization, and biosystems for hazardous waste destruction.

Keywords: *Hazardous materials, *Waste disposal, *Water treatment, *Meetings, Earth fills, Linings, Water pollution control, Ground water, Storage tanks, Underground storage, Incinerators, Kilns, Air pollution control, Metals, Scrubbers, Recovery, Soils, Fungi, Biodeterioration, Organic compounds, Remedial action, Steam stripping.

PB91-148387/REB PC **A99**/MF **A04**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
Science Applications International Corp., McLean, VA.
Sep 90, 760p EPA/600/9-90/039
Contract EPA-68-C8-0062
Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab., International Association for Clean Technology, Vienna (Austria), Department of Defense, Washington, DC., and Department of Energy, Washington, DC.

The International Conference on Pollution Prevention: Clean Technologies and Clean Products was held in Washington, DC, June 10-13, 1990. With support from the Department of Defense, the Department of Energy, and the International Association for Clean Technology, the conference explored the innovative technologies and socio-economic issues arising in the field of pollution prevention. These Proceedings include papers and transcripts of most of the presentations made during the three-day conference.

Keywords: *Prevention, *Pollution, *Meetings, Economic impact, Hazardous materials, Public health, Coal gasification, Protection, Ground water, Technology transfer, Legislation, Materials, Substitutes, Technical assistance, Corporations, Risk, Liabilities, Manufacturing, Europe, Cost analysis, Recycling, Waste minimization, Clean Water Act, Tanning.

PB91-148395/REB PC **A10**/MF **A02**
Corvallis Environmental Research Lab., OR.
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
NSI Technology Services Corp., Corvallis, OR.
H. E. Erickson, M. Morrison, J. Kern, L. Hughes, and J. Malcolm. Jan 91, 223p EPA/600/3-91/008
See also PB91-148403. Prepared in cooperation with FTN Associates, Little Rock, AR. Sponsored by Corvallis Environmental Research Lab., OR.

The Watershed Manipulation Project (WMP) was implemented by EPA to: identify and quantify the relative importance of various processes in controlling surface water acidification with particular emphasis on the role of sulfate adsorption and base cation supply in the long-term watershed response to acidic deposition; assess the quantitative and qualitative watershed response to various levels of acidic deposition; and evaluate the assumptions that underlie the Direct/Delayed Response Project (DDRP) models and their ability to predict short-term watershed responses to experimental manipulation. These objectives will be achieved through a series of experiments at various spatial and temporal scales ranging from laboratory, plot, hillslope, and catchment manipulations. The document describes the quality assurance and quality control (QA/QC) program implemented by WMP for measurements made during the first three years of the project. Companion documents describe the field procedures implemented during that time, and the rationale for the WMP hypotheses.

Keywords: *Watersheds, *Water quality, *Acidification, *Water analysis, Bear Brook, Maine, Water pollution control, Air water interactions, Quality assurance, Sampling, Quality control, pH, Spectrum analysis, Performance evaluation, Project planning, Lead Mountain, Data processing, Sulfates, Deposition, Water chemistry, Cations, Field tests, *Watershed Manipulation Project, Direct/Delayed Response Project.

PB91-148403/REB PC **A05**/MF **A01**
Corvallis Environmental Research Lab., OR.
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
NSI Technology Services Corp., Corvallis, OR.
H. E. Erickson, L. E. Rustad, A. M. Narahara, and S. C. Nodvin. Feb 91, 93p EPA/600/3-91/007
See also PB91-148395. Prepared in cooperation with Maine Univ. at Orono. Sawyer Environmental Chemistry Lab. Sponsored by Corvallis Environmental Research Lab., OR.

The Field Implementation Plan (FIP) of the Watershed Manipulation Project (WMP) has been developed for the Bear Brook Watershed in Maine (BBWM). The document provides details on field activities for site and task groups for the period 1986 to October 1989. Specific objectives of the FIP are to: describe the Bear Brook manipulation site; detail field experimental and sampling designs for hypothesis testing at the BBWM; and, summarize field methods used at the Bear Brook site.

Keywords: *Watersheds, *Water quality, *Biogeochemistry, *Acidification, Water pollution, Bear Brook, Maine, Lead Mountain, Field tests, Site characterization, Implementation, pH, Water chemistry, Mathematical models, Forests, Soil surveys, Deposition, Sampling, Hydrology, Air water interactions, *Watershed Manipulation Project, *Field implementation plan, Direct/Delayed Response Project.

PB91-148411/REB PC **A04**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
Engineering Science, Cary, NC.
Nov 89, 71p EPA/450/4-89/022
Contract EPA-68-02-4398
See also PB89-128631. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The report provides a listing of particulate matter emission factors, size-specific = or < 10 micrometers (PM10) for fuel combustion, industrial and commercial operations, and solid wastes disposals. The factor list is identified with appropriate EPA AIRS Facility Subsystem (AFS) Source Classification Codes (SCCs) and their process descriptions. An appendix to the listing provides documentation of technology transfer rationale for the PM10 emission factors.

Keywords: *Air pollution, *Emission factors, *Particulates, Particle size distribution, Solid waste disposal, Industrial wastes, Combustion products, Pollution sources, Listings, Technology transfer, Source Classification Codes, Stationary sources.

PB91-148429/REB PC **A05**/MF **A01**
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan. Final rept.
Environmental Protection Agency, Chicago, IL. Region V.
Dec 88, 81p EPA/905/4-88/008
See also PB88-249818.

The report sets out risk management recommendations for contamination with 2,3,7,8-tetrachlorodibenzo-p-dioxin (2378-TCDD) and other polychlorinated dibenzo-p-dioxins (CDDS) and polychlorinated dibenzofurans (CDFs) in and around Midland, Michigan. Included are: (1) a summary of the results of environmental studies undertaken by the U.S. EPA, the State of Michigan, and the Dow Chemical Company, including monitoring of air, soil, surface water, waste water, fish tissue, and garden vegetables for CDDs/CDFs; (2) a summary of possible health risks to Midland area residents resulting from exposures to CDDs/CDFs; (3) actions for minimizing emissions and discharges to the environment from Dow Chemical; (4) recommendations for residents of the Midland area on how to minimize exposures to CDDs/CDFs, and thus the possible health risks associated with these exposures; and (5) additional monitoring programs to delineate long-term trends in emissions and discharges of CDDs/CDFs, and to document changes in environmental contamination for the more significant human exposure routes. A summary of public comments on the Risk Assessment and on the Risk Management Recommendations is presented in an appendix.

Keywords: *Risk assessment, Management, Environmental monitoring, *Public health, *Ecology, *Pollution control, Environmental surveys, Exposure, Recommendations, Environmental exposure pathway, Public opinion, Fishes, Water pollution, Air pollution, Land pollution, Vegetables, *Dioxins, Midland(Michigan), Dibenzodioxin/tetrachloro, Polychlorinated dibenzofurans, Polychlorinated dibenzodioxins.

PB91-148437/REB PC **A03**/MF **A01**
Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.
Great Lakes Demonstration Program, Section 108a. Final rept. 1972-87.
Science Applications International Corp., McLean, VA.
R. Fares. Oct 88, 20p EPA/905/8-88/005 , , GLNPO-1
Contract EPA-68-04-5041
Sponsored by Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.

The report contains a review of Great Lakes Demonstration projects funded under Section 108a of the Water Quality Act PL 92:580. The program provided data and information vital to the establishment of the national nonpoint source control efforts of the U.S. Environmental Protection Agency and the U.S. Department of Agriculture.

Keywords: *Project planning, *Water pollution control, *Great Lakes, Agriculture, Urban areas, Drainage, Cultivation, Government agencies, Demonstration project, Nonpoint source, Institutional cooperation.

PB91-148452/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
Little (Arthur D.), Inc., Cambridge, MA.
P. P. Costas, and A. D. Schwope. Jan 91, 33p ADL-54995-35, EPA/600/2-91/001
Contract EPA-68-03-3293
Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

The objective of the study was to evaluate several low-temperature characteristics of Challenge 5100, a new protective clothing material developed by Chemical Fabrics Corporation. The low temperature characteristics of three other protective clothing materials were also evaluated and used as a basis for comparison and interpretation of the Challenge results. The other clothing materials were chlorinated polyethylene, polyvinyl chloride/nylon, and butyl/nylon/butyl. The results of two stiffness tests indicated that the stiffening characteristics of the Challenge 5100 material as a function of temperature are comparable to those of polyvinyl chloride/nylon. Chlorinated polyethylene exhibited the most stiffening as the temperature was lowered, and butyl/nylon/butyl exhibited the least stiffening. The results of the hardness measurements indicate similar material performance. Since the results of both stiffness tests are in agreement with the known field performances of the materials, either test method can be used to evaluate clothing materials.

Keywords: *Protective clothing, *Low temperature tests, *Polyvinyl chloride, *Polyethylene fibers, *Stiffness tests, Comparative evaluation, Materials testing, *Challenge 5100.

PB91-148460/REB PC **A08**/MF **A01**
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
Corvallis Environmental Research Lab., OR.
T. J. Moser, J. R. Barker, and D. T. Tingey. Jan 91, 171p EPA/600/3-91/001
Prepared in cooperation with ManTech Environmental Technology, Inc., Research Triangle Park, NC.

Since the release of the Environmental Protection Agency's (EPA's) toxic release inventory (TRI) estimates for 1987, there has been a heightened concern over the nation's air quality. Primarily, the concern has been directed at human health effects in industrial-urban areas. The fact that many airborne chemicals pose hazards to human health is only one aspect of the problem. The continued deposition of airborne toxic chemicals pose threats to both terrestrial and aquatic ecosystems, the discussion is limited to terrestrial vegetation.

Keywords: *Air pollution effects(Plants), *Vegetation, *Toxic substances, *Terrestrial ecosystems, Biological effects, Exposure, Environmental effects, Deposition, Environmental transport, Air water interactions, Recommendations, Atmospheric diffusion, Forests, Plants(Botany), Chemical compounds, Pesticides.

PB91-149518/REB PC **A05**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Self-Consistent Deutschian ESP Model. Final rept. Oct 86-Dec 87.
Southern Research Inst., Birmingham, AL.
M. G. Faulkner, and J. L. DuBard. Jan 91, 93p EPA/600/7-91/001
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The report presents a new version of the EPA/Southern Research Institute electrostatic precipitator (ESP) model. The primary difference between this and the standard (Revision 3) versions is in the treatment of the particulate space charge. Both models apply the Deutsch equation to narrow particle size bands over short ESP lengths to determine collection efficiency. The standard version estimates space charge by a formula which predicts an effective mobility for ions and particles and a reduced ion density for particle charging. The estimated values are used to calculate the electric field at the plate and the particle charge, both required for the Deutsch equation. However, in the new version the particulate space charge is treated explicitly, allowing the interrelation of the particle charge and electric field calculations. The charge and field calculations are alternated until they become self-consistent within each length increment of the ESP. Self-consistency occurs when the charge used for the space charge in the field calculation is the same as that calculated using the results of the field calculation. The explicit treatment of the space charge directly relates the particle charge and electric field calculations, and therefore the collection efficiency calculation, to the dust load present in the gas stream. The report gives operating instructions for the new model.

Keywords: *Electrostatic precipitators, *Air pollution control equipment, *Mathematical models, Performance evaluation, Particles, Space charge, Ions, Electric fields, Operating, Particle size, Deutsch equation.

PB91-149526/REB PC **A09**/MF **A01**
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems. Final draft rept.
Corvallis Environmental Research Lab., OR.
N. C. Leibowitz, L. Squires, and J. P. Baker. Jan 91, 191p EPA/600/3-91/010
Prepared in cooperation with ManTech Environmental Technology, Inc., Research Triangle Park, NC.

The overall goal of Environmental Monitoring and Assessment Program-Wetlands is to provide a quantitative assessment of the current status and long-term trends in wetland condition on regional and national scales. The specific, long-term objectives of EMAP-Wetlands are as follows: Quantify the regional status of wetlands, by measuring indicators of ecological condition and also hydrology, pollution exposure, and other major factors known to influence or stress wetlands; Monitor changes through time, on a regional scale, in the condition of wetlands and in hydrology, pollution exposure, and other factors that influence or stress wetlands; and Identify plausible causes for degraded or improved conditions, by evaluating associations between wetland condition and hydrology, pollution exposure, and other factors that affect wetland condition.

Keywords: *Ecology, *Swamps, *Marshes, *Pollution control, Assessments, Monitoring, Hydrology, Environmental impacts, Degradation, Project planning, Classifications, Drainage, Government policies, Effective-

ness, Statistical analysis, *Wetlands, Ecosystems, Reginal.

PB91-149534/REB PC **A04**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Approach for Estimating Global Landfill Methane Emissions. Final rept. Apr-Sep 90.
Radian Corp., Research Triangle Park, NC.
R. L. Peer, A. E. Leininger, B. B. Emmel, and S. K. Lynch. Jan 91, 54p DCN-90-239-005-48-09, EPA/600/7-91/002
Contract EPA-68-02-4288
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The report is an overview of available country-specific data and modeling approaches for estimating global landfill methane. Current estimates of global landfill methane indicate that landfills account for between 4 and 15% of the global methane budget. The report describes an approach for using country-specific and field test data to develop a less uncertain estimate of global landfill methane. Development of enhanced emissions factors for landfills and other major sources of methane will improve the understanding of atmospheric chemistry and feedback effects, will target mitigation opportunities, and will ensure cost-effective mitigation strategies.

Keywords: *Methane, *Estimating, *Earth fills, *Air pollution, Sources, Mathematical models, Evaluation, Accuracy, Decision makers, Climatic changes, Gas flow, Atmospheric composition, Chemical analysis, Emission, Rates(Pertime), Temperature, United States, Refuse, Moisture content, Foreign countries, Global Climate Research Program, Scholl Canyon Model.

PB91-149542/REB PC **A05**/MF **A01**
Corvallis Environmental Research Lab., OR.
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample. Technical rept.
Oregon State Univ., Corvallis. Dept. of Statistics.
W. S. Overton, and S. V. Stehman. Nov 89, 90p TR-130, EPA/600/3-91/009
Sponsored by Corvallis Environmental Research Lab., OR.

The Phase II Lake Surveys of the U. S. Environmental Protection Agency's (EPA) National Surface Surveys, were conducted on a probability subsample of the Phase I Lake Survey sample. The design allowed estimates to be made both by double sample methodology and by direct probability estimation. The paper describes the adaptation of double sampling methodology to the objectives focusing specifically on the calibration issues involved in those procedures. The Phase II Data Analysis Plan includes specification for the calibration protocol to be used in the case of single Phase II strata, and for simple, one-to-one prediction equations. For more general and complex prediction equations, the general protocol was indicated, but some details were not supplied; these are given here. Also, the issue of calibration in the case of mixed strata is addressed.

Keywords: *Calibrating, *Sampling, *Lakes, *Water quality, Surveys, Methodology, Experimental design, Specifications, Probability, Mathematical models, Algorithms, pH, Density functions, Graphs(Charts), Double sampling.

PB91-149567/REB PC **A03**/MF **A01**
Environmental Protection Agency, Seattle, WA. Region X.
Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PTI Environmental Services, Bellevue, WA.
Mar 89, 38p EPA/910/9-89/006
Contract EPA-68-D8-0085
See also PB90-227117. Sponsored by Environmental Protection Agency, Seattle, WA. Region X.

The Everett Harbor Urban Bay Action Program was developed to reduce toxic contamination in the Everett Harbor system. The Program (1) identifies existing areas of toxic contamination, (2) identifies known and potential sources of toxic contaminants, (3) establishes schedules for corrective actions to eliminate existing problems, and (4) identifies appropriate agencies for implementing corrective actions. Corrective actions may include both source controls and sediment clean-up. Source controls may be reduction of contaminant discharge or application of best management practices.

Keywords: *Toxicity, *Water pollution control, *Everett Harbor, *Snohomish River, Sites, Identifying, Sources, Project planning, Sediments, Dredging, Industrial wastes, Fishes, Animal diseases, Lagoons(Ponds), Capping, Runoff, Government agencies, Diagrams, Maps, Cleanup, Best management practices.

PB91-149575/REB PC **A03**/MF **A01**
Environmental Protection Agency, Seattle, WA. Region X.
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PTI Environmental Services, Bellevue, WA.
D. S. Becker, and T. C. Ginn. Jun 90, 50p EPA/910/9-90/009
Contract EPA-68-D8-0085
Sponsored by Environmental Protection Agency, Seattle, WA. Region X.

Four of the sediment bioassays commonly used to assess the toxicity of Puget Sound sediments were used to evaluate the influence of sample holding time on the toxicity of sediment samples collected from a highly contaminated site and a reference area in the sound. The four sediment bioassays evaluated included the following: 10-day amphipod mortality test, 20-day Neanthes biomass test, 15 minute Microtox test (saline extract), 48-hour echinoderm embryo abnormality test. The results of the amphipod mortality test suggests that sediment holding times longer than 6 weeks may result in bioassay responses that are substantially different from those observed after a 2-week holding time. The results from the Neanthes biomass test indicate that holding times of 6 weeks or longer may result in bioassay responses that are different from those observed after a 1 week holding time. The results of the Microtox test suggests that sediment holding times of 4 weeks or longer may result in bioassay responses that are substantially different from those observed after a 2-week holding time. The results of the echinoderm embryo abnormality test were not evaluated.

Keywords: *Sediments, *Water pollution effects(Animals), *Puget Sound, *Marine biology, Time dependence, Comparison, Tables(Data), Graphs(Charts), *Toxicity tests, Amphipod mortality test, Neanthes biomass test, Microtox test.

PB91-149583/REB PC **A06**/MF **A01**
Environmental Protection Agency, Seattle, WA. Region X.
Elliot Bay Action Program: 1988 Action Plan. Final rept.
PTI Environmental Services, Bellevue, WA.
Sep 88, 116p EPA/910/9-88/240
Contract EPA-68-02-4341
Prepared in cooperation with Tetra Tech, Inc., Bellevue, WA. Sponsored by Environmental Protection Agency, Seattle, WA. Region X.

The Urban Bay Action Program (1) identifies priority problem areas of contamination; (2) identifies current, historical, and potential sources of contamination; (3) establishes schedules to take corrective actions to eliminate existing problems and to investigate potential problems; (4) identifies appropriate agencies for implementing corrective actions; and (5) ensures implementation of the resulting plan. The action plan represents the concerted efforts and commitments of many regulatory agencies and local governments to reduce contamination in Elliott Bay. Representatives of regulatory agencies and local government formed the Interagency Work Group which has met on a regular basis since 1985 to develop and oversee a corrective plan of action. Corrective actions may include both source controls and remedial (cleanup) actions such as capping or removal of contaminated sediments. Source controls may include permit revisions to require reduction of contaminant concentrations or volumes of discharges, or application of best management practices to reduce contamination of surface water runoff.

Keywords: *Water pollution control, *Elliott Bay, *Puget Sound, Sources, Removal, Sediments, Licenses, Requirements, Capping, Reduction, Maps, National government, Requirements, Local government, Runoff, Inspection, Sampling, Washington(State), Urban Bay Action Program, Cleanup, Discharge(Water), Best management practices, Listings.

PB91-149591/REB PC **A03**/MF **A01**
Environmental Protection Agency, Seattle, WA. Region X.
Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PTI Environmental Services, Bellevue, WA.
D. M. Johns, and T. C. Ginn. Jun 90, 20p EPA/910/9-90/010
Contract EPA-68-D8-0085
Sponsored by Environmental Protection Agency, Seattle, WA. Region X.

Long-term sediment bioassays were conducted on sediments from three sites individually and a mixture of sediments from two of those sites from Puget Sound (i.e. a total of four treatments). The survival and change in biomass of juvenile Neanthes was related to reproductive success in adult Neanthes.

Keywords: *Sediments, *Worms, *Toxicity, *Organic compounds, *Puget Sound, Bioassay, Growth, Survival, Reproduction(Biology), Tests, Exposure, Elliot Bay, Behavior, Neanthes.

PB91-149609/REB PC **A07**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks. Rept. for Mar 89-Sep 90.
PEI Associates, Inc., Arlington, VA.
S. E. Boone, P. J. Mraz, J. M. Miller, J. J. Mazza, and M. Borst. Jan 91, 133p EPA/600/2-90/061
Contract EPA-68-03-3409
Also available from Supt. of Docs. Prepared in cooperation with CDM Federal Programs Corp., Fairfax, VA. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

Preventing leaks from underground storage tanks is of paramount importance in this decade as environmental resources are seriously threatened by the release of toxic substances and costs of reparation are exorbitant. Inspecting underground storage tanks is one action that helps prevent and correct potential tank failures that could result in such release. The study identifies and characterizes the types of internal practices (current, emerging, and outmoded) to conduct internal inspections of underground storage tanks. EPA sponsored this survey of state-of-the-art internal inspection methods as an initial compilation of this important information, for dissemination to the regulated community. The document addresses those methods pertaining to tanks; description of the inspections performed on ancillary equipment (pipes, vents, etc.) of UST systems is not within the scope of the report. The report is the result of an effort to examine the various tools and techniques used for conducting internal inspections. The study documents the significant factors evaluated during an inspection. It examines the application of each inspection method by identifying the objectives of the technique, its procedural steps, the necessary equipment and instrumentation, the considerations for use in the field.

Keywords: *Land pollution abatement, *Underground storage, *Storage tanks, *Toxic substances, Water pollution abatement, State of the art, Inspection, Leakage, Operating, Nondestructive testing, Petroleum products, Visual observation, Maintenance, State programs, On-site investigations, Materials tests, Hazardous materials.

PB91-149617/REB PC **A01**/MF **A01**
Up and Running: New EPA Case History Database and Library System. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. W. Hillger. c1990, 5p
Pub. in LUSTLine, Bulletin 12, p5 and p12 Feb 90.

Early in the UST program, EPA and State environmental programs recognized the need to facilitate technology transfer among all personnel involved in UST programs nationwide. It has been noted many times at

Office of Underground Storage Tanks (OUST) workshops that the level of experience of personnel in the UST programs varies widely. This is generally attributed to the recent development of the UST programs, high turnover within the program staff, and the introduction of new commercial technologies to contend with the large number of UST cleanups. COLIS (Computerized On-Line Information System) was designed and implemented to support some of these pressing program needs.

Keywords: *Case studies, *Information systems, *Storage tanks, *Land pollution, US EPA, Underground storage, Leakage, Environmental transport, Technology transfer, Historical aspects, Remedial action, Decision making, Management planning, *Announcement bulletin, *COLIS(Computerized On-Line Information System), Cleanup operations.

PB91-149625/REB PC **A03**/MF **A01**
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
E. W. Rice, P. V. Scarpino, G. S. Logsdon, D. J. Reasoner, and P. J. Mason. c1990, 12p EPA/600/J-90/322
Pub. in Environmental Technology, v11 n9 p821-828 Sep 90. Prepared in cooperation with Cincinnati Univ., OH. Dept. of Civil and Environmental Engineering, and Black and Veatch, Cincinnati, OH.

Water quality degradation due to the growth of microorganisms is an area of concern for many water utilities. To date, the procedures developed for determining the amount of biodegradable material present in potable water have utilized heterotrophic non-coliform bacteria as bioassay seed organisms. A procedure was developed which utilized coliform bacteria as the bioassay organisms for determining the ability of the water to support and promote growth of coliform bacteria. The bioassay procedure can be used to evaluate the effect of various unit processes upon the biological stability of the product water.

Keywords: *Bioassay, *Microorganisms control(Water), *Water pipelines, *Water treatment, Coliform bacteria, Biodeterioration, Growth, Evaluation, Potable water, Enterobacteriaceae, Tests, Membranes, Fluid filteration, Sampling, Temperature, Escherichia coli, Ozonization, Water distribution, Distribution systems, *Drinking water, Total organic carbon.

PB91-149633/REB PC **A02**/MF **A01**
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. E. Landreth. c1990, 9p EPA/600/J-90/323
Pub. in Waste Management and Research, v8 p307-318 1990.

Designing and constructing a landfill or impoundment are complex undertakings, as are applying for and reviewing the necessary documents involved with a permit to construct. Each of the five elements of landfill/impoundment design and construction (foundations, dike integrity and slope stability, liner systems, cover systems, and run-on/run-off controls) are considered and a U.S. Environmental Protection Agency guide of technical literature references is cited to aid the designer, permit reviewer, or owner/operator seek the permit.

Keywords: *Guidelines, *Earth fills, *Surface impoundments, *Permits, *Waste disposal, Design criteria, Operating, Construction, Standards compliance, Technology utilization, Reprints.

PB91-149641/REB PC **A03**/MF **A01**
Air Emissions from the Incineration of Hazardous Waste. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
E. T. Oppelt. c1990, 31p EPA/600/J-90/324
Pub. in Toxicology and Industrial Health, v6 n5 p23-51 1990.

In the United States over the last ten years, concern over important disposal practices of the past has manifested itself in the passage of a series of federal and state-level hazardous waste clean-up and control statutes of unprecedented scope. The impact of these various statutes will be a significant modification of waste management practices. Of all of the 'terminal' treatment technologies, properly-designed incineration systems are capable of the highest overall degree of destruction and control for the broadest range of hazardous waste streams. Substantial design and operational experience exists and a wide variety of commercial systems are available. Consequently, significant growth is anticipated in the use of incineration and other thermal destruction methods. The objective of the paper is to examine the current state of knowledge regarding air emissions from hazardous waste incineration in an effort to put the associated technological and environmental issues into perspective. (Copyright (c) 1990 Princeton Scientific Publishing Co., Inc.)

Keywords: *Hazardous materials, *Incinerators, *Air pollution, Waste disposal, Organic wastes, Oxidation reduction reactions, Volume, Preparation, Combustion chambers, Dewatering, Design criteria, Exhaust gases, Air pollution control, Flue gases, Flow charts, Regulations, Effectiveness, Removal, Reprints, High temperature.

PB91-149658/REB PC **A03**/MF **A01**
Neurotoxic Effects of Colchicine. Journal article.
Health Effects Research Lab., Research Triangle Park, NC.
W. R. Mundy, and H. A. Tilson. cApr 90, 12p EPA/600/J-90/325
Pub. in NeuroToxicology (Tradename) 11, p539-548 1990.

Neurotoxicants have found increasing use as tools to study the structure and function of the central nervous system. One class of compounds which block mitosis and disrupt axoplasmic transport includes colchicine, a chemical which is highly toxic to certain neuronal populations. Colchicine administered directly into the hippocampus of rats results in the preferential destruction of dentate gyrus granule cells without affecting the surrounding pyramidal cells. Injection of colchicine into other brain areas also destroys neurons but with less selectivity than is observed in the hippocampus. The neurotoxicity of colchicine appears to be related to the ability to bind to tubulin, although its exact mechanism remains to be elucidated. (Copyright (c) 1990 Intox Press, Inc.)

Keywords: *Toxicology, *Nervous system, *Colchicine, Hippocampus, Neurons, Axons, Mitosis, Tubulins, Rats, Reprints, Dentate gyrus.

PB91-149724/REB PC **A03**/MF **A01**
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water. Journal article.
Health Effects Research Lab., Research Triangle Park, NC.
J. R. Meier, and F. B. Daniel. cOct 90, 12p EPA/600/J-90/326
Pub. in Jnl. of the American Water Works Association, v82 n10 p48 Oct 90.

Short-term bioassays such as the Ames test are used to assess genotoxicity and potential carcinogenicity of specific drinking water contaminants as well as concentrated samples of drinking water. The authors discuss the development, limitations, and interpretation of short-term tests; qualitative and quantitative aspects of the utility of the tests for predicting carcinogenicity; and general approaches to using the tests in analyzing potential health effects of drinking water. They conclude that although uncertainties regarding interpretation limit the application of such tests for risk assessment, short-term tests provide public health officials with a useful tool for obtaining timely and cost-efficient information about potential health risks associated with drinking water.

Keywords: *Bioassay, *Toxicity, *Public health, *Water pollution, Carcinogens, Genetics, Potable water, Risk, Assessments, Humans, Exposure, Concentration(Composition), In vitro analysis, Rodents, Comparison, Time studies, Cost effectiveness, Reprints, Drinking water, *Health assessment, Ames test.

PB91-149732/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity. Journal article.
NSI Technology Services Corp., Research Triangle Park, NC.
V. L. Slott, J. D. Suarez, J. E. Simmons, and S. D. Perreault. c1990, 13p EPA/600/J-90/327
Contract EPA-68-02-4450
Pub. in Fundamental and Applied Toxicology, v15 n3 p597-606 Oct 90. Sponsored by Health Effects Research Lab., Research Triangle Park, NC.

The effect of inhaled epichlorohydrin (E) on rat sperm motility characteristics was evaluated. Male F-344 rats were exposed to 100ppm E via inhalation for 4 hrs on the morning of d 0 and killed immediately and on d 1, 2, 6 and 14 postexposure. Videotapes of cauda epididymal sperm were analyzed (300-350 sperm/sample) with a Hamilton Thorn Motility Analyzer. E did not affect the percentage of motile sperm at any time. However, transient changes in sperm velocity were found. On d 1 postexposure mean progressive (straight-line) and mean path (smoothed curvilinear) velocity were significantly decreased to 80% and 85% of control, respectively. The progressive velocities of sperm from both control and treated rats were normally distributed, indicating a general effect of E on all sperm as opposed to a more severe effect on a specific sperm subpopulation. Both velocities remained slightly but significantly decreased on d 2 (92% and 93% of control for progressive and path velocity, respectively), and were unaffected at later timepoints. Other endpoints (testis and epididymis weights, testicular spermatid counts and cauda epididymal sperm reserves) were unaltered by E. Thus, inhaled E produced specific, transient decreases in rat sperm velocity. (Copyright (c) 1990 by the Society of Toxicology.)

Keywords: *Toxicology, *Sperm motility, *Epichlorohydrin, *Velocity, Rats, Spermatozoa, Organ weight, Respiration, Air pollution effects(Animals), Reproduction(Biology), Reprints.

PB91-149740/REB PC **A03**/MF **A01**
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.
M. K. Selgrade, M. J. Daniels, and E. C. Grose. c1990, 18p EPA/600/J-90/328
Pub. in Inhalation Toxicology, v2 n4 p375-389 Oct 90.

Rats were exposed for 1,3,13,52 or 78 wk to air or a simulated urban profile of O3 designed to mimic diurnal exposure patterns frequently seen in worst case summer environments. Daily exposures consisted of a background level of 0.06 ppm for a period of 13 h, a broad exposure spike rising from 0.06 ppm to 0.25 ppm and returning to 0.06 ppm over 9 h and a 2 h downtime. Integration of the spike portion of the exposure pattern was equivalent to a 9 h square wave of 0.19 ppm. Rats were exposed to the profile 5 days/wk; weekend exposures were to background levels only. Spleens were removed and blood was drawn at the end of the exposure periods. O3 exposure had no effect on NKC activity, nor were any O3-related changes in mitogen responses or histopathology noted. Spleen cell mitogen responses, but not NKC activity, were significantly depressed, presumeably as a result of age, following the 52 and 78 wk exposures. Effects of age were apparent in the PBL responses to mitogens following the 13 wk as well as the 52 and 78 wk exposures. For comparative purposes, effects of a single, 3 h, exposure to 1 ppm O3 on spleen cell responses to the same mitogens were also determined 24, 48, and 72 h after exposure; there were also no effects due to the acute exposure.

Keywords: *Ozone, *Natural killer cells, *T lymphocytes, *Mitogens, Rats, Dose-response relationships, Spleen, Histology, Lymph nodes, Reprints.

PB91-149757/REB PC **A03**/MF **A01**
Effects of Chlorine Dioxide on the Developing Rat Brain. Journal article.
Health Effects Research Lab., Cincinnati, OH.
G. P. Toth, R. E. Long, T. S. Mills, and M. K. Smith. c1990, 19p EPA/600/J-90/329
Pub. in Jnl. of Toxicology and Environmental Health, v31 p29-44 1990. Prepared in cooperation with Pathol-

ogy Associates, Inc., West Chester, OH., and Computer Sciences Corp., Cincinnati, OH.

Male and female Long-Evans rat pups, exposed to an oral dose of 14 mg chlorine dioxide ClO2/Kg/d (postnatal d 10), were examined for effects on brain development and for changes in thyroid activity. Body weight reductions were observed on postnatal (pn) d 11, 21, and 35. Forebrain weight and protein content were decreased on pnd 21 and 35, as were the DNA content on d 35 and the number of dendritic spines on cerebral cortical pyramidal cells, a marker for synapse formation. Otherwise, cell proliferation in the forebrain, cerebellum, and olfactory bulbs was normal, as were migration and aggregation of neuronal cells in three areas of the cerebral cortex. Histopathology of the forebrain, cerebellum, and brainstem showed no gross lesions loss of myelin, or change in the cells staining positive for Nissl substance. Serum T3 and T4 levels, as well as hepatic mitochondrial alpha-glycerophosphate dehydrogenase activity, were unchanged by ClO2 treatment. The results indicated that ClO2 may have central neurotoxic potential. No underlying antithyroid activity was evident.

Keywords: *Toxicity, *Brain, Rats, Deoxyribonucleic acids, Synapses, Histopathology, Thyroid hormones, Organ weight, Body weight, Liver mitochondria, Glycerolphosphate dehydrogenase, Radioimmunoassay, Reprints, *Chlorine dioxide.

PB91-149765/REB PC **A03**/MF **A01**
Toxicological Mechanisms of Implantation Failure. Journal article.
Health Effects Research Lab., Cincinnati, OH.
A. M. Cummings. c1990, 12p EPA/600/J-90/330
Pub. in Fundamental and Applied Toxicology, v15 n3 p571-579 Oct 90.

Implantation in mammals requires the successful completion of a series of integrated phenomena, including uterine preparation, synchronized embryo transport, embryonic attachment, uterine transformation, placental development, and the requisite hormonal milieu to support each step. Potential for toxic interference with early pregnancy exists at several points in the course of events via a variety of anatomical and physiological sites. An improved understanding of the mechanisms of implantation failure due to toxic insult is necessary in order to assess risks of reproductive toxicants to the human female population. As an approach to providing such information, a panel of tests has been assembled and developed to probe the mechanisms by which chemicals affect fertility in rodents. These assessments are performed only if adverse effects on litter size or pregnancy are evident from previous reproductive studies. The evaluation of methoxychlor, a weakly estrogenic pesticide, has served to partially validate the panel. The early pregnancy protocol provides does-response information on the effects of short-term exposure of animals to compounds during early pregnancy. (Copyright (c) 1990 by the Society of Toxicology.)

Keywords: *Toxicology, *Ovum implantation, *Teratogens, Dose-response relationships, Embryo, Rodentia, Methoxychlor, Litter size, Ovariectomy, Risk assessment, Reprints.

PB91-149773/REB PC **A03**/MF **A01**
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.
R. J. Smialowicz, M. M. Riddle, R. R. Rogers, R. W. Luebke, and C. B. Copeland. c1990, 13p EPA/600/J-90/331
Pub. in Toxicology, v64 n2 p169-178 Nov 90. Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC.

Adult male Fischer 344 rats were dosed by oral gavage with bis(tri-n-butyltin) oxide (TBTO) in peanut oil on ten consecutive days, at dosages ranging from 1.25 to 15 mg/kg/day. Other groups of rats were dosed daily for 10 days by oral gavage with cyclophosphamide (CY) at dosages ranging from .75 to 6 mg/kg/day. These rats served as positive controls for the immune assays employed. The immune function parameters examined included the following: delayed-type hypersensitivity (DTH) and antibody responses to bovine serum albumin (BSA), primary antibody responses to sheep red blood cells (SRBC) and trinitrophenyl lipopolysaccharide (TNP-LPA), and enumeration of splenic lymphocyte populations. The DTH and antibody responses to BSA were not effected by TBTO exposure; however these responses were suppressed in rats dosed with CY at 6 mg/kg/day. The plaque forming cell (PFC) response to the T cell-dependent antigen SRBC was enhanced in rats dosed with TBTO at from 5 to 15 mg/kg/day. On the other hand, the PFC response to the T cell-independent antigen TNP-LPS was unaffected by TBTO exposure. Rats dosedwith CY had suppressed PFC responses to SRBC and TNP-LPS at dosages of 3 and 6 mg/kg/day, respectively. (Copyright (c) 1990 Elsevier Scientific Publishers Ireland Ltd.)

Keywords: *Toxicology, *Immune system, *Pesticides, Rats, Dose-response relationships, Cyclophosphamide, Lipopolysaccharides, Erythrocytes, Plaque assay, T lymphocytes, Suppressor cells, Kinetics, Delayed hypersensitivity, Reprints, *Tributyltin oxide.

PB91-149781/REB PC **A03**/MF **A01**
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum'). Journal article.
Environmental Research Lab.-Narragansett, Newport, OR. Mark O. Hatfield Marine Science Center.
D. R. Young, D. J. Baumgartner, S. C. Snedaker, L. Udey, and M. S. Brown. c1989, 12p EPA/600/J-90/332, ERLN-N070
Pub. in Research Jnl. of the Water Pollution Control Federation, v62 n6 p763-770 1990.

The study was conducted to determine the effects of treatment and seawater dilution of municipal wastewater on marine organisms. An experimental facility was built in southeast Florida that provided both unchlorinated and chlorinated effluent from three standard treatments: primary settling, chemical flocculation, and activated sludge secondary treatment. Exposure tests lasting longer that one month were conducted on the sheepshead minnow (Cyprinodon variegatus) and the pink shrimp (Panaeus duorarum), with each of these six effluent types at seawater dilution ratios of 30:1 100:1, and 300:1. The shrimp showed a much more sensitive response than the minnow. Almost 100% mortality occurred for shrimp exposed to the unchlorinated 30:1 seawater dilutions of primary-settled wastewater, while mortality for the other two effluents were similar to controls. Mortality could not be attributed to any of the chemicals measured in the wastewater. For the 30:1 dilution experiments, chlorination usually resulted in much higher toxicity, increasing the dilution factor from 30:1 to 100:1 reduced the mortality observed (in both unchlorinated and chlorinated tests) essentially to control levels.

Keywords: *Marine biology, *Water pollution effects(Animals), *Toxicity, *Wastewater treatment, *Seawater, Mortality, Environmental monitoring, Chlorination, Reprints, *Sheepshead minnow, *Pink shrimp, Cyprinodon variegatus, Panaeus duorarum.

PB91-149799/REB PC **A03**/MF **A01**
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring. Journal article.
Environmental Research Lab., Narragansett, RI.
W. G. Nelson. c1990, 12p EPA/600/J-90/333, ERLN-1022
Pub. in Aquatic Toxicology and Risk Assessment, ASTM STP 1096, v13 p167-175 1990.

An effort was undertaken at the Environmental Protection Agency's (EPA) Environmental Research Laboratory, Narragansett (ERL-N), Rhode Island, to evaluate the integration of in situ biological monitoring with the blue mussel, Mytilus edulis L., into EPA's Complex Effluent Toxicity Testing Program. The scope for growth (SFG) index, an instantaneous measure of energy balance in an organism, was used to assess the physiological condition of the mussels. The initial step in the program, assessing the sensitivity of M. edulis to several known toxicants in the laboratory, indicated that the SFG of the mussel is comparable in sensitivity to those of other endpoints and test species currently used for assessing receiving waters. A second step involved using the mussel in situ to assess the impact of a municipal sewage outfall on receiving water quality in Greenwich Cove, East Greenwich, Rhode Island. This was completed twice; once before the initiation of an upgrade of the facility, and once when the upgrade was about half complete. Mussels were deployed along a dilution gradient from the sewage outfall to a control station for a period of one month. Subsets of mussels were collected after a 7-day and 30-day exposure period.

Keywords: *Chemical water pollutants, *Environmental monitoring, *Mussels, *Toxicity, *Water quality, Energy metabolism, Field tests, Metabolic clearance rate, Copper, Species specificity, Reprints, *Complex Effluent Toxicity Testing Program, *Mytilus edulis.

PB91-149807/REB PC **A03**/MF **A01**
Corvallis Environmental Research Lab., OR.
Quantitative Method for Evaluating Avian Food Avoidance Behavior. Journal article.
Michigan State Univ., East Lansing.
D. W. Kononen, J. R. Hochstein, and R. K. Ringer. c1986, 11p EPA/600/J-86/533
Pub. in Environmental Toxicology and Chemistry, v5 p823-830 1986. Sponsored by Corvallis Environmental Research Lab., OR.

Food avoidance experiments could contribute to assessments of animals' behavioral responses to environmental toxicants. Food avoidance tests with mallards (Anas platyrhynchos L.) and northern bobwhite (Colinus virginianus L.) as the test species were patterned after avian 5-d dietary LC50 tests. Animals in each treatment group were given free access to untreated feed and feed treated with various concentrations of methiocarb (3,5-dimethyl-4-(methylthio)-phenyl methylcarbamate), a widely used bird repellent. Prior to food avoidance testing, 5-d dietary LC50 tests were conducted to provide baseline data for comparison. A measure of avoidance response was estimated from a log (dose)-probit(response) analysis. The precentage of total (treated plus untreated) feed consumption as treated feed consumption was the response variable. The detectable dietary concentration at which mallards and bobwhite began to avoid a specific contaminant was determined by calculating a median food avoidance concentration 50(FAC50). In the absence of detectable avoidance behavior, test animals' total feed consumption can be expected to consist of equal amounts of treated and untreated feed. An effective avoidance index (EAI), LC50/FAC50, was used as a measure of toxicant's 'margin of safety.' (Copyright (c) 1986 SETAC.)

Keywords: *Animal behavior, *Avoidance learning, *Methiocarb, Food contamination, Water contamination, Dose-response relationships, Food consumption, Reprints, *Mallards, *Northern bobwhite, Colinus virginianus, Effective avoidance index(EAI), Anas platyrhynchos.

PB91-149815/REB PC **A03**/MF **A01**
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment. Journal article.
Environmental Protection Agency, Washington, DC. Office of Health and Environmental Assessment.
R. P. Beliles, and J. C. Parker. c1989, 11p EPA/600/J-89/494, OHEA-C-339
Pub. in Jnl. of the Health Physics Society, v57 Sup1 p333-340 Jan 90.

In the assessment of risk, several factors affect predictions: selection of reactive agent, selection of tumor incidence data, modeling of dose, scaling across species, adjustment for differences in duration and frequency of exposure, and selection of the most suitable risk extrapolation model. If the end points, exposure regimen, and the model for risk extrapolation are constant, then the review of dose paradigms will illustrate the effect of dose modeling on risk, since by definition the reactive agent is the primary carcinogen. The response incidence in lifetime inhalation bioassays of two primary carcinogens, ethylene oxide and formaldehyde, was used with different dose paradigms to estimate risk from maximum lifetime occupational exposures. The dose paradigms that will be considered include: concentration, concentration time product, retained dose, integrated blood concentration, and tissue exposure. (Copyright (c) 1989 Health Physics Society.)

Keywords: *Carcinogens, *Risk assessment, *Air pollution effects(Animals), Dose-response relationships, Risk assessment, Bioassay, Formaldehyde, Ethylene oxide, Rats, Occupational exposure, Tables(Data), Squamous cell carcinoma, Nose(Anatomy), Species specificity, Reprints.

PB91-151472/REB PC **E99**/MF **E99**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators.
Radian Corp., Research Triangle Park, NC.
1990, 1343p-in 8v
Set includes PB91-151480 through PB91-151555. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

No abstract available.

PB91-151480/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
M. A. Vancil, C. R. Parrish, and M. A. Palazzolo. Sep 89, 38p EPA/600/2-91/007A
Contract EPA-68-02-4288
See also Volume 2, PB91-151498. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

Emissions of metals and organics from a series of four wastewater sludge incinerators were determined. Three multiple hearth units and one fluidized bed combustor were tested. Emissions were controlled with a combination of venturi and/or tray impingement scrubbers. One site incorporated an afterburner as well. Flue gas testing was conducted at the inlet and outlet to the air pollution control devices at two of the plants. Feed sludge was also extensively tested for moisture, metals, and organics, as well as overall feed rate and heating value. Testing operating conditions were categorized as short-term versus long term (transients, start-up, interruptions, etc.). The metals found in greatest concentrations in the sludge were lead, chromium, and nickel; and the highest metal emission rates were of lead and cadmium. Organics were tested for in terms of volatile species (B.P. 30C - 100C) and semi-volatiles species. For the volatile species, toluene had the highest concentrations in the sludge and acrylonitrile, benzene, toluene, chloroform, and vinyl chloride had the highest emission rates. Few of the target semi-volatile compounds were detected in either the sludge feed or at the stack.

Keywords: *Air pollution sampling, *Incineration, *Sludge disposal, *Municipal wastes, Air pollution control, Flue gases, Metals, Organic compounds, Volatile organic compounds, Fluidized bed processors, Afterburners, Concentration(Composition), Scrubbers, Emission factors.

PB91-151498/REB PC **A13**/MF **A02**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
D. R. Knisley, L. M. Lamb, and A. M. Smith. Feb 89, 300p EPA/600/2-91/007B
Contract EPA-68-02-6999
See also Volume 1, PB91-151480 and Volume 3, PB91-151506. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

The Site I plant treats 36MGD of wastewater and the blended primary/secondary sludge is dewatered to approximately 16 to 20 percent solids. Sludge is incinerated by a six-hearth unit at approximately 6.0 wet tons per hour. Emissions are controlled by a three tray impingement scrubber using either a mixture of primary and secondary effluent or just secondary effluent as the scrubber liquor. Tests were conducted to determine particulate, metals, and organic parameters of sludge, inlet scrubber water, and scrubber exhaust gases. Lead was the most prominent metal emission while beryllium was below the detection limit in the flue gas. Chromium had the highest concentrations in the sludge and arsenic was below the detection limit. All target volatile organics were detected in the flue gas samples, while only 2 of the 14 species were detected in sludge feed and scrubber water samples. The most concentrated species found in the flue gas were benzene, acrylonitrile and tetrachloroethane. Only four of the target semi-volatile organics were found in the flue gas samples while none were found in sludge feed and scrubber water samples. Bis(2-ethylhexyl)phthalate and three dichlorobenzenes were the compounds detected.

Keywords: *Air pollution sampling, *Municipal wastes, *Sludge disposal, *Incineration, *Air pollution detection, Sewage sludge, Flue gases, Air pollution control, Scrubbers, Metals, Emission factors, Concentration(Composition), Quality assurance, Tables(Data), Volatile organic compounds, Organic compounds, Gas analysis, Quality control.

PB91-151506/REB PC **A12**/MF **A02**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
M. A. Vancil, C. R. Parrish, D. R. Knisley, K. W. Barnett, and D. J. Holder. Aug 89, 253p EPA/600/2-91/007C
Contract EPA-68-02-4288
See also Volume 2, PB91-151498 and Volume 4, PB91-151514. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

The Site 2 plant treats 38 MGD of municipal and to a lesser degree industrial wastewater. The blended primary/secondary sludge (approx 65-86% primary) is dewatered using centrifugation to about 18 to 25 percent solids. Sludge is fed to an eight-hearth incinerator at approximately 7.0 wet tons per hour. Emissions are controlled by a variable-throat venturi/impingement scrubber which uses secondary effluent as the scrubber liquor. Tests were conducted to determine particulate, metals, and organic emissions. In addition to sampling flue gases at the scrubber inlet and outlet, sludge feed, incinerator ash and scrubber inlet and outlet water was also sampled. Lead had the highest scrubber inlet flue gas concentrations during both short-term and long-term tests. Emission rates of cadmium, nickel, chromium and arsenic were also detected. Average scrubber removal efficiencies exceeded 53 percent for all metals. All of the target volatile organics except 1,2 dichloroethane were detected in the flue gas samples. The species detected in the highest concentrations were acrylonitrile, toluene, benzene, and vinylchloride. Up to seven target semi-volatile compounds were detected in the flue gas samples with phenol being the most prominent.

Keywords: *Air pollution sampling, *Incineration, *Sludge disposal, *Municipal wastes, Concentration(Composition), Flue gases, Scrubbers, Sewage sludge, Emission factors, Volatile organic compounds, Air pollution control, Tables(Data), Graphs(Charts), Metals, Organic compounds.

PB91-151514/REB PC **A02**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
M. A. Vancil, C. R. Parrish, D. R. Knisley, K. W. Barnett, and D. J. Holder. Aug 89, 8p EPA/600/2-91/007D
Contract EPA-68-02-6999
See also Volume 3, PB91-151506 and Volume 5, PB91-151522. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

The Site 2 plant treats 38 MGD of municipal and to a lesser degree industrial wastewater. The blended primary/secondary sludge (approx 65-86% primary) is dewatered using centrifugation to about 18 to 25 percent solids. Sludge is fed to an eight-hearth incinerator at approximately 7.0 wet tons per hour. Emissions are controlled by a variable-throat venturi/impingement scrubber which uses secondary effluent as the scrubber liquor. Tests were conducted to determine particulate, metals, and organic emissions. In addition to sampling flue gases at the scrubber inlet and outlet, sludge feed, incinerator ash and scrubber inlet and outlet water was also sampled. Incinerator operating data, sample calculations, additional volatile and semi-volatile data, CEM one-minute averages, and XAD preparation and QC checks are presented.

Keywords: *Air pollution sampling, *Sludge disposal, *Incineration, *Municipal wastes, Emission factors, Sewage sludges, Site surveys, Air pollution control, Performance evaluation, Flue gases, Concentration(Composition), Metals, Organic compounds, Scrubbers, Volatile organic compounds, Quality control.

PB91-151522/REB PC **A08**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
M. A. Vancil, C. R. Parrish, D. R. Knisley, K. W. Barnett, and D. J. Holder. Jun 89, 151p EPA/600/2-91/007E
Contract EPA-68-02-6999
See also Volume 4, PB91-151514 and Volume 6, PB91-151530. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

The Site 3 plant treats 2.5 MGD (designed for 7.5 MGD) of municipal wastewater. The blended primary/secondary sludge is dewatered using 2 belt filter presses to about 22 to 24 percent solids. Sludge is fed to a fluidized bed incinerator which is designed to burn 2.75 dry tons per hour. Emissions are controlled by a variable throat venturi followed by a three-tray impingement scrubber. The scrubber uses tertiary-treated nonchlorinated plant effluent. Tests were conducted to determine particulate, metals, and organic emissions. In addition to sampling flue gases at the scrubber outlet stack, scrubber influent water and sludge feed samples were also taken. Nickel was the most prominent metal emission and also had the highest concentration in the sludge feed. Ten of the fourteen target volatile organic compounds were detected in the flue gas in at least one of the VOST runs. The most concentrated species detected were chloroform and benzene in the stack gas; toluene, tetrachloroethene and ethylbenzene in the sludge feed; and chloroform and methylene chloride in the process water. Bis(2-ethylhexyl)phthalate was detected in the flue gas, sludge feed, and process water semi-volatile samples. No other semi-volatile compound was detected in the flue gas samples.

Keywords: *Incineration, *Sludge disposal, *Air pollution sampling, *Municipal wastes, Sewage sludge, Flue gases, Emission factors, Air pollution control, Scrubbers, Metals, Fluidized bed processors, Organic compounds, Volatile organic compounds, Particles, Site surveys, Tables(Data), Concentration(Composition).

PB91-151530/REB PC **A13**/MF **A02**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
M. A. Vancil, C. R. Parrish, D. R. Knisley, K. W. Barnett, and M. A. Palazzolo. Sep 89, 293p EPA/600/2-91/007F
Contract EPA-68-02-4288
See also Volume 5, PB91-151522 and Volume 7, PB91-151548. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

The Site 4 plant treats 11 to 12 MGD of wastewater from domestic (80% of influent) and industrial (20% of influent) sources. The treated primary/secondary sludge is dewatered using cloth filter presses to approximately 35 percent solids. The dried filter cakes are incinerated in a six-hearth unit and emissions are controlled with an afterburner, a precooler, a water injection venturi, and tray scrubber. Tests were conducted to determine particulate, metals, and organic emissions at the control device inlet and outlet sampling lo-

cations. Under normal operating conditions, the most prominent metal at the scrubber inlet flue gas stream was lead while zinc had the highest concentrations at the flue gas outlet. Of the target volatile organics, acrylonitrile and acetonitrile were detected in the highest concentrations. The venturi/tray scrubber showed 40 percent removal of acrylonitrile, chlorobenzene, and ethylbenzene. The following compounds appeared to be stripped from the scrubbing liquor into the flue gas: carbon tetrachloride, chloroform, methylene chloride, tetrachloroethene, toluene, 1,1,1-trichloroethane and trichloroethene. Three of the target volatile compounds (acetonitrile, acrylonitrile and benzene) were products of incomplete combustion (PICs) regardless of incinerator conditions. Semi-volatile organic compounds were tested only at the incinerator exit. Testing revealed phenol and naphthalene as the only compounds present. Dioxin/furan tests indicate average 2378-TCDD emission rates of 1.45 microgram/hr during cool furnace tests and 0.35 microgram/hr during hot furnace tests.

Keywords: *Incineration, *Sludge disposal, *Air pollution sampling, *Municipal wastes, Metals, Organic compounds, Scrubbers, Air pollution control, Concentration(Composition), Flue gases, Volatile organic compounds, Combustion efficiency, Emission factors.

PB91-151548/REB PC **A09**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
M. A. Vancil, C. R. Parrish, D. R. Knisley, K. W. Barnett, and M. A. Palazzolo. Sep 89, 184p EPA/600/2-91/007G
Contract EPA-68-02-4288
See also Volume 6, PB91-151530 and Volume 8, PB91-151555.Portions of this document are not fully legible. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

The Site 4 plant treats 11 to 12 MGD of wastewater from domestic (80% of influent) and industrial (20% of influent) sources. The treated primary/secondary sludge is dewatered using cloth filter presses to approximately 35 percent solids. The dried filter cakes are incinerated in a six-hearth unit and emissions are controlled with an afterburner, a precooler, a water injection venturi, and tray scrubber. Tests were conducted to determine particulate, metals, and organic emissions at the control device inlet and outlet sampling locations. Incinerator operating data, sample calculations, additional volatile and semi-volatile data, XAD preparation and QC checks, sludge analysis results, and internal audit results are presented.

Keywords: *Air pollution sampling, *Incineration, *Sludge disposal, *Municipal wastes, Sewage sludge, Air pollution control, Metals, Organic compounds, Flue gases, Auditing, Emission factors, Tables(Data), Concentration(Composition), Volatile organic compounds.

PB91-151555/REB PC **A06**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report. Final rept. 1987-90.
Radian Corp., Research Triangle Park, NC.
M. A. Vancil, C. R. Parrish, and M. A. Palazzolo. Jul 90, 115p EPA/600/2-91/007H
Contract EPA-68-02-4286
See also Volume 7, PB91-151548. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Also available in set of 8 reports PC E99/MF E99, PB91-151472.

Emissions of metals and organics from a series of four municipal wastewater sludge incinerators were determined. Three multiple hearth units and one fluidized bed combustor were tested. Emissions were controlled with a combination of venturi and/or tray impingement scrubbers. One site incorporated an afterburner as well. In order to obtain additional data on organics emissions, test results from both the Volatile Organic Sampling Trains (VOST) and the semi-volatile trains were retrieved. The gas chromatographic/mass spectroscopy (GC/MS) tapes containing the original chromatograms for the scrubber outlet flue gas samples from all four test sites were reviewed. A screening analysis of the tapes was performed in which peaks meeting a minimum area criteria were identified by computer. From the peak areas, flue gas concentrations and emissions were determined. At the majority of sites, greater than 60 additional volatile compounds were detected. The majority of these were simple saturated and unsaturated hydrocarbons. As with the initial test results, fewer additional semivolatiles than volatiles were detected. With three of the four test sites, fewer than 40 additional semi-volatiles were detected.

Keywords: *Air pollution detection, *Sludge disposal, *Incineration, *Municipal wastes, Sewage sludge, Air pollution control, Gas analysis, Metals, Organic compounds, Emission factors, Volatile organic compounds, Scrubbers, Afterburners, Gas chromatography, Mass spectroscopy, Flue gases, Site surveys, Volatile organic sampling trains.

PB91-153775/REB PC **A04**/MF **A01**
Environmental Investments: The Cost of a Clean Environment. A Summary. Final rept. 1972-2000.
Environmental Protection Agency, Washington, DC. Office of Policy, Planning and Evaluation.
A. Carlin. Dec 90, 53p* EPA/230/12-90/084
See also PB91-153783. Prepared in cooperation with Environmental Law Inst., Washington, DC.

The document summarizes the results of a report to Congress which estimates comprehensively the direct costs of pollution control activities in the United States. Estimates of annual pollution control costs over the years 1972-2000 for various levels of the public sector, as well as for the private sector are presented. Cost estimates are given for five categories of environmental media (air, water, land, chemicals, multi-media) and basic types of costs (capital, operating, annualized). Distinctions are made among the costs of existing regulations, new regulations, and full implementation of existing laws, regulations, and programs for which attainment of environmental goals was not achieved by 1987. The estimates are also used to provide some comparisons with several Western European nations and to make a number of other cost comparisons that may prove important over the next several years. In the current report, several points stand out: first, spending on environmental problems is rising; second, the allocation of resources between environmental media is changing; and third, the costs of pollution control are rising at a time when unmet environmental needs are still quite large.

Keywords: *Cost analysis, *Investments, *Pollution control, *United States, Cost estimates, Air pollution, Water pollution, Hazardous materials, Radioactive wastes, Capitalized costs, Operating costs, Expenses, Cost comparison, Western Europe, Regulations, Law enforcement, Inflation(Economics), Trends, Land pollution, Chemicals.

PB91-153783/REB PC **A22**/MF **A03**
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States. Final rept. 1972-2000.
Environmental Protection Agency, Washington, DC. Office of Policy, Planning and Evaluation.
Nov 90, 511p* EPA/230/11-90/083
See also PB91-153775. Prepared in cooperation with Environmental Law Inst., Washington, DC.

The report to Congress estimates comprehensively the direct costs of pollution control activities in the United States. Estimates of annual pollution control costs over the years 1972-2000 for various levels of the public sector, as well as for the private sector are presented. Cost estimates are given for five categories of environmental media (air, water, land, chemicals, multi-media) and basic types of costs (capital, operating, annualized). Distinctions are made among the costs of existing regulations, new regulations, and full implementation of existing laws, regulations, and programs for which attainment of environmental goals was not achieved by 1987. The estimates are also used to provide some comparisons with several Western European nations and to make a number of other cost comparisons that may prove important over the next several years. Trends in environmental quality, the 'output' of environmental pollution control expenditures, are also presented. In the current report, several points stand out: first, spending on environmental problems is rising; second, the allocation of resources between environmental media is changing; and third, the costs of pollution control are rising at a time when unmet environmental needs are still quite large.

Keywords: *Cost analysis, *Investments, *Pollution control, *United States, Cost estimates, Periodic variations, Air pollution, Water pollution, Hazardous materials, Protection, Ground water, Surface waters, Improvement, Cost effectiveness, Law(Jurisprudence), Regulations, Radioactive wastes, Cost comparison, Western Europe, Land pollution, Chemicals.

PB91-154211/REB PC **A08**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
Research Triangle Inst., Research Triangle Park, NC.
K. K. Starner, R. L. Perkins, B. W. Harvey, and S. H. Westbrook. Feb 90, 156p EPA/600/4-90/004
Contracts EPA-68-02-4125, EPA-68-02-4550
Also available from Supt. of Docs. See also PB86-222353. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The report presents the performance results of laboratories participating in the sixteenth, seventeenth and eighteenth rounds of the Bulk Sample Analysis Quality Assurance Program sponsored by the United States Environmental Protection Agency, (EPA). Round 16 of the program operated along the guidelines established in previous rounds and was a voluntary quality assurance program. The Asbestos Hazard Emergency Response Act of 1986 (AHERA), directed the National Institute of Standards and Technology (NIST) to establish and maintain a laboratory accreditation program for bulk sample analysis of asbestos. The program began in October 1988 by evaluating enrolled polariscope laboratories in the interim prior to the initiation of the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos laboratories, sponsored by NIST.

Keywords: *Asbestos, *Construction materials, *School buildings, Sampling, Quality assurance, Laboratories, Identifying, Chrysotile, Polariscope, Quantitative analysis, Evaluation, Insulation, Classifications, Errors, Tables(Data), Asbestos Hazard Emergency Response Act of 1986, Accreditation.

PB91-154617/REB PC **A04**/MF **A01**
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
W. F. Sette. Mar 91, 63p EPA/540/09-91/123

The new revised Neurotoxicity Test Guidelines are being added to Subdivision F of the Pesticide Assessment Guidelines, which provides guidance for registrants in the conduct of test to support registration of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The guidelines will also apply to future testing requirements for industrial chemicals under the Toxic Substances Act (TSCA). These revised neurotoxicity guidelines have been reviewed and approved by the FIFRA Scientific Advisory Panel and made available for public comment. The following guidelines are included in the package: (1) Neurotoxicity Screening Battery including Functional Observational Battery, Motor Activity, and Neuropathology, including an assay for Glial Fibrillary Acidic Protein; (2) Delayed Neurotoxicity of Organophosphorus Substances following Acute and 28-day Exposures, including an assay for Neurotoxic Esterase; (3) Developmental Neurotoxicity Study; (4) Schedule-Controlled Operant Behavior; and (5) Peripheral Nerve Function.

Keywords: *Pesticides, *Nervous system, *Toxicity, Guidelines, Glial fibriallary acidic protein, Organophosphorus insecticides, Esterases, Behavior, Humans, Animals, Peripheral nerves, Test methods, *Developmental neurotoxicity.

PB91-156331/REB PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC.
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
Water resources investigation.
Geological Survey, Sacramento, CA. Water Resources Div.
J. W. Gartner, and R. N. Oltmann. 1990, 89p USGS/WRI-90-4018
Also available from Supt. of Docs. Prepared in cooperation with California State Water Resources Control Board, Sacramento. Sponsored by Environmental Protection Agency, Washington, DC., and National Oceanic and Atmospheric Administration, Rockville, MD.

The report describes a study by the U.S. Geological Survey to determine whether reliable current-meter data can be collected in shallow, tidally affected waters under the influence of wind-generated waves. Four types of recording current meters with different speed sensors were tested, and the accuracy of data recorded by the meters under different conditions (slack water and maximum-flood and maximum-ebb periods during calm and windy conditions) was compared. It is important to note that the four meters tested are not necessarily representative of all available designs. The report describes the various current meters and mooring configurations used in the study, the procedures used to deploy and retrieve the meters and moorings, the methods for data translation and analysis, and the results of the comparison of current-meter records.

Keywords: *San Francisco Bay, *Ocean currents, *Current meters, Comparison, Shallow water, California, Tidal waters, Performance evaluation, Moorings, Data processing, Design criteria.

PB91-156737/REB PC **A20**/MF **A03**
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
31 Dec 90, 467p* EPA/DF/MT-91/080A
For system on magnetic tape, see PB91-592000. See also PB91-156745.

Within the Environmental Protection Agency (EPA), the Office of Solid Waste and Emergency Response (OSWER) is responsible for the development and management of a national program to safely handle solid and hazardous waste. The national program, for the most part, is authorized by the Resource Conservation and Recovery Act (RCRA). The Hazardous Waste Data Management System (HWDMS) was developed to automatically track the status of permits, reports, inspections, enforcement activities, and financial data to assist EPA in managing the data generated by RCRA. As with many computer systems, HWDMS has outgrown its capabilities, so a new system is needed. The new system is called the Resource Conservation and Recovery Information System (RCRIS). The goal of the RCRIS system is to provide a more effective means for tracking hazardous waste handlers regulated under RCRA. RCRA Notification, Permitting, and Compliance Monitoring and Evaluation data is available through the National Technical Information Service (NTIS) on IBM compatible tapes. From now until HWDMS is completely archieved, there will be two data tapes from NTIS. There will be a tape for HWDMS and a separate one for RCRIS. The HWDMS tape will include data from all States and Territories, except for Mississippi and general enforcement data, sensitive information is not included.

Keywords: *Hazardous materials, *Information systems, *Waste management, Pollution regulations, Documentation, Waste treatment, Waste disposal, Waste storage, Permits, Compliance, Law enforcement, State government, Standard industrial classification, Regional analysis, States(United States), Information transfer, *Hazardous Waste Data Management System, Resource Conservation and Recovery Information System, Resource Conservation and Recovery Act.

PB91-156745/REB PC **A20**/MF **A03**
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
31 Dec 90, 467p* EPA/DF/MT-91/080B
For system on magnetic tape, see PB91-592000. See also PB91-156737.

Within the Environmental Protection Agency (EPA), the Office of Solid Waste and Emergency Response (OSWER) is responsible for the development and management of a national program to safely handle solid and hazardous waste. The national program, for the most part, is authorized by the Resource Conservation and Recovery Act (RCRA). The Hazardous Waste Data Management System (HWDMS) was developed to automatically track the status of permits, reports, inspections, enforcement activities, and financial data to assist EPA in managing the data generated by RCRA. As with many computer systems, HWDMS has outgrown its capabilities, so a new system is needed. The new system is called the Resource Conservation and Recovery Information System (RCRIS). The goal of the RCRIS system is to provide a more effective means for tracking hazardous waste handlers regulated under RCRA. RCRA Notification, Permitting, and Compliance Monitoring and Evaluation data is available through the National Technical Information Service (NTIS) on IBM compatible tapes. From now until HWDMS is completely archieved, there will be two data tapes from NTIS. There will be a tape for HWDMS and a separate one for RCRIS. The HWDMS tape will include data from all States and Territories, except for Mississippi and general enforcement data, sensitive information is not included.

Keywords: *Hazardous materials, *Information systems, *Waste management, Pollution regulations, Documentation, Waste treatment, Waste disposal, Waste storage, Permits, Information transfer, Compliance, Law enforcement, State government, Standard industrial classification, Regional analysis, Mississippi, *Resource Conservation and Recovery Information System, Hazardous Waste Data Management System, Resource Conservation and Recovery Act.

PB91-157222/REB PC **A07**/MF **A01**
Office of Radiation Programs, Washington, DC.
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
ICF, Inc., Fairfax, VA.
Feb 91, 129p EPA/520/1-91/002-SUPPL
Contract EPA-68-D90170
See also PB91-131300. Sponsored by Office of Radiation Programs, Washington, DC.

The report, a supplement to the RCP Proficiency Report, will further assist governmental officials in providing advice to the public on the selection of proficient radon mitigation contractors. These reports list 1,123 contractors who have met the requirements of the RCP Program as of December 15, 1990. The Proficiency Report provides information on each contractor's name, RCP identification number, company name, address, phone number, and geographic service area. The report provides two additional tables, indexed by company name and by RCP identification number. The report is intended to help users quickly identify a proficient contractor if only the company name is known, or to verify which contractor is associated with a particular ID number.

Keywords: *Contractor personnel, *Radon, *Mitigation, Position(Location), Number codes, Tables(Data), *Proficiency report.

PB91-158394/REB PC **A03**/MF **A01**
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
K. L. Dearfield. Feb 91, 16p EPA/540/09-91/122
See also PB86-108958 and PB89-124085.

In response to the need to improve scientific and regulatory decisions and to provide additional guidance for the investigators performing oncogenicity studies, a position statement is presented by the Toxicology Branch of the Hazard Evaluation Division in the Office of Pesticide Programs. The position statement reflects the scientific thoughts of only the Office of Pesticide Programs (OPP) and should not be construed to be guidance from any other Office within EPA.

Keywords: *Pesticides, *Hazardous materials, *Toxic substances, Toxicity, Carcinogenicity tests, Risk assessment, Humans, Domestic animals, Metabolic activation, Mutagenicity tests, *Assessment guidelines.

PB91-159590/REB PC **A11**/MF **A02**
Corvallis Environmental Research Lab., OR.
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
NSI Technology Services Corp., Corvallis, OR.
A. T. Herlihy, D. H. Landers, R. F. Cusimano, W. S. Overton, and P. J. Wigington. Feb 91, 233p EPA/600/3-91/012
Contracts EPA-68-C8-0006, EPA-68-03-3249
See also PB89-138432. Prepared in cooperation with Lockheed Engineering and Sciences Co., Inc., Las Vegas, NV., Kilkelly Environmental Associates, Inc., Raleigh, NC., and Utah State Univ., Logan. Sponsored by Corvallis Environmental Research Lab., OR.

The Eastern Lake Survey - Phase II (ELS-II) was conducted in spring, summer, and fall of 1986 as part of the U. S. Environmental Protection Agency's (EPA) National Surface Water Survey (NSWS). The NSWS is a contribution to the National Acid Precipitation Assessment Program (NAPAP), which was charged by the U. S. Congress to provide policymakers with sound technical information regarding the effects of acid deposition. The major component of ELS-II was the spring, summer, and fall seasonal surveys and Fall Variability Study of lakewater chemistry in the northeastern United States. ELS-II lakes were sampled once in the spring, summer, and fall at the same location on the lake where the ELS-I sample was collected. In the fall variability study, a subset of ELS-II lakes was sampled on two additional dates at two independently selected locations believed to be the deepest point in the lake. ELS-II data, in conjunction with ELS-I data can be used to assess between-year, within-season, and among-season chemical variability, as well as spatial variability due to site selection.

Keywords: *Lakes, *Surface waters, *Acidification, *Variability, *Seasonal variations, Water quality, Water pollution, Water chemistry, Northeastern region(United States), Surveys, Acid deposition.

PB91-159608/REB PC **A04**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Global Warming Mitigation Potential of Three Tree Plantation Scenarios. Final rept. Sep 89-Jun 90.
Radian Corp., Research Triangle Park, NC.
R. L. Peer, D. L. Campbell, and W. G. Hohenstein. Feb 91, 68p EPA/600/7-91/003
Contract EPA-68-02-4286
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The report gives results of an analysis of three alternative uses of forests in the U.S. to reduce atmospheric carbon dioxide (CO_2) concentrations: (1) planting trees with no harvesting, (2) traditional forestry, and (3) short-rotation intensive culture of trees for biomass. Increasing concentrations of CO_2 and other radiatively important trace gases (RITGs) are of concern due to their potential to alter the Earth's climate. Some scientists, after reviewing the results of general circulation models, predict rising average temperatures and alterations in the Earth's hydrologic cycle. While the debate continues over the actual magnitude of global warming, most scientists agree that some change will occur over the next century. This places a burden on policymakers to address global warming and to develop mitigation measures. Since forests provide a sink for carbon by fixing CO_2 to produce biomass, halting deforestation and creating new forests have been proposed as ways to slow the buildup of carbon in the Earth's atmosphere.

Keywords: *Global warming, *Forestry, *Air pollution control, *Carbon dioxide, *Trees(Plants), *Mitigation, Climatic changes, Biomass, General circulation models, Hydrologic cycle, Reforestation, Cost analysis, Pollution sources, Harvesting, Land use, Greenhouse effect, Emission inventories.

PB91-159616/REB PC **A04**/MF **A01**
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
Corvallis Environmental Research Lab., OR.

K. W. Thornton, and P. J. Wigington. Feb 91, 67p EPA/600/3-91/006
See also PB91-148395 and PB91-148403. Prepared in cooperation with FTN Associates, Little Rock, AR.

The Watershed Manipulation Project (WMP) was implemented by EPA to: identify and quantify the relative importance of various processes in controlling surface water acidification with particular emphasis on the role of sulfate adsorption and base cation supply in the long-term watershed response to acidic deposition; assess the quantitative and qualitative watershed response to various levels of acidic deposition; and evaluate the assumptions that underlie the Direct/Delayed Response Project (DDRP) models and their ability to predict short-term watershed responses to experimental manipulation. These objectives will be achieved through a series of experiments at various spatial and temporal scales ranging from laboratory, plot, hillslope, and catchment manipulations. The document presents the rationale for these hypotheses, their importance for WMP objectives, the probability of a conclusive outcome, and the decision criteria that will be used, and in general terms, the experimental approach.

Keywords: *Water pollution control, *Acidification, *Mathematical models, *Hypotheses, Land pollution, Sulfates, Water chemistry, Long term effects, Experimental design, Surface waters, Deposition, Acid rain, Cations, Decision making, Air pollution, Manipulators, Air water interactions, Spatial distribution, Temporal distribution, Error analysis, Substitutes, *Watershed Manipulation Project, Aquatic Effects Research Program, Direct/Delayed Response Project.

PB91-159624/REB PC **A08**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1. Final rept.
Pacific Environmental Services, Inc., Durham, NC.
K. Meardon. Sep 90, 166p EPA/450/1-90/004A
Contract EPA-68-02-4393
See also Volume 2, PB91-159632 and PB85-225175. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The report presents an analysis of cancer risks in the United States from outdoor exposures to airborne toxic pollutants. It is intended to provide updated information to suggest priorities for air toxics control. The study is an update of an EPA report issued in 1985 entitled The Air Toxics Problem in the United States: An Analysis of Cancer Risks for Selected Pollutants. The analysis is based primarily on information derived from recent studies and reports. Results are expressed as cancer risk from individual pollutants and source categories in terms of excess lifetime individual cancer risks and nationwide annual cancer cases. Health risks due to indoor exposure and noncancer health effects resulting from outdoor exposure are not included in the analysis, but are addressed in separate studies.

Keywords: *Air pollution effects(Humans), *Cancer, *Toxic substances, Risk assessment, Toxicology, Health status indicators, Health hazards, Public health, Epidemiology, Radioactive air pollutants, Volatile organic compounds.

PB91-159632/REB PC **A11**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices. Final rept.
Pacific Environmental Services, Inc., Durham, NC.
Sep 90, 227p EPA/450/1-90/004B
Contract EPA-68-02-4393
See also Volume 1, PB91-159624. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The report presents an analysis of cancer risks in the United States from outdoor exposures to airborne toxic pollutants. It is intended to provide updated information to suggest priorities for air toxics control. The study is an update of an EPA report issued in 1985 entitled The Air Toxics Problem in the United States: An Analysis of Cancer Risks for Selected Pollutants. The analysis is based primarily on information derived from recent studies and reports. Results are expressed as cancer risk from individual pollutants and source categories in terms of excess lifetime individual cancer risks and nationwide annual cancer cases. Health risks due to indoor exposure and noncancer health effects resulting from outdoor exposure are not included in the analysis, but are addressed in separate studies.

Keywords: *Air pollution effects(Humans), *Cancer, *Toxic substances, Toxicology, Health status indicators, Tables(Data), Health hazards, Public health, Epidemiology, Volatile organic compounds, Hazardous wastes.

PB91-159640/REB PC **A05**/MF **A01**
Army Medical Research and Development Command, Fort Detrick, MD.
Health Advisory for 1,3-Dinitrobenzene. Final rept.
Environmental Protection Agency, Washington, DC. Criteria and Standards Div.
N. P. Hajjar, M. E. Brower, P. A. Turck, C. L. Kruger, and W. R. Hartley. Jan 91, 83p
Sponsored by Army Medical Research and Development Command, Fort Detrick, MD.

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, 1,3-dinitrobenzene. 1,3-Dinitrobenzene is manufactured by the nitration of nitrobenzene or benzene and is a by-product formed during the production of nitrobenzene, TNT explosives, and nitrobenzoic acid. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Dinitrobenzene, CAS 99-65-0.

PB91-159657/REB PC **A04**/MF **A01**
Health Advisory for Hexachloroethane. Final rept.
Environmental Protection Agency, Washington, DC. Office of Drinking Water.
L. Gordon, W. R. Hartley, and W. C. Roberts. Jan 91, 74p
Prepared in cooperation with Army Medical Research and Development Command, Fort Detrick, MD.

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, hexachloroethane. Hexachloroethane is a chlorinated alkane which has been used in high pressure lubricants, rubber and insecticidal formulations, moth repellants, fire extinguishing fluids, fermentation retardants, chemical precursors, and rodenticides. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Hexachloroethane, CAS 67-72-1.

PB91-159665/REB PC **A13**/MF **A02**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
Chemical Abstracts Service, Columbus, OH.
Jun 90, 282p EPA/560/7-90/003
See also PB85-204568, PB85-204584 and PB85-204592. Sponsored by Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

The 1990 Supplement to EPA's 1985 Edition of the Toxic Substances Control Act (TSCA) Chemical Substance Inventory covers approximately 5,000 substances that have been added to the Inventory since the 1985 publication. However, substances that were added to the Inventory after February 1, 1990 are not included in the publication. The 1990 Supplement contains all the appendices and indices that are included in the 1985 Edition, with the exception of the Molecular Formula Index.

Keywords: *Chemical compounds, *Inventories, Registries, Indexes(Documentation), Definitions, *Toxic Substances Control Act, *Toxic substances, *CAS numbers.

PB91-159673/REB PC **A02**/MF **A01**
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
Dec 90, 9p EPA/540/FS-91/124

The document contains up-to-date chemical information on Bacillus thuringensis, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the following actions has occurred: Issuance or reissuance of a registration standard; Issuance of each special review document; Registration of a significantly changed use pattern; Registration of a new chemical; or An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

Keywords: *Pesticides, *Bacillus thuringiensis, *Biological pest control, Hazardous materials, Chemical properties, Toxicology, Ecology, Agricultural products, Path of pollutants, Chemical information fact sheet, Use patterns, Science findings.

PB91-159681/REB PC **A03**/MF **A01**
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
Jun 89, 13p EPA/540/FS-91/123

The document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on Tribenuron methyl. A Fact Sheet is issued after one of the following actions has occurred: (1) Issuance or reissuance of a registration standard; (2) Issuance of each special review document; (3) Registration of a significantly changed use pattern; (4) Registration of a new chemical; or (5) An immediate need for information to reesolve controversial issues relating to a specific chemical or use pattern.

Keywords: *Pesticides, *Herbicides, Hazardous materials, Chemical properties, Regulations, Toxicology, Ecology, Agricultural products, Toxic substances, *Tribenuron methyl, *Methyl benzoates, Path of pollutants, Chemical information fact sheet, Use patterns, Science findings, CAS 101200-48-8.

PB91-159699/REB PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues. Final rept.
Midwest Research Inst., Kansas City, MC.
P. H. Cramer, J. S. Stanley, and K. R. Thornburg. 15 Jun 90, 65p EPA/560/5-90/012
Contract EPA-68-02-4252
Sponsored by Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

The study has resulted in the detection and confirmation of polyhalogenated diphenylethers (PHDPEs) in human adipose tissues. The identifications are based on both full scan and selected ion monitoring (SIM) high resolution mass spectrometry (HRMS) analysis efforts. The samples that were analyzed were selected from composites of the fiscal year 1987 (FY87) National Human Adipose Tissue Survey (NHATS) repository. The specific analysis effort to confirm the presence of the PHDPEs was conducted as a result of observations of response to these compounds during the analysis of the FY87 NHATS composites for polyhalogenated dibenzo-p-dioxins and dibenzofurans. The PHDPEs are of interest as a result of their planar aromatic structure and potential toxicological properties. The PHDPEs are commercially produced as brominat-

ed fire retardants and are known contaminants in other commercial products such as pentachlorophenol. The concentrations of the PHDPEs were estimated from the preliminary analysis for the polyhalogenated dibenzo-p-dioxins and dibenzofurans. The analysis efforts summarized in the report were conducted using available PHDPE standards.

Keywords: *Adipose tissue, *Chemical analysis, *Mass spectroscopy, Lipids, Tables(Data), *Chlorinated diphenylethers, *Brominated diphenylethers.

PB91-159707/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
Computer Sciences Corp., Research Triangle Park, NC.
R. E. Stogner, J. S. Irwin, W. B. Petersen, M. Aissa, and A. Lansari. Jan 91, 42p EPA/600/3-91/013
Contract EPA-68-01-7365
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

Two studies are reported on factors influencing indoor pollution levels. In the first, two mass balance computer models, CONTAM87 and CONTAM88, were used to estimate indoor pollution levels for a hypothetical four story building exposed to measured outdoor ozone (O3) concentrations for a 24-hour period. The building contained 50 rooms; exterior rooms contained windows, interior rooms did not. Modeled indoor concentrations indicated that ozone levels generally decreased along a partial cross section from peripheral rooms actually experience lower ozone concentrations than interior rooms. CONTAM88 analysis also revealed that simple actions such as opening interior office doors could significantly change indoor ozone distribution. In the second, a sensitivity study was conducted to quantify the factors affecting serial correlation in the time series of indoor pollution levels. Further, the authors investigated in a very preliminary way the use of personal exposure monitoring data to infer the values of variables needed to estimate indoor concentrations, such as the rates of air exchange, pollutant removal, and pollutant generation.

Keywords: *Emission factors, *Indoor air pollution, *Computerized simulation, *Air quality, Time series analysis, Concentration(Composition), Ozone, Statistical analysis, Sulfur dioxide, Mass balance, Ventilation, Environmental engineering, Buildings, Air infiltration, CONTAM87 model, CONTAM88 model.

PB91-160549/REB PC**$95.00**/MF **E09**
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st), Held in New Orleans, Louisiana on September 10-13, 1990.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
Sep 90, 1110p EPA/530/SW-91/030

The document contains the proceedings of the First International Symposium on Oil and Gas Exploration and Production Waste Management Practices, September 10 - 13, 1990, New Orleans, Louisiana.

Keywords: *Meetings, *Waste management, *Oil recovery, *Gas production, Crude oil, Natural gas, Exploratory wells, Pollution regulations, Waste disposal, Hazardous materials transportation.

PB91-160556/REB PC **A12**/MF **A02**
Treatment Technology Background Document.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
L. Rosengrant. Jan 91, 271p
See also PB90-234253.

The document provides a discussion of the treatment technologies applicable to wastes that are subject to the land disposal restrictions (LDR), which were mandated by Congress as part of the 1984 HSWAs to the RCRA. The document does not include every possible technology that may be used to treat wastes subject to the LDR, but discusses those most commonly used. The technologies discussed include those that are demonstrated (commercially available) and have been proven to substantially diminish the toxicity of hazardous constituents and/or to reduce the likelihood of migration of such constituents from the waste of concern. These technologies include those that treat wastewaters (wastes containing less than or equal to 1% filterable solids and less than or equal to 1% total organic carbon) and those that treat non-wastewaters.

Keywords: *Waste treatment, *Technology utilization, *Hazardous materials, *Water pollution control, *Waste disposal, *Best technology, Ground disposal, Pollution regulations, Biological treatment, Oxidation, Reduction(Chemistry), Radioactive materials, Materials recovery, Separation, Incineration, Precipitation(Chemistry), Encapsulating, Vitrification, Electrolysis, Waste utilization, Waste recycling.

PB91-160564/REB PC **A03**/MF **A01**
Chloromethane: Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Oct 89, 26p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, methyl chloride. Methyl chloride is used in the production of other chemical products. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Methyl chloride, *Toxicology, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, Health hazards, CAS 74-87-3.

PB91-160572/REB PC **A03**/MF **A01**
Bromochloromethane: Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Oct 89, 18p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, bromochloromethane. Bromochloromethane is primarily used as a fire-extinguishing fluid, particularly in aircraft and portable extinguishers. It is also used in organic syntheses. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Bromochloromethane, CAS 74-9705.

PB91-160580/REB PC **A03**/MF **A01**
Dichlorodifluoromethane: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 20p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, dichlorodifluoromethane. Dichlorodifluoromethane's applications include use primarily as a refrigerant and blowing agent, with minor use as a food freezant. Miscellaneous uses are as a leak detection agent, for chilling of cocktail glasses and as a low temperature solvent. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Dichlorodifluoromethane, CAS 75-71-8.

PB91-160598/REB PC **A03**/MF **A01**
o-Chlorotoluene: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 17p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, o-chlorotoluene. o-Chlorotoluene is used as a solvent and as a chemical intermediate in the manufacture of pesticides, dyestuffs, pharmaceuticals, and peroxides. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Tests, Teratogenic compounds, Carcinogens, Mutagens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *o-Chlorotoluene, CAS 95-49-8.

PB91-160606/REB PC **A03**/MF **A01**
1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 17p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, 1,3,5-trichlorobenzene. The chemical 1,3,5-trichlorobenzene is used as a chemical intermediate; in the synthesis of explosives; in pesticides; and in electrical insulation material. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Trichlorobenzenes, CAS 108-70-3.

PB91-160614/REB PC **A03**/MF **A01**
Bromomethane: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 22p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, bromomethane. Bromomethane is used primarily as a fumigant in soil to control fungi, nematodes and weeds and in the space fumigation of food commodities and storage facilities to control insects and rodents. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Bromomethane, CAS 74-83-9.

PB91-160622/REB PC **A03**/MF **A01**
Bis-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 16p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, bis-(2-chloroisopropy) ether. Bis-(2-chloroisopropyl) ether is used as a solvent for fats, waxes, and greases; in textile manufacturing; in the manufacturing of cleaning solutions and spotting agents; in paint and varnish removers; and as an intermediate in chemical synthesis. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Teratogenic compounds, Tests, Carcinogens, Mutagens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Bis(chloromethyl ethyl)ether, CAS 108-60-1.

PB91-160630/REB PC **A03**/MF **A01**
1,1,2-Trichloroethane: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 24p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, 1,1,2-Trichloroethane. 1,1,2-Trichloroethane is used as a feedstock intermediate in the production of 1,1-dichloroethylene; a solvent for chlorinated rubbers; and in fats, oils, waxes, and resins. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, *Trichloroethanes, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, CAS 79-00-5.

PB91-160648/REB PC **A03**/MF **A01**
Trichlorofluoromethane: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 31p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, trichlorofluoromethane. Trichlorofluoromethane is used primarily as a plastic foam blowing agent, refrigerant, and solvent/degreasing agent in the aerospace and electronics industry. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Trichlorofluoromethane, CAS 75-69-4.

PB91-160655/REB PC **A03**/MF **A01**
1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 25p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, 1,2,4-trichlorobenzene. The chemical 1,2,4-trichlorobenzene is used as a solvent in chemical manufacturing; in dyes and intermediates; in dielectric fluid; in synthetic transformer oils; in lubricants; in heat-transfer medium; and in insecticides. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Trichlorobenzenes, CAS 120-82-1.

PB91-160663/REB PC **A03**/MF **A01**
Hexachlorobutadiene: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 23p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, hexachlorobutadiene. Hexachlorobutadiene is used as a solvent in chlorine gas production, an intermediate in the manufacture of rubber compounds and lubricants, a gyroscope fluid, and a pesticide. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metablism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Hexachlorobutadiene, CAS 87-68-3.

PB91-160671/REB PC **A03**/MF **A01**
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 20p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, 1,1,1,2-tetrachloroethane. Tetrachloroethane is used as a feedstock for the production of solvents such as trichloroethylene and tetrachloroethylene. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quanitification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Tetrachloroethane, CAS 74-87-3.

PB91-160689/REB PC **A03**/MF **A01**
Naphthalene: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Mar 90, 28p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, naphthalene. Naphthalene is used in the manufacture of phthalic and anthranilic acids and other derivatives, and in making dyes; in the manufacture of resins, celluloid, lampblack and smokeless gunpowder; and as moth repellant, insecticide, anthelmintic, vermicide, and intestinal antiseptic. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Naphthlene, *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, CAS 91-20-3.

PB91-160697/REB PC **A03**/MF **A01**
1,2,3-Trichloropropane: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Sep 89, 17p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, 1,2,3-trichloropropane. Trichloropropane is used as a paint and varnish remover, solvent, degreasing agent, and crosslinking agent in the clastomer Thiokiol ST. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *Trichloropropane, CAS 96-18-4.

PB91-160705/REB PC **A03**/MF **A01**
p-Chlorotoluene: Drinking Water Health Advisory.
Environmental Protection Agency, Washington, DC. Office of the Assistant Administrator for Water.
Jun 89, 16p

The Drinking Water Health Advisory, Office of Water, U.S. Environmental Protection Agency, has issued its report on the chemical, p-chlorotoluene. p-Chlorotoluene is used as a solvent and as a chemical intermediate in the manufacture of pesticides, dyestuffs, pharmaceuticals, and peroxides. The report covers the following areas: the occurrence of the chemical in the environment; its environmental fate; the chemical's absorption, distribution, metabolism, and excretion in the human body; and its health effects on humans and animals, including its mutagenicity and carcinogenicity characteristics. Also included is the quantification of its toxicological effects.

Keywords: *Potable water, *Water quality, *Water pollution effects(Humans), *Toxicology, Health hazards, Pharmacokinetics, Metabolism, Carcinogenicity tests, Mutagenicity tests, Teratogens, Water pollution effects(Animals), Chemical analysis, Skin(Anatomy), Eyes, *p-Chlorotoluene, CAS 106-43-4.

PB91-160739/REB PC **A17**/MF **A03**
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report. Final rept.
Environmental Protection Agency, Washington, DC. Office of Policy, Planning and Evaluation.
K. Hinman, D. Schwartz, and E. Soffer. 30 May 86, 393p
See also PB91-160747.

The report presents the results of the first phase of the Santa Clara Valley Integrated Environmental Management Project (IEMP), an innovative project designed to address the environmental and public health problems posed by toxic chemicals in California's Santa Clara Valley. Integrated environmental management is intended to be a practical tool for controlling pollution that threatens public health. EPA, in partnership with state and local leaders, can use estimates of the public health impacts of a wide range of environmental problems to compare those problems and set priorities for risk management. Setting priorities provides a way of

working through an environmental agenda by targeting the worst problems first in order to get the most risk reduction (and thus public health benefit) for any given level of resources.

Keywords: *Public health, *Pollution control, *Santa Clara Valley, Toxicity, Risk assessment, Humans, Exposure, Carcinogens, Industrial wastes, Water pollution, Organic compounds, Metals, Air pollution, Gases, Monitoring, Maps, California, Integrated Environmental Management Project, Chemicals, Priorities.

PB91-160747/REB PC **A11**/MF **A02**
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
Environmental Protection Agency, Washington, DC. Office of Policy, Planning and Evaluation.
K. Hinman, P. Risler, J. Ruffolo, E. Soffer, and A. Steckel. Sep 87, 245p
See also PB91-160739.

The report presents the results of the second phase of the Santa Clara Valley Integrated Environmental Management Project (IEMP), an innovative project designed to address environmental and public health problems posed by toxic chemicals in California's Santa Clara Valley. The project's goals are: to evaluate and compare the health risks - of cancer and other chronic, toxic effects - from toxic pollutants in the environment; to use the evaluation to set informed priorities for further analysis and possible control; to work closely with government agencies and the community to manage environmental public health problems effectively.

Keywords: *Public health, *Pollution control, *Santa Clara Valley, Toxicity, Risk assessment, Monitoring, Air pollution, Water pollution, Water wells, Aquifers, Organic compounds, Sources, Ground water, Disinfection, Standards, Tables(Data), California, Integrated Environmental Management Project, Trihalomethane, Institutional analysis, Cleanup.

PB91-161026/REB PC **A05**/MF **A01**
White Phosphorus Health Advisory. Final rept.
Environmental Protection Agency, Washington, DC. Office of Drinking Water.
L. Gordon, W. R. Hartley, and W. C. Roberts. Dec 90, 83p
Prepared in cooperation with Army Medical Research and Development Command, Fort Detrick, MD.

The Health Advisory (HA) provides information on the health effects, analytical methodology and treatment technology that would be useful in dealing with White Phosphorus contamination of drinking water. Due to the extreme toxicity of White Phosphorus following oral ingestion, One-day, Ten-day, and Longer-term (child and adult) HAs are not recommended. The Lifetime HA is 0.0001 mg/l. White Phosphorus is not classifiable as to human carcinogenicity. Health Advisories describe nonregulatory concentrations of drinking water contaminants at which adverse health effects would not be anticipated to occur over specific exposure durations.

Keywords: *Public health, *White phosphorus, *Water pollution, *Toxicity, Ingestion(Biology), Concentration(Composition), Exposure, Necrosis, Musculoskeletal disorders, Humans, Laboratory animals, Inhalation, Skin, Absorption, Mortality, Health assessment, Drinking water.

PB91-161380/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
May 89, 14p ECAO-CIN-629
See also PB81-117426.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Chlorinated Naphthalenes.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Naphthalene compounds, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, *Naphthalene/chloro, Clean Water Act, Pharmacokinetics, Naphthalene/dichloro, Naphthalene/trichloro, Naphthalene/tetrachloro, Naphthalene/pentachloro, Naphthalene/hexachloro, Naphthalene/heptachloro, Naphthalene/octachloro.

PB91-161398/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jun 89, 21p ECAO-CIN-615
See also PB81-117285.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Acrylonitrile.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Acrylonitriles, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Food chains, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Potable water, Research and development, Water pollution standards, Clean Water Act, Pharmacokinetics.

PB91-161406/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Nitrosamines. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Sep 89, 44p ECAO-CIN-662
See also PB81-117756.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Nitrosamines.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Nitrosamines, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Clean Water Act, Pharmacokinetics.

PB91-161414/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Nitrophenols. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Dec 89, 24p ECAO-CIN-661
See also PB81-117749.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Nitrophenols.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Nitrophenols, Water pollution standards, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Research and development, Potable waters, Clean Water Act, Pharmacokinetics.

PB91-161422/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jun 89, 20p ECAO-CIN-654
Also see PB81-117665.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. The addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Hexachlorocyclopentadiene.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), Water pollution standards, Toxic tolerances, Laboratory animals, Chlorine organic compounds, Toxicology, Aquatic biology, Marine biology, Exposure, Research and development, Food chains, Maximum permissible exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Potable water, *Cyclopentadiene/hexachloro, Clean Water Act, Pharmacokinetics.

PB91-161430/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Fluoranthene. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Apr 90, 19p ECAO-CIN-648
See also PB81-117608.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Fluoranthene.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), Condensed aromatics, Water pollution standards, Research and development, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Potable water, Food chains, Maximum permissible exposure, Environmental health, Exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, *Fluoranthene, Clean Water Act, Pharmacokinetics.

PB91-161448/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jul 89, 16p ECAO-CIN-644
See also PB81-117731.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop

ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for 1, 2-Diphenylhydrazine.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Research and development, *Hydrazine/diphenyl, Clean Water Act, Pharmacokinetics.

PB91-161455/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jun 89, 15p ECAO-CIN-652
See also PB81-117640.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Hexachlorobutadiene.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), Water pollution standards, Toxic tolerances, Laboratory animals, Chlorine organic compounds, Toxicology, Aquatic biology, Marine biology, Exposure, Research and development, Potable water, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, *Butadiene/hexachloro, Clean Water Act, Pharmacokinetics.

PB91-161463/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Heptachlor. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
May 89, 24p ECAO-CIN-651
See also PB81-117632.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Heptachlor.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Heptachlor, Insecticides, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Water pollution standards, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Research and development, Potable water, Clean Water Act, Pharmacokinetics.

PB91-161471/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for DDT. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Sep 89, 22p ECAO-CIN-636
See also PB81-117491.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for DDT/DDD/DDE.

Keywords: *DDE insecticide, *Water quality, *Toxic substances, *Water pollution effects(Humans), *DDT, *DDD insecticide, Insecticides, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Research and development, Potable water, Water pollution standards, Clean Water Act, Pharmacokinetics.

PB91-161489/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Dec 89, 18p ECAO-CIN-647
See also PB81-117590.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Ethylbenzene.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Ethyl benzene, Water pollution standards, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Biological effects, Environmental health, Aquatic ecosystems, Risk assessment, Carcinogens, Public health, Maximum permissible exposure, Food chains, Research and development, Potable water, Clean Water Act, Pharmacokinetics.

PB91-161497/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Apr 90, 16p ECAO-CIN-642
See also PB81-117558.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for 2, 4-Dimethylphenol.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Xylenols, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Clean Water Act, Pharmacokinetics.

PB91-161505/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Endrin. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Dec 89, 20p ECAO-CIN-646
See also PB81-117582.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Endrin.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Endrin, Insecticides, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Potable water, Research and development, Food chains, Maximum permissible exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystem, Biological effects, Environmental health, Clean Water Act, Pharmacokinetics.

PB91-161513/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Acenaphthene. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Apr 90, 16p ECAO-CIN-613
See also PB81-117269.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority Pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Acenaphthene.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Acenaphthene, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Clean Water Act, Pharmacokinetics.

PB91-161521/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Sep 89, 24p ECAO-CIN-616
See also PB81-117301.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. The addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Aldrin/Dieldrin.

Keywords: *Dieldrin, *Water quality, *Toxic substances, *Water pollution effects(Humans), *Aldrin, Potable water, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Food chains, Maximum permissible exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Water pollution standards, Research and development, Insecticides, Clean Water Act, Pharmacokinetics.

PB91-161539/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Antimony. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
May 89, 20p ECAO-CIN-617
See also PB81-117319.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority Pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Antimony.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Antimony, Water pollution standards, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Research and development, Potable water, Food chains, Maximum permissible exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Environmental health, Biological effects, Clean Water Act, Pharmacokinetics.

PB91-161547/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Chlordane. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Sep 89, 21p ECAO-CIN-625
See also PB81-117384.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Chlordane.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Chlordane, Carcinogens, Insecticides, Toxic tolerances, Toxicology, Aquatic biology, Marine biology, Exposure, Potable water, Water pollution standards, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Clean Water Act, Pharmacokinetics.

PB91-161554/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Aug 89, 21p ECAO-CIN-624
See also PB81-117376.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. The addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Carbon Tetrachloride.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Carbon tetrachloride, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Risk assessment, Aquatic ecosystems, Biological effects, Public health, Maximum permissible exposure, Food chains, Research and development, Potable water, Water pollution standards, Environmental health.

PB91-161562/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Chloroform. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Aug 89, 22p ECAO-CIN-631
See also PB81-117442.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Chloroform.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Chloroform, Water pollution standards, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Research and development, Potable water, Food chains, Maximum permissible exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Clean Water Act, Pharmacokinetics.

PB91-161570/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jul 89, 17p ECAO-CIN-632
See also PB81-117459.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for 2-Chlorophenol.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), Phenols, Toxic tolerances, Laboratory animals, Aquatic biology, Marine biology, Exposure, Carcinogens, Public health, Water pollution standards, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Research and development, Potable water, *Phenol/chloro, Clean Water Act, Pharmacokinetics.

PB91-161588/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document Addendum for Toxaphene. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
May 89, 17p ECAO-CIN-674
See also PB87-105375 and PB81-117863.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority Pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Toxaphene.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Toxaphene, Water pollution standards, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Potable water, Research and development, Food chains, Maximum permissible exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Insecticides, Clean Water Act, Pharmacokinetics.

PB91-161596/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jun 89, 17p ECAO-CIN-640
See also PB81-117533.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for 2, 4-Dichlorophenol.

Keywords: *Phenol/dichloro, *Water quality, *Toxic substances, *DCP 2-4 herbicide, *Water pollution effects(Humans), Potable water, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Water pollution standards, Research and development, Food chains, Insecticides, Clean Water Act, Pharmacokinetics.

PB91-161604/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Benzidene. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
May 89, 18p ECAO-CIN-621
See also PB81-117343.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Benzidine.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Benzidine, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Exposure, Carcinogens, Public health, Nitrogen organic compounds, Water pollution standards, Marine biology, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Research and development, Potable water, Clean Water Act, Pharmacokinetics.

PB91-161612/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Acrolein. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Sep 89, 16p ECAO-CIN-614
See also PB81-117277.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. The addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Acrolein.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Acrolein, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Water pollution standards, Potable water, Clean Water Act, Pharmacokinetics.

PB91-161620/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers. Draft rept. (Final).
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jun 89, 25p ECAO-CIN-628

See also PB81-117418.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Chloroalkyl Ethers.

Keywords: *Chlorine organic compounds, *Water quality, *Toxic substances, *Water pollution effects(Humans), *Ethers, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Clean Water Act, Pharmacokinetics.

PB91-161638/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Phenol. *Draft rept. (Final).*
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Dec 89, 17p ECAO-CIN-664
See also PB81-117772.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Phenol.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Phenol, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Clean Water Act, Pharmacokinetics.

PB91-161646/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Haloethers. *Draft rept. (Final).*
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
May 89, 16p ECAO-CIN-649
See also PB81-117616.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Haloethers.

Keywords: *Halogenated aromatic hydrocarbons, *Water quality, *Toxic substances, *Water pollution effects(Humans), Ethers, Water pollution standards, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Research and development, Potable water, Food chains, Maximum permissible exposure, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Clean Water Act, Pharmacokinetics.

PB91-161653/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters. *Draft rept. (Final).*
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Sep 89, 41p ECAO-CIN-665
See also PB81-117780.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Phthalate Esters.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Phthalates, Toxic tolerances, Laboratory animals, Toxicology, Aquatic biology, Marine biology, Exposure, Carcinogens, Water pollution standards, Potable water, Research and development, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Food chains, Carboxylic acid esters, Clean Water Act, Pharmacokinetics.

PB91-161661/REB PC **A03**/MF **A01**
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols. *Draft rept. (Final).*
Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.
Jul 89, 30p ECAO-CIN-630
See also PB81-117434.

Under the 1977 Clean Water Act, Congress mandated the U.S. Environmental Protection Agency to develop ambient water quality criteria for 129 priority pollutants. These criteria were published in 1980. Under Section 304(a)(1) of the Clean Water Act as amended in 1987, the U.S. EPA is mandated to re-evaluate and update these criteria every five years. These addenda represent an updated literature search current as of 1988, plus additional information from Agency files and Program Offices. The addendum is to update the existing Ambient Water Quality Criteria Document for Chlorinated Phenols.

Keywords: *Water quality, *Toxic substances, *Water pollution effects(Humans), *Phenols, Toxic tolerances, Laboratory animals, Chlorine organic compounds, Toxicology, Aquatic biology, Marine biology, Exposure, Potable water, Research and development, Food chains, Carcinogens, Public health, Risk assessment, Aquatic ecosystems, Biological effects, Environmental health, Maximum permissible exposure, Clean Water Act, Pharmacokinetics.

PB91-161679/REB PC **A09**/MF **A02**
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
Environmental Research Lab., Athens, GA.
C. T. Jafvert, and J. E. Rogers. Jan 91, 193p EPA/600/9-91/001

These proceedings describe a workshop at which biological remediation of contaminated sediments was discussed. For the purpose of the workshop, contaminated sediments of primary interest were those within six of the Areas of Concern (AOC) identified in the U.S./Canada International Joint Commission's Great Lakes Water Quality Board; five of these AOC are priority concerns of the U.S. Environmental Protection Agency's Assessment and Remediation of Contaminated Sediments (ARCS) Program. The workshop was organized around four topic areas: (1) Overview of the Areas of Concern, (2) Biological degradation of PCBs; (3) Biological degradation of PAHs, and (4) Biological treatment of metal species. For the first topic area, presentations were made describing site characteristics of the Ashtabula River, OH; the Buffalo River, NY; the Sheboygan River, WI; the Grand Calumet River, IN; the Saginaw River and Bay, MI; and the Hamilton Harbor, Ontario, Canada. For the remaining topic areas, presentations were made by investigators actively involved in either bench, pilot, or full-scale studies concerning these areas. The document provides extended abstracts and brief summaries of the presentations and discussion sessions at the workshop.

Keywords: *Sediments, *Meetings, *Biological treatment, *Water pollution, *Sediment-water interfaces, *Biodegradation, Great Lakes, Biodeterioration, Aromatic polycyclic hydrocarbons, Site characterization, Remedial action, Laboratory tests, Metals, Leaching, Aerobic processes, Anaerobic processes, Field tests, Polychlorinated biphenyls.

PB91-161687/REB PC **A04**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources. Final rept. Mar 88-Sep 90.
Radian Corp., Research Triangle Park, NC.
J. J. Watson, J. A. Probert, and S. D. Piccot. Jan 91, 74p EPA/600/8-91/002
Contracts EPA-68-02-4288, EPA-68-02-4274
Prepared in cooperation with Alliance Technologies Corp., Chapel Hill, NC. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

The report describes a global inventory of anthropogenic volatile organic compound (VOC) emissions that includes a separate inventory for each of seven pollutant groups--paraffins, olefins, aromatics, formaldehyde, other aldehydes, other aromatics, and marginally reactive compounds. The inventory, one input to atmospheric chemistry models required to estimate the global atmospheric concentration of ozone, is part of an assessment of the potential environmental impacts associated with global climate change. Study results show total global anthropogenic emissions of about 121 million short tons of VOCs per year. The U.S. is the largest emitter with 21% of the total. Globally, fuelwood combustion and savanna burning are the largest sources, together accounting for over 35% of global VOC emissions. The approach used to develop the inventory involved: (1) identifying the major anthropogenic sources of VOC emissions in the U.S. and grouping them into categories; (2) developing emission factors by dividing the U.S. emissions by the amount of production or consumption of the related commodity in the U.S.; (3) multiplying the U.S. emission factors by production/consumption statistics for other countries to yield global VOC emission estimates; and (4) geographically distributing the emissions.

Keywords: *Air pollution, *Environmental impact assessments, Global aspects, Pollution sources, Climatic changes, Atmospheric chemistry, Ozone, Alkene hydrocarbons, Alkanes, Geographical distribution, Emission factors, Statistical analysis, Aromatic compounds, Formaldehyde, Aldehydes, *Volatile organic compounds, *Emission inventories.

PB91-161695/REB PC **A04**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet. Rept. for Jan 88-Jul 89.
PEI Associates, Inc., Cincinnati, OH.
J. R. Kominsky, and R. W. Freyberg. Mar 91, 53p EPA/600/2-91/004
Contract EPA-68-03-4006
See also PB89-221246. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

A study was conducted to evaluate the potential for asbestos fiber reentrainment during cleaning of carpet contaminated with asbestos. Two types of carpet cleaning equipment were evaluated at two carpet contamination levels. Airborne asbestos concentrations were determined before and during carpet cleaning. Overall, airborne asbestos concentrations were two to four times greater during the carpet cleaning activity. The level of asbestos contamination and the type of cleaning method used had no statistically significant effect on the relative increase of airborne asbestos concentrations during carpet cleaning.

Keywords: *Asbestos, *Carpet, *Indoor air pollution, *Air pollution sampling, *Air pollution control, Dry methods, Wet methods, Vacuuming, Cleaning, Concentration(Composition), Experimental design, Particle size distribution, Quality assurance, Occupational exposure, Buildings, Tables(Data), Occupational safety and health, Field tests, High efficiency particulate air filters.

PB91-161703/REB PC **A04**/MF **A01**
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
Environmental Research Lab., Athens, GA.
T. W. Collette, R. F. Christman, J. M. McGuire, and C. Trusty. Mar 91, 72p EPA/600/4-91/004
Prepared in cooperation with North Carolina Univ. at Chapel Hill. School of Public Health, and Technology Applications, Inc., Athens, GA.

The gas chromatographic (GC) and Fourier transform infrared and mass spectroscopic (FT-IR and MS, respectively) properties of (Z)-2-chloro-3-(dichloromethyl)-4-oxobutenoic acid (MX) (a highly mutagenic byproduct of drinking water chlorination) and several related compounds were studied. Specifically, MX, the methyl ester of MX (MX-OMe), and three MX-model compounds--mucochloric acid (MCA), mucobromic acid (MBA), and 2,4-(3H,5H)-furandione (2,4 FD)--were analyzed on the GC/FT-IR and GC/MS systems. A concentration study of MX on the GC/FT-IR system revealed a minimum identifiable quantity of approximately 10 ng, with linear response over the range of 10 to 600 ng. MX was stable to approximately 260 C. The thermal decomposition product produced above that temperature was tentatively identified by GC/MS as 2-(dichloromethyl)-3-chloro-2-propenal. The GC/FT-IR detector response for 600 ng of MX was compared to that of 600 ng of MX that had been methylated. The ratio of the detector response indicated that the methylation efficiency was, at best, 40%. Additionally, several extracts of chlorinations of dissolved organic material were analyzed. No MX was detected. The approximate extraction efficiencies of MX and MCA were determined for several organic solvents, of which ethyl acetate was the most efficient for both compounds.

Keywords: *Chlorine organic compounds, *Potable water, *Water pollution, Chlorination, Mass spectroscopy, Gas chromatography, Infrared spectroscopy, Solvents, Extraction, Pyrolysis, Bromine organic compounds, Graphs(Charts).

PB91-161711/REB PC **A06**/MF **A01**
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
Environmental Research Lab., Athens, GA. Office of Research and Development.
S. L. Bird, J. M. Cheplick, and D. S. Brown. Mar 91, 123p EPA/600/3-91/019
See also PB90-119959. Prepared in cooperation with Computer Sciences Corp., Athens, GA.

The report documents an initial testing and sensitivity analysis of the Terrestrial Ecosystem Exposure Assessment Model (TEEAM). TEEAM calculates the exposure concentrations of contaminants in plants and animals in terrestrial ecosystems. The project was performed in two phases. First, a sensitivity analysis was performed using a simple system--an American robin inhabiting a typical peanut field in Georgia that had been treated with diazinon. The primary food source for the robin was the earth-worms living in the pesticide-contaminated soil. Second, an intensive model testing and evaluation effort was undertaken to examine each major model component. Results of the testing suggest that continued model development should focus on better simulation of surface ponding, plant transport, and uptake by soil dweller and above ground insect populations.

Keywords: *Terrestrial ecosystems, *Mathematical models, *Pesticides, *Land pollution, *Environmental surveys, Plants(Botany), Animals, Food chains, Exposure, Environmental transport, Sensitivity analysis, Air pollution, Water pollution, Hydrology, Performance evaluation, *Terrestrial Ecosystem Exposure Assessment Model.

PB91-161729/REB PC **A13**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Modal Aerosol Dynamics Modeling.
Computer Sciences Corp., Research Triangle Park, NC.
E. R. Whitby, P. H. McMurry, U. Shankar, and F. S. Binkowski. Feb 91, 281p EPA/600/3-91/020
Contract EPA-68-01-7365
See also PB86-212685. Prepared in cooperation with Minnesota Univ., Minneapolis. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The report presents the governing equations for representing aerosol dynamics, based on several different representations of the aerosol size distribution. Analytical and numerical solution techniques for these governing equations are also reviewed. Described in detail is a computationally efficient numerical technique for simulating aerosol behavior in systems undergoing simultaneous heat transfer, fluid flow, and mass transfer in and between the gas and condensed phases. The technique belongs to a general class of models known as modal aerosol dynamics (MAD) models. These models solve for the temporal and spatial evolution of the particle size distribution function. Computational efficiency is achieved by representing the complete aerosol population as a sum of additive overlapping populations (modes), and solving for the time rate of change of integral moments of each mode. Applications of MAD models for simulating aerosol dynamics in continuous stirred tank aerosol reactors and flow aerosol reactors are provided. For the application to flow aerosol reactors, the discussion is developed in terms of considerations for merging a MAD model with the SIMPLER routine described by Patankar (1980). Considerations for incorporating a MAD model into the U.S. Environmental Protection Agency's Regional Particulate Model are also described. Numerical and analytical techniques for evaluating the size-space integrals of the modal dynamics equations (MDEs) are described. For multimodal logonormal distributions, an analytical expression for the coagulation integrals of the MDEs, applicable for all size regimes, is derived, and is within 20% of accurate numerical evaluation of the same moment coagulation integrals. A computationally efficient integration technique, based on Gauss-Hermite numerical integration, is also derived.

Keywords: *Aerosols, *Coagulation, *Dynamics, Nucleation, Mathematical models, Accuracy, Particle size.

PB91-161737/REB PC **A06**/MF **A01**
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Mar 90, 108p EPA/450/3-90/009

On February 27, 1990, standards for Benzene were promulgated for benzene transfer and benzene waste operations. The benzene enabling document summarizes these standards. The basic purpose of the document is to assist the EPA regional enforcement personnel in the understanding of these regulations and the implementation plan for benzene NESHAPs. Flow diagrams that can assist in the determination of the applicability of the standards to the sources and example forms to be filled out by the waste operations listing stream characteristics are also included.

Keywords: *Air pollution standards, *Benzene, *Air pollution abatement, *Waste management, *Hazardous materials transportation, Air pollution control, State implementation plans, Standards compliance, Regional analysis, Law enforcement, Pollution regulations, Personnel, Waste waters, Performance standards, Sources, *National Emission Standards for Hazardous Air Pollutants.

PB91-161745/REB PC **A08**/MF **A01**
Polymer Manufacturing Industry - Enabling Document. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Dec 90, 175p EPA/450/3-90/019
See also PB91-148304.

The enabling document summarizes the standards that were promulgated in December 1990 (55 FR51010) for new stationary sources of polypropylene, polyethylene, polystyrene, and poly (ethylene terephthalate) manufacturing industry. The basic purpose of the document is to assist the EPA regional enforcement personnel in the understanding of these regulations and the implementation plan for these regulations. Flow diagrams that can assist in the determination of the applicability of the standards to the sources are also included.

Keywords: *Polymers, *Stationary pollutant sources, US EPA, Standards, Emission, Regulations, Manufacturing, Polyethylene, Polystyrene, Polypropylene, Polyethylene terephthalate, Volatile organic compounds, Industrial plants.

PB91-161752/REB PC **A10**/MF **A02**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Ongoing Research and Regulatory Development Projects. Final rept.
Radian Corp., Research Triangle Park, NC.
T. K. Moody, C. E. Oldham, and C. E. Norris. Jul 90, 216p DCN-90-203-099-26-10, EPA/450/3-90/013
Contract EPA-68-D8-0065
See also PB90-113531. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The National Air Toxics Information Clearinghouse (NATICH) has been established by the U.S. Environmental Protection Agency's (EPA) Office of Air Quality Planning and Standards for the purpose of facilitating information transfer among Federal, State, and local air quality management agencies. The document is divided into three sections and an appendix. The first section is an introduction that explains document scope and use. Section 2 lists 230 air toxics projects in progress as of March 31, 1990, at EPA, NIOSH, ATSDR, and State and local agencies. A brief description of each project and a contact name, office, and telephone number are given. The third section of the document contains the index that allows readers to locate projects of interest. The appendix lists regulatory development projects on toxic chemicals under way at the EPA's Office of Drinking Water (ODW).

Keywords: *Research and development, *Information transfer, *Air pollution, *Toxic substances, *Pollution regulations, Pollution sources, Local government, State programs, Occupational safety and health, Public health, Water pollution, Bibliographies, Subject indexing, Radioactive materials, *National Air Toxics Information Clearinghouse.

PB91-162404/REB PC **A03**/MF **A01**
Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
W. J. Averett. 1990, 17p EPA/600/D-90/225
Presented at the ISA/89 International Conference, Exhibit and Training Conference, Philadelphia, PA., October 22-28, 1989.

The report describes the results of an investigation of the performance of state-of-the-art and standard porable ultrasonic Doppler flowmeters that do not require particles or bubbles in the fluid to make an accurate measurement. Both the standard and new state-of-the-art flowmeters measured flow within their claimed accuracy in tap water without any particles or bubbles added. All testing was performed at the U.S. Environmental Protection Agency (USEPA) Test and Evaluation Facility in Cincinnati, Ohio. All testing conformed to Scientific Apparatus Makers Association (SAMA) standards. The test results from both flowmeters are presented so that an easy comparison may be made and that the improvement in performance can be determined. The velocity range of all testing was from 0 - 21.58 ft/sec. The state-of-the-art ultrasonic flowmeter was superior in measuring lower values of flow and performed about the same as the control flowmeter over the upper range of the velocities tested. However, these advancements in ultrasonic technology do not abrogate the normal loss of accuracy above 16.25 ft/sec in tap water. The loss seems to be a function of Reynolds Number.

Keywords: *Flowmeters, *Ultrasonics, *Water meters, Doppler effect, Flow measurement, Water pollution, Experimental data, Quality control, Errors, Anemometers, Reynolds number.

PB91-162412/REB PC **A02**/MF **A01**
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
M. L. Apel, and H. M. Freeman. 1990, 10p EPA/600/D-90/226

Presented at the Waste Minimization and Clean Technology: Moving Toward the 21st Century, Geneva, Switzerland, May 29-June 1, 1989. Prepared in cooperation with American Public Works Association, Chicago, IL.

The Waste Reduction Innovative Technology Evaluation (WRITE) Program is one of EPA's major pollution prevention research programs. The program encourages joint interaction by industry and government in the development, demonstration and implementation of effective techniques and practices for minimizing the generation of non-hazardous as well as hazardous wastes. Through the program, technical and economic evaluations of industrial manufacturing and processing operations use to reduce the volume or toxicity of wastes are conducted. Research studies are also being conducted under the WRITE Program to address long-term chemical and industry-specific pollution prevention issues. The paper describes the development and implementation of EPA's WRITE Program. Summaries of the Program findings and conclusions to date are also presented.

Keywords: *Pollution abatement, *Hazardous materials, *Waste management, Research and development, Environmental protection, US EPA, Industrial wastes, Long term effects, Economic analysis, Toxic substances, Reprints, *Waste Reduction Innovative Technology Evaluation Program, Waste minimization, Source reduction.

PB91-162420/REB PC **A03**/MF **A01**
Cost Estimates for Controlling SOCs by GAC Treatment.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
J. Q. Admas, and R. M. Clark. 1990, 31p EPA/600/D-90/227
Presented at Design and Use of Granular Activated Carbon - Practical Aspect, American Water Works Association Research Foundation/U.S. Environmental Protection Agency, Cincinnati, OH., May 9-10, 1989.

The Drinking Water Research Division of EPA has a major role in evaluating the cost and performance of technology considered as part of drinking water regulations. The paper examines cost estimates for controlling various SOCs by GAC treatment using predicted use rates, and then evaluates the sensitivity of cost to variations in design and operating variables. Strategies for reducing the cost of GAC systems is discussed utilizing optimization of EBCT, in-series contactors versus a single contactor configuration, and off-site carbon reactivation.

Keywords: *Cost estimates, *Water pollution control, *Granular activated carbon treatment, *Water treatment, *Synthetic resins, Pollution regulations, Technology utilization, Organic compounds, Performance standards, Adsorption, Design criteria, Operating costs, Empty bed contact time, Safe Drinking Water Act.

PB91-162438/REB PC **A03**/MF **A01**
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
D. J. Reasoner, E. W. Rice, and L. C. Fung. 1990, 22p EPA/600/D-90/228
Pub. in Proceedings of the American Water Works Association, Water Quality Conference, San Diego, CA., November 1990. Prepared in cooperation with Hackensack Water Co., Haworth, NJ.

Ozonation of drinking water may adversely affect the biological stability of the finished water. The study was designed to assess the effect of ozone as a preoxidant on the nutrient status of water treated in a full-scale water treatment plant. The study was conducted over a ten week period with analyses performed on a weekly basis. The Haworth Water Treatment Plant is a direct filtration plant utilizing ozonation, alum and cationic polymer flocculation, flotation-skimming, and dual media (anthracite-sand) filtration. Chlorine is added just prior to the filtration process to maintain a residual in the filter effluent. Chlorine and ammonia are added after filtration to produce a chloramine residual in the finished water. Samples collected were the raw source water, water from the ozone contactor, and the finished product water collected at the entry point of the distribution system. Standard water quality parameters analyzed included total coliform bacteria, heterotrophic place count bacteria, total organic carbon (TOC), pH, turbidity, hardness, alkalinity, specific conductance, sulfate, nitrate and chloride. Biological stability of the water was determined by the assimilable organic carbon (AOC) bioassay using Pseudomonas fluorescens strain P-17 and Spirillum strain NOX, and by the coliform growth response (CGR) bioassay with Enterobacter cloacae and Escherichia coli as the bioassay organisms.

Keywords: *Water treatment plants, *Ozonation, *Potable water, *Biological effects, *Water pollution, Water quality, Bioassay, Physical chemical treatment, Flocculation, Filtration, Chlorination, Disinfection, Aquatic microbiology, Biodeterioration, Halomethanes, Bacteria, Reprints.

PB91-162446/REB PC **A03**/MF **A01**
Succeeding at Waste Minimisation. Symposium paper.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
M. A. Curran, and H. M. Freeman. 1990, 12p EPA/600/D-90/229
Presented at Special Wastes Symposium, Geneva, Switzerland, September 20-22, 1989.

The EPA's progress over the last eighteen years in improving environmental quality through its media-specific pollution control programs has been substantial. However, EPA realizes that further improvements can be realized by pursuing pollution prevention strategies through a multi-media waste minimization approach. Many public and private organizations in the United States support waste minimization as an approach to reducing waste generation. The EPA encourages waste generators to carry out assessments in their facilities to identify opportunities for waste minimization. The paper describes the six elements of a waste minimization program as recommended by the EPA.

Keywords: *Pollution abatement, *Waste management, *Hazardous materials, US EPA, Assessments, Waste treatment, Waste disposal, Cost analysis, Feasibility studies, Pollution regulations, Operating, Management planning, Administrative procedures, Reprints, *Waste minimization, Source reduction.

PB91-162453/REB PC **A03**/MF **A01**
Cost Modeling for Drinking Water Unit Treatment Processes.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. G. Eilers. Jun 90, 11p EPA/600/D-90/230
Proceedings of American Water Works Association, Sunday Seminar Session, 1990 Annual Conference, Cincinnati, OH., June 17-21, 1990.

Current U.S. EPA research is underway to improve and expand upon a cost data base for use in estimating the economics of building and operating drinking water treatment facilities. The cost data is important to the EPA decision making process when formulating new regulations and to water utilities as they implement these regulations. The cost estimates based upon the data must accurately reflect the true cost of current technology used for drinking water treatment.

Keywords: *Water treatment plants, *Potable water, *Cost estimates, *Mathematical modeling, Operating costs, Decision making, Pollution regulations, Water quality, Water pollution abatement, Cost analysis, Forecasting, Economic analysis, Reprints, Safe Drinking Water Act, Small systems.

PB91-162461/REB PC **A03**/MF **A01**
Standardized Costs for Water Supply Distribution Systems.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. G. Eilers. 1990, 11p EPA/600/D-90/231
Proceedings of American Water Works Association Engineering and Construction Symposium Annual Conference, Los Angeles, CA., June 18-22, 1989.

There are a significant number of water supply distribution systems in the United States that are deteriorating, resulting in a potential threat to the future quality of drinking water. Corrective measures will directly influence the cost of providing water. It would be useful to have a mechanism for examining the economics of various alternative solutions for handling problems affecting water quality within the distribution system. A cost data base has been developed to aid the design engineer in this type of analysis.

Keywords: *Water distribution(Applied), *Distribution systems, *Potable water, *Water quality, *Economic analysis, Water supply, Water costs, Substitutes, Design criteria, Water utilities, Standards, Sources, Corrosion, Water pollution abatement, Performance standards, Civil engineering, Reprints, Safe Drinking Water Act.

PB91-162479/REB PC **A03**/MF **A01**
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90. Symposium paper.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
P. R. de Percin. 1990, 16p EPA/600/D-90/232
Proceedings of the New England Environmental Expo 90, Hynes Convention Center, Boston, MA., April 10-12, 1990.

The Superfund Innovative Technology Evaluation (SITE) Program was developed to assist the development of hazardous waste treatment technologies necessary to implement new cleanup standards which require greater reliance on permanent remedies. As part of the SITE program, four stabilization and solidification processes have been performed, six treatability studies are underway, and five demonstrations are in the planning and site selection phase. During these demonstrations, the effectiveness of the stabilization/solidification processes was evaluated by measuring the chemical and physical characteristics before and after treatment. An overall conclusion, from the completed SITE demonstration on Stabilization Processes, is that a Treatability study should be required before selecting a remediation technology. Also, it appears that each stabilization process has similar capabilities to treat metals and inorganics, and significantly different capabilities to handle organics.

Keywords: *Superfund, *Hazardous materials, *Waste treatment, *Stabilization, *Remedial action, Standards, Technology utilization, Solidification, Metals, Organic compounds, Inorganic compounds, Performance standards, Site surveys, Reprints, Cleanup operations.

PB91-162487/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
Cincinnati Univ., OH.
W. J. D. Hoover, L. C. Murdoch, S. J. Vesper, H. R. Pahren, and O. L. Sprockel. 1990, 30p EPA/600/D-90/233
Contract EPA-68-C9-0031
Prepared in cooperation with National Urban League, Inc., Cincinnati, OH. Center Hill Lab. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

A serious problem in the implementation of in situ bioreclamation is the delivery of nutrients and oxygen to soil of low permeability. The problem commonly requires contaminated soil to be excavated for bioreclamation, resulting in increased exposure to toxic materials, liability and cost. The authors demonstrated that it is feasible to create hydraulic fractures at shallow depths (several m) in silty clay till. Fractures created during a recent field test were flat-lying and roughly equant in plan with a maximum dimension of 8 m. Coarse sand was pumped into the fractures to hold them open. The sand was an average of 1.1 cm in maximum thickness. As many as four fractures were created from the same borehole, stacked at vertical spacing of 15 or 30 cm. The technique will be used to deliver slow-releasing granules of nutrients and encapsulated oxygen compounds in an effort to enhance in situ bioreclamation of contaminated soil.

Keywords: *Biodeterioration, *Land reclamation, *Nutrients, *Land pollution control, *Oxygenation, In situ processes, Soil contamination, Subsurface investigations, Aerobic processes, Hydraulic fracturing, Hydrogen peroxide, Encapsulating, Soil contamination, Microorganisms, Slow releasing chemical.

PB91-162495/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
Computer Sciences Corp., Research Triangle Park, NC.
J. O. Paumier, and J. S. Irwin. 1990, 14p EPA/600/D-90/234
Prepared in cooperation with National Oceanic and Atmospheric Administration, Silver Spring, MD. Atmospheric Sciences Modeling Div. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

The performance of two mixing height models are compared to observed mixing heights during convective conditions. The first model integrates the hourly surface heat flux and friction velocity to compute convective and mechanical estimates, respectively. The second model uses an interpolation approach that is currently recommended by the U.S. Environmental Protection Agency for use in air quality regulating analysis. The results suggest that both models perform best when estimating late afternoon mixing heights; nearly 85% of the estimates from both models are within 40% of the observed values. For the entire daytime period, the first model produced the least biased results; all the estimates, on average were within a factor of two of the observed mixing heights. The second model performed poorly in the hours shortly after sunrise, but was comparable to the first model for the latter part of the day.

Keywords: *Mathematical models, *Atmospheric diffusion, *Atmospheric circulation, *Height, Field tests, Meteorology, Performance evaluation, Mixing, Air quality, Convective flow, Atmospheric boundary layer flow, Comparison, Air pollution, Environmental transport, *CWB model, *EPA model, CRSTER model.

PB91-162503/REB PC **A03**/MF **A01**
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
S. G. Perry, J. O. Paumier, and D. J. Burns. 1991, 13p EPA/600/D-90/235
Prepared in cooperation with National Oceanic and Atmospheric Administration, Silver Spring, MD. Air Resources Lab., and Computer Sciences Corp., Research Triangle Park, NC.

The conference preprint describes the results of the first performance evaluation of the Complex Terrain Dispersion Model (CTDMPLUS), which is currently being considered by the USEPA as a regulatory guideline model. The CTDMPLUS performance is also compared with that of Rough Terrain Diffusion Model (RTDM). For the one-year Lovett Power Plant data base, where plume impaction is fairly uncommon, CTDMPLUS tends to overpredict the high end of the concentration distribution by about a factor of two for 1-hour, 3-hour, and 24-hour averages. In comparison, RTDM overpredicted the high concentrations by about a factor of five.

Keywords: *Air pollution, *Air quality display model, *Mathematical models, *Plumes, Complex terrain, Atmospheric diffusion, Environmental transport, US EPA, Guidelines, Performance evaluation, Concentration(Composition), Meteorology, *Complex Terrain Dispersion Model, *CTDMPLUS model, Rough Terrain Diffusion Model.

PB91-162511/REB PC **A03**/MF **A01**
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
Environmental Research Lab.-Duluth, Monticello, MN. Monticello Ecological Research Station.
R. O. Hermanutz, K. N. Allen, and S. F. Hedtke. c1990, 19p EPA/600/D-90/237
Pub. in Water Chlorination, Environmental Impact and Health Effects, Chapter 37, v6 p463-477. See also PB88-102728. Proceedings of Conference on Water Chlorination: Environmental Impact and Health Effects, Oak Ridge, TN., May 3-8, 1987.

The purpose of the study was to determine in outdoor streams the relative sensitivity of selected organisms to chlorine, to evaluate the degree to which the 4-d criterion protects the structure and function of aquatic ecosystems, and to compare the toxicity and persistence or fate of different forms of TRC. In 1985 chlorine alone was tested and in 1986 chlorine was tested with and without the addition of ammonia. The comparisons of the forms of TRC are based on the supposition that the addition of ammonia (as ammonium chloride and ammonium hydroxide) caused a shift in the composition of TRC to a higher percentage of chloramines. (Copyright (c) 1990 Lewis Publisher, Inc.).

Keywords: *Chlorine, *Environmental monitoring, *Streams, *Water pollution effects(Animals), Ammonia, Freshwater fishes, Water quality, Reprints.

PB91-162529/REB PC **A03**/MF **A01**
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
Environmental Research Lab.-Duluth, MN.
S. P. Bradbury, T. R. Henry, and R. W. Carlson. c1990, 23p EPA/600/D-90/238
Pub. in Environmental Chemistry and Toxicology, p295-315, 1990. See also PB88-214762. Proceedings of International Workshop on Quantitative Structure-Activity Relationship in Environmental Toxicology (3rd), Knoxville, TN., 1990.

The U.S. Environmental Protection Agency (EPA), under a variety of legislation, is charged with the responsibility of assessing the hazard of chemicals to human health and the environment. In some instances, EPA incorporates predictive techniques in its decision-making process (Auer et al., 1990). Predictive toxicological methods are often employed as cost-effective components in an overall strategy for prioritizing chemicals for in-depth investigation. Predictive approaches are also used where empirical toxicological data is either unavailable or not required under a specific statute. For example, under Section 5 of the Toxic Substances Control Act (TSCA) the EPA Office of Toxic Substances must review and assess the potential hazard of a new industrial chemical within 90 d, generally with little accompanying information beyond the compound's structure (Auer et al., 1990). The implementation of TSCA illustrates the need to establish reliable predictive techniques because laboratory resources are limited and the potential number of compounds for study is large. (Copyright (c) 1990 ECSC, EEC, EAEC, Brussels and Luxembourg.)

Keywords: *Toxicology, *Water pollution effects(Animals), Structure-activity relationship, Mathematical models, Toxic substances, Cardiovascular system, Respiratory system, Oxidative phosphorylation, Trout, Dose-response relationships, Graphs(Charts), Narcotics, Reprints, *Fish acute toxicity syndrome.

PB91-162537/REB PC **A02**/MF **A01**
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
T. G. Brna. Aug 90, 8p EPA/600/D-90/239
Presented at International Conference on Organohalogen Compounds (10th), Bayreith, FRG, September 10-14, 1990.

The paper discusses controlling polychlorinated dibenzo-p-dioxin (PCDD) and dibenzofuran (PCDF) emissions from incinerators by flue gas cleaning. New Source Performance Standards for municipal waste combustors (MWCs) and guidelines for existing incinerators in the U.S., proposed on December 20, 1989, are to be promulgated in December 1990. The proposed national regulations require more stringent control of particulate matter and include pre-combustion, combustion, and post-combustion controls, the last two depending on size and age of the facility. Dry scrubbing processes have been used exclusively on recent MWCs and are planned for future MWCs in the U.S. for flue gas cleaning (post-combustion control). They inherently include particulate matter control along with their primary function of acid gas removal. These technologies are also generally effective in controlling PCDDs, PCDFs, and trace heavy metals. Test results quantifying air pollutant emissions, especially PCDD/PCDF, and their control will be presented and compared with the proposed regulations.

Keywords: *Air pollution control, *Incineration, *Waste disposal, *Polychlorinated dibenzodioxins, *Polychlorinated dibenzofurans, Flue gases, Municipal wastes, Particle, Air pollution standards, Heavy metals, Comparison, Pollution regulations, Air cleaning systems, Air pollution abatement, Reprints, New Source Performance Standards.

PB91-162545/REB PC **A03**/MF **A01**
Acid Rain Control Options.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
F. T. Princiotta. 1990, 26p EPA/600/D-90/240
Presented at the Electric Power Industry and the New Clean Air Act Conference, Washington, DC., December 10-11, 1990.

The paper discusses acid rain control options available to the electric utility industry. They include coal switching, flue gas desulfurization, and such emerging lower cost technologies as Limestone Injection Multistage Burners (LIMB) and Advanced Silicate (ADVACATE), both developed by EPA, selective use of gas to reduce nitrogen oxides (NOx) and sulfur dioxide (SO_2) in coal-fired boilers, and the use of Integrated Coal Gasification Combined Cycle (IGCC) technology.

Keywords: *Acid rain, *Air pollution control, *Air pollution abatement, Precipitation(Meteorology), Nitrogen oxides, Coal, Sulfur dioxide, Electric power plants, Calcium silicates, Combined-cycle power plants, Industrial wastes, Fuel substitution, Reprints, Flue gas desulfurization, Limestone Injection Multistage Burners, Clean Air Act.

PB91-162552/REB PC **A02**/MF **A01**
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
J. D. Kilgroe. 1990, 8p EPA/600/D-90/241
Presented at International Conference on Organchalogen Compounds (10th), Bayreuth, FRG, September 10-14, 1990.

The paper discusses combustion control of emissions of polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) from municipal waste incinerators in North America. New regulations to control air pollution emissions from municipal waste incineration have been enacted in Canada and are being developed in the U.S. Regulations in both countries will require the use of good combustion practice (GCP). The U.S. EPA defines three goals for their GCP strategy: to maximize furnace destruction of organics, to limit the relative amount of flyash carried from combustors with flue gases, and to operate flyash collection devices at temperatures which minimize the de novo synthesis of PCDD/PCDF. The paper describes the rationale for the GCP strategy, presents data showing the effects of electrostatic precipitator operating temperature on PCDD/PCDF formation rates, and brieflydescribes current North American incinerator design and operating practices which must be changed to reduce formation and emission of PCDD/PCDF.

Keywords: *Air pollution control, *Incinerators, *Waste disposal, *Polychlorinated dibenzodioxins, *Polychlorinated dibenzofurans, Canada, United States, Combustion efficiency, Air pollution abatement, Air pollution standards, Pollution regulations, Municipal wastes, Fly ash, Electrostatic precipitators, Design criteria, Performance evaluation, Reprints, Foreign technology.

PB91-162560/REB PC **A03**/MF **A01**
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
Health Effects Research Lab., Research Triangle Park, NC.
J. Lewtas, L. Claxton, J. Mumford, and G. Lofroth. 1990, 21p EPA/600/D-90/242
Prepared in cooperation with Nordic School of Public Health, Goeteborg (Sweden).

There are several strategies for conducting bioassay studies of indoor air pollutant mixtures. One approach is to generate indoor pollutants from sources under laboratory conditions suitable for human, animal, or in vitro bioassay studies. This approach was used extensively to evaluate tobacco smoke and to a lesser

extent for other indoor combustion sources such as kerosene heaters. A second approach is to simulate these complex mixtures by simpler mixtures of pure chemicals which can be used in biological studies. The third approach, which is described in more detail here, is to use bioassays in the direct evaluation of complex mixtures of indoor air pollutants. The mixtures of organics found indoors from combustion sources, building materials, household products and human activities are extremely complex. They consist of thousands of components which are not well characterized or quantified. Many of these mixtures and certain components are potential human carcinogens. The development of short-term bioassays to detect mutagens and potential carcinogens has facilitated studies of complex mixtures including air pollutants and combustion emissions. Chapter 7 will focus on the development and application of bacterial mutagenicity assays to complex mixtures of indoor air pollutants.

Keywords: *Indoor air pollution, *Toxicology, *Air pollution effects(Humans), Exposure, Mutagenicity tests, Risk assessment, Combustion, Carcinogens, Salmonella typhimurium.

PB91-162578/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues. Book chapter.
Kentucky Univ., Lexington. Graduate Center for Toxicology.
R. C. Gupta, and C. G. Gairola. c1990, 12p EPA/600/D-90/243
Pub. in Genetic Toxicology of Complex Mixtures, v39 p303-312 1990. Sponsored by Health Effects Research Lab., Research Triangle Park, NC., and Public Health Service, Rockville, MD.

An analysis of the tissue DNA adducts in rats by the sensitive (32)p-postlabeling assay showed one to eight detectable DNA adducts in lung, trachea, larynx, heart and bladder of the sham controls. Chronic exposure of animals to mainstream cigarette smoke showed a remarkable enhancement of most adducts in the lung and heart DNA. Since cigarette smoke contains several thousand chemicals and a few dozen of them are known or potential carcinogens, the difference between the DNA adducts of nasal and the other tissues may reflect the diversity of reactive constituents and their differential absorption in different tissues. In comparison to the lung DNA adducts, the adducts in nasal DNA were less hydrophobic. Identity of the predominant adducts was further investigated by comparison with several reference DNA adducts from 10 PAH and aromatic amines. Since some of these chemicals are present in cigarette smoke, the results suggest that these constituents of cigarette smoke may not be directly responsible for formation of DNA adducts in the lung and heart of the smoke-exposed animals.

Keywords: *DNA damage, *Respiratory system, *Air pollution effects(Animals), *Carcinogens, Tissues(Biology), Aromatic polycyclic hydrocarbons, Mutagens, Phosphorus radioisotopes, Carboxyhemoglobin, Thin layer chromatography, Reprints, *Cigarette smoke.

PB91-162594/REB PC **A02**/MF **A01**
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
Health Effects Research Lab., Research Triangle Park, NC.
L. D. Claxton, T. E. Kleindienst, E. Perry, and L. T. Cupitt. c1990, 10p EPA/600/D-90/245
Pub. in Genetic Toxicology of Complex Mixtures, p103-111 1990. Prepared in cooperation with Northrop Services, Inc., Research Triangle Park, NC., and Environmental Health Research and Testing, Inc., Research Triangle Park, NC.

During the past decade, there has been renewed effort examining the extent to which hazardous compounds (particularly mutagens and carcinogens) are found in the urban atmosphere. Most of these studies examined organic material associated with the particles emitted from specific sources. In contrast, few studies have examined the volatile airborne organics before and after they undergo atmospheric transformation. Such studies have shown that the mutagenicity of organic material from combustion sources can dramatically increase after photooxidation processes and that a variety of atmospheric hydrocarbons can be transformed into mutagenic species through these same processes. A review of the Salmonella bioassay genotoxicity of volatile organic pollutants and their atmospheric transformation products is presented.

Keywords: *Mutagenicity tests, *Air pollutants, Salmonella typhimurium, Bioassay, Photochemistry, Reprints, *Atmospheric transformation, Volatile organic compounds.

PB91-162602/REB PC **A03**/MF **A01**
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
Health Effects Research Lab., Research Triangle Park, NC. Genetic Toxicology Div.
J. Lewtas. c1990, 11p EPA/600/D-90/246
Pub. in Genetic Toxicology of Complex Mixtures, v39 p353-361 1990.

The future assessment of complex mixtures of environmental pollutants will increasingly rely on new interdisciplinary strategies including state-of-the-art genetic and molecular methodologies. Integrated multidisciplinary studies will assess human exposure, dosimetry and cancer risk to complex mixtures of pollutants and apportion the exposure and risk to the various pollution sources. Strategies which hold promise for future studies include: (1) biomonitoring environmental levels, fate, transformation and human exposure; (2) characterization of the genotoxic components of complex mixtures using advanced chemical and bioassay methods; (3) source apportionment of human exposure to mutagens; (4) molecular dosimetry of complex mixtures, and (5) mechanistic studies of the effects of complex mixtures induced by both genetic and non-genetic mechanisms. Important advances in understanding the genetic and carcinogenic effects of complex environmental mixtures will increasingly rely on the successful implementation of multidisciplinary integration of environmental, laboratory and human studies using state-of-the-art biological, chemical and molecular methods.

Keywords: *Toxicology, *Environmental pollutants, *Mutagens, Health hazards, Predictive value of tests, Carcinogenicity tests, Bioassay, Risk assessment, Mutagenicity tests, DNA damage, Reprints.

PB91-162610/REB PC **A03**/MF **A01**
In vitro Assessment of Gamete Integrity.
Health Effects Research Lab., Research Triangle Park, NC. Reproductive Toxicology Branch.
S. Perreault-Darney. c1990, 16p EPA/600/D-90/247

Drugs and xenobiotics can compromise reproductive function by impairing gamete physiology and thereby blocking fertilization, or by damaging gamete DNA or chromatin and thereby causing pregnancy failure or birth defects. Standard measures of gamete integrity, such as morphology, motility (sperm), or fertilizing ability, while useful in identifying and characterizing adverse effects, may not identify genetic damage in the gametes. To better assess gamete integrity, methods capable of detecting DNA or chromosomal damage in individual sperm or egg cells are needed. The report summarizes recent advances in in vitro technologies for assessing both the pathophysiologic and genetic integrity of gametes with emphasis on the latter.

Keywords: *Spermatozoa, *Ovum, *Fertility, *Xenobiotics, *Toxicity, In vitro analysis, Deoxyribonucleic acids, Chromatin, DNA damage, Aneuploidy, Mutation, Sperm motility.

PB91-162628/REB PC **A03**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Soil Bioventing Demonstration Project.
New Jersey Inst. of Tech., Newark.
J. S. Cho, D. H. Kampbell, J. T. Wilson, and D. C. DiGiulio. c1990, 16p EPA/600/D-90/248
Pub. in New Jersey Institute of Technology, Division of Continuing Education, November 1990. Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

A pilot scale demonstration project of a soil bioventing system, which utilizes the biodegradation in soil and physical removal of VOC by induced air flow, is in operation at the U.S. Coast Guard Aviation Field in Traverse City, Michigan. The system is being tested to determine its suitability for remediation of the vadose zone in conjunction with aquifer remediation at a site contaminated by an aviation gas spill. Several microcosm studies with soil obtained from the vertical profile of the contaminated site showed rapid microbial decompositions of hydrocarbon fumes with NPK nutrient and moisture addition. Basic removal kinetics data were obtained from these experiments. Field pneumatic pump tests for soil-air characterization have been conducted. The soil-air permeability and pressure distributions under the air injection/withdrawal systems were obtained. On the basis of information from the laboratory and field tests, a conceptual design at a field scale was made. The system will be implemented on the selected study site and the operation will start in fall, 1990. Additional soil core samplings and continuous monitoring of operation are planned.

Keywords: *Biodeterioration, *Land pollution control, *Water pollution control, *Remedial action, *Volatile organic compounds, Oil pollution control, Aquifers, Ground water, Vadose water, Oil spills, Leakage, Fuels, Site characterization, Environmental transport, Microorganisms, Biochemistry, Hydrocarbons, Oxidation, Soil gases, Nutrients, Reaction kinetics, Aeration, Reprints, *Cleanup operations, *Soil venting.

PB91-162636/REB PC **A02**/MF **A01**
Bilateral Wastewater Land Treatment Research.
Robert S. Kerr Environmental Research Lab., Ada, OK.
L. E. Leach, B. E. Bledsoe, D. Zhen-Bo, and W. Shao-Tang. c1990, 8p EPA/600/D-90/249
Pub. in Water Environment and Technology, v2 n12 Dec 90. Prepared in cooperation with Beijing Municipal Research Inst. of Environmental Protection (China).

Diplomatic relations between the United States and China, established in 1979, opened the door for development of 1985 bilateral environmental research and technology transfer between the USEPA's Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, and China's Beijing Municipal Research Institute of Environmental Protection. The research was aimed at optimizing rapid infiltration treatment for nitrogen removal so that municipal wastewater could be used to recharge and improve nitrogen-rich, over-extracted ground-water aquifers. Complimentary research evaluated USEPA's selected priority pollutant volatile organics and fecal coliforms. During a three-year study period, several cyclic schedules of flooding and drying were systematically tested using duplicate lysimeters. Soils selected from a potential full scale site, lysimeter studies indicated that 16 days' flooding followed by a 5 day drying period provided the most efficient treatment. Nitrate and total nitrogen levels were consistently reduced to below 1.5 and 2.5 mg/l, respectively, while BOD, Kjeldal nitrogen, ammonia, organic nitrogen, and phosphorus were all reduced to less than 1.0 mg/l. Four volatile organic priority pollutants were slightly degraded during the winter but were significantly reduced during warmer months. The research also indicated that percolation of the wastewater through 370 cm of soil reduced fecal coliforms more than 6 orders of magnitude to below 6 counts per 100 ml.

Keywords: *Waste water, *Land disposal, *Sewage disposal, *Induced infiltration, *Industrial wastes, Groundwater recharge, Research and development, Municipal wastes, Technology transfer, US EPA, Sewage treatment, Water pollution control, Design criteria, Remedial action, Water quality, Coliform bacteria, Aquifers, Reprints, Foreign technology, China.

PB91-162644/REB PC **A03**/MF **A01**
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site. Rept. for Mar 89-Oct 90.
Robert S. Kerr Environmental Research Lab., Ada, OK.
D. H. Kampbell. c1990, 12p EPA/600/D-90/250
Pub. in Proceedings of the Conference on Hazardous Waste Research, Manhattan, KS., May 21-22, 1990, v2 p789-796. Prepared in cooperation with Kansas State Univ., Manhattan.

Twenty years after an estimated spill of 36,000 gallons of aviation gasoline at an airport location a major portion still remains as oily phase residue just above the water table. The plume extends downgradient 360 meters. The vertical profile is a uniform beach sand to 15 meters with the water table near five meters. Soil

gas measurements have been done at various depths throughout the vertical profile. Generally the relationship was direct with depth for fuel vapor, methane, and carbon dioxide, but not with oxygen where active degradation processes occurred. Bioprocess enhancement occurred beneath a turf area receiving fertilizer and sprinkler water.

Keywords: *Gas spills, *Remedial action, *Biological treatment, *Biodeterioration, *Land pollution control, Anaerobic processes, Water table, Soil gases, Oxygenation, Microorganisms, Carbon dioxide, Aviation gasoline, Water pollution control, Aerobic processes, Site surveys, Reprints.

PB91-162651/REB PC **A03**/MF **A01**
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
Robert S. Kerr Environmental Research Lab., Ada, OK.
D. H. Kampbell, J. T. Wilson, and D. W. Ostendorf.
c1991, 17p EPA/600/D-91/001
Pub. in Petroleum Contaminated Soils, v3 p125-139, Sep 90. Prepared in cooperation with Massachusetts Univ., Amherst. Dept. of Civil Engineering.

Soil gas measurements were taken in a beach sand matrix of the unsaturated zone above a ground water plume contaminated from a spill near 35,000 gallons of aviation gasoline. The soil gas sampling and analysis strategy provided required information for mapping the plume and vertical profile measurements with a minimal expenditure of resources and work time. Analysis of a calibration gas and replicate sampling showed that the apparatus used gave reasonably correct soil gas contituent measurements. Boundaries of the plume were defined and a hot spot was located downgradient from the original spill location. Elevated carbon dioxide above the contaminated capillary fringe indicated microbial respiration activity. A biodegradation model developed from the vertical profile data predicted very low oxygen at the water table and little or no loss of hydrocarbon emissions to the atmosphere.

Keywords: *Soil gases, *Gas spills, *Remedial action, *Environmental monitoring, *Plumes, *Land pollution, Aviation gasoline, Ground water, Mapping, Water pollution control, Volatile organic compounds, Mathematical model, Biodeterioration, Water table, Sampling, Soil contamination, Environmental transport, Concentration(Composition), Reprints.

PB91-162669/REB PC **A03**/MF **A01**
Hydrocarbon Spill Exposure Assessment Modeling.
Robert S. Kerr Environmental Research Lab., Ada, OK.
J. W. Weaver, and R. J. Charbeneau. c1991, 19p EPA/600/D-91/002
Proceedings of the Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Restoration Conference, Houston, TX., October 31-November 2, 1990. Library of Congress catalog card no. 90-46654. Prepared in cooperation with Texas Univ. at Austin. Center for Research in Water Resources.

Hydrocarbon spills impact drinking water supplies at down gradient locations. Conventional finite difference and finite element models of multiphase, multicomponent flow have extreme requirements for both computer time and site data. Site data and the intent of the modeling often do not warrant the application of such models. An alternative approach is proposed which is based on semi-analytic models for vertical product infiltration, radial spreading on the water table, and transport of aqueous phase contaminants in the aquifer. Three individual models for these processes are linked to estimate exposure at a down gradient well. A time record of concentration can be determined for any desired location in the aquifer. The presentation outlines the methodology and examines parameter sensitivity within the combined vadose zone, oil lens, and aquifer transport models.

Keywords: *Potable water, *Oil spills, *Chemical spills, *Hydrocarbons, *Water pollution, *Mathematical models, Water supply, Exposure, Environmental transport, Ground water, Environmental impact assessments, Water table, Aquifers, Vadose water, Subsurface investigations, Reprints.

PB91-162677/REB PC **A03**/MF **A01**
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters. Symposium paper (Draft).
Corvallis Environmental Research Lab., OR.
R. S. Bennett. c1991, 29p EPA/600/D-91/003
Pub. in Proceedings of the Population Ecology and Wildlife Toxicology of Agricultural Pesticide Use: A Modelling Initiative for Avian Species, 1990.

Avian behavioral responses to exposure to agricultural pesticides are reviewed in relation to ultimate effects on survival and reproduction. Pesticide-induced changes in foraging behaviors may lead to the formation of conditioned aversions that affect subsequent dietary exposure and, consequently, survival. Although laboratory birds can readily detect the presence of pesticides in food and prefer untreated alternatives if present, there are several other factors in the field that affect the ability of birds to modify their exposure to pesticides. Pesticides also can affect reproductive behaviors of birds at several periods, including pairing and nest building, egg laying, incubation, and rearing of young. Behavioral effects at these periods have been observed to reduce reproductive success. Research is needed to identify how pesticide effects on avian population parameters are influenced by their behavioral responses.

Keywords: *Wildlife, *Pesticides, *Animal behavior, *Birds, *Carbamate insecticides, Feeding behavior, Reproduction(Biology), Eggs, Reprints.

PB91-162685/REB PC **A03**/MF **A01**
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment. Symposium paper.
Corvallis Environmental Research Lab., OR.
J. D. Bailey, R. K. Dixon, and R. Rose. 1991, 15p EPA/600/D-91/004
Presented at IN INDO-US Workshop on Global Climatic Change, New Delhi, India, January 8-11, 1991. Prepared in cooperation with ManTech Environmental Technology, Inc., Corvallis, OR., and Oregon State Univ., Corvallis. Agricultural Experiment Station.

A controlled-environment experiment was initiated to evaluate the influence of CO2 enrichment on the growth and ontogeny of bigleaf maple (Acer macrophyllum). Development of seedlings was monitored from seed germination through the first five months of ontogeny in growth chambers containing 350 (ambient), 575 and 700 ppm CO2. Seedling shoot elongation, leaf and branch expansion, and foliage retention were altered by ambient CO2 conditions. These preliminary morphological responses are consistent with reports from previous experiments which employed tree seedlings pre-conditioned in ambient CO2 conditions. Alterations in seedling crown and leaf morphology due to CO2 enrichment may influence future adaptive responses of tree species to environmental stress agents.

Keywords: *Carbon dioxide, *Maple trees, Dose-response relationships, Plant growth, Seedlings, Germination, Morphology, Ontogenesis, *Acer macrophyllum.

PB91-162693/REB PC **A03**/MF **A01**
Advanced Screening Model for Complex Terrain Applications.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
A. J. Cimorelli, S. G. Perry, and D. J. Burns. 1991, 14p EPA/600/D-91/005
Prepared in cooperation with Computer Sciences Corp., Research Triangle Park, NC., and National Oceanic and Atmospheric Administration, Silver Spring, MD. Atmospheric Sciences Modeling Div.

A methodology has been developed to use the advanced techniques of the Complex Terrain Dispersion Model in situations where on-site meteorological measurements are limited or unavailable. The approach, known as CTSCREEN, uses actual source and terrain characteristics to model plume impacts with an extensive array of predetermined meteorological conditions. CTSCREEN compares favorably with other complex terrain screening models (ones that require collection of on-site meteorological data) and is a great improvement over screening models that also use predetermined meteorology.

Keywords: *Plumes, *Air pollution, *Air quality display model, Meteorology, Mathematical models, Environmental transport, Complex terrain, Comparison, Performance evaluation, *Complex Terrain Dispersion Model, *CTSCREEN model, CTDMPLUS model.

PB91-162701/REB PC **A03**/MF **A01**
Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
J. S. Bridges, and M. A. Curran. Mar 90, 11p EPA/600/D-91/006

The purpose of the paper is to provide an overview of the Waste Reduction Evaluations at Federal Sites (WREAFS) Program and to discuss the results of completed waste minimization opportunity assessments within the Federal community. The overview contains documentation of waste minimization assessments conducted at the Philadelphia Navy Shipyard, Fort Riley (Kansas) Army Forces Command, the Naval Undersea Warfare Engineering Station (Keyport, Washington), and the VA Medical Center in Cincinnati, Ohio. In addition, an ongoing assessment is being conducted at the AWBERC (EPA, Cinn., OH), and a waste minimization research study is being conducted on waste solvents under an interagency agreement with the US Air Force. These projects have investigated waste minimization opportunities for a wide variety of waste streams and the recommendation presented significantly reduced waste generation and provide savings in raw material and disposal costs.

Keywords: *Waste management, *Hazardous materials, Federal agencies, Cost analysis, Waste disposal, Environmental protection, Technology transfer, Reprints, *Waste minimization, *Waste Reduction Evaluations at Federal Sites Program.

PB91-162719/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
Istituto di Ricerca sulle Acque, Rome (Italy).
M. L. Apel, J. S. Bridges, M. F. Szabo, and S. H. Ambekar. 1989, 27p EPA/600/D-91/007
Contract EPA-68-03-3389
Presented at International Symposium on Metals Speciation (2nd), Separation and Recovery, Rome, Italy, May 14-19, 1989. Prepared in cooperation with Illinois Inst. of Tech., Chicago. Notre Dame Industrial Waste Elimination Research Center. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab., and PEI Associates, Inc., Cincinnati, OH.

Metal bearing wastestreams containing heavy metals are generated through several industrial processes. Standard pretreatment practices usually involve removal of these metals from the effluent prior to discharge using a variety of techniques, often resulting in production of a sludge which must be disposed as a hazardous waste. With the increased costs of hazardous waste disposal, waste minimization practices and techniques designed to reduce the quantity of hazardous waste generated in industrial countries are becoming more prevalent. The paper presents the findings of three waste minimization case studies concerned with the recovery of metals from two industrial wastestreams in the printed circuit board industry and one in the automotive repair industry. The purpose of these studies was to technically and economically evaluate the effectiveness of three metal recovery operations in minimizing the volume of hazardous waste generated at each facility.

Keywords: *Materials recovery, *Heavy metals, *Hazardous materials, *Waste management, Case studies, Industrial wastes, Waste disposal, Cost analysis, Electronic circuits, Automotive industry, Repair shops, Reprints, *Waste minimization, Source reduction.

PB91-162727/REB PC **A02**/MF **A01**
Future of Expert Systems in the Environmental Protection Agency.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

D. Greathouse, and J. Decker. c1989, 10p EPA/600/D-91/008
Presented at the American Chemical Society Conference, Miami, FL., September 10-15, 1989. Prepared in cooperation with Computer Sciences Corp., Cincinnati, OH.

As in other organizations, the history of expert systems in the Environmental Protection Agency is very short. Approximately five years ago, the focus of the expert systems activities was to assess the feasibility and utility as environmental decision aids. Last year the Agency approved a five year funding initiative to support development of a number of systems to assist in management and implementation of Superfund activities. Whereas initial systems were limited to a few engineering and technical issues, the scope of todays systems includes legal, regulatory and administrative issues. Notwithstanding this rapid evolution in scope and funding, expert systems are not currently mainstream decision making tools in the Environmental Protection Agency. Many decision makers are either not familiar with expert systems or are skeptical that they can provide meaningful and reliable advice. Since expert systems are so new and have not yet been proved for wide spread application in regulatory environment, their future is uncertain. With this background, the paper will propose one or more scenarios for the future of expert systems in the Environmental Protection Agency. (Copyright (c) 1990 American Chemical Society.)

Keywords: *Environmental tests, *US EPA, *Environmental management, Forecasting, Superfund, Waste management, Legal aspects, Pollution regulations, Decision making, Technology transfer, *Expert systems.

PB91-162743/REB PC **A02**/MF **A01**
Expert Systems to Assist in Evaluation of Measurement Data. Symposium paper.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
D. G. Greathouse. c1991, 7p EPA/600/D-91/010
See also PB89-129449. Presented at the International Symposium (1st), Field Screening Methods, Las Vegas, NV., October 1988.

Expert systems are computer programs designed to provide advice in a specialized area that is comparable to the advice which would be provided by an expert or knowledgeable person in the area. Development of these systems for a particular application is feasible if expert(s) are available who can perform the evaluation in a reasonable length of time. Evaluation of measurement data that are collected according to standard protocols can usually be performed by experts in the laboratory sciences and application fields with possible assistance from a professional statistician. Expert systems have the potential for improving the productivity of less experienced persons responsible for evaluating or interpreting measurement data. The Risk Reduction Engineering Laboratory has developed an expert system to assist in evaluation of the chemical compatibility of flexible membrane liners based on the data from prescribed physical measurements performed on sample specimens of the liner material. The goal of these tests is to determine if a liner material will be chemically resistant to a leachate from a hazardous waste landfill. The system provides an example of the type of systems that could be developed to improve the quality of decisions based on measurement data. The system will be described and demonstrated (if desired) to illustrate the type of systems that could be developed for other types of measurement data interpretations.

Keywords: *Environmental tests, *Environmental surveys, *Data processing, Technology transfer, Quality control, Waste disposal, Decision making, Geophysics, Quality assurance, Reprints, *Expert systems, Flexible Membrane Liner System(FLEX).

PB91-162750/REB PC **A03**/MF **A01**
Development and Application of a Research Database for Drinking Water Systems Evaluation. Symposium paper.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
S. Campbell, and J. Finkeldey. Apr 89, 15p EPA/600/D-91/011
Presented at the AWWA (American Water Works Association) Computer Specialty Conference, Denver, CO., April 2-4, 1989.

The Computer Information System (CIS) that was developed by the Drinking Water Research Division gives fast, easy access to more than 521,000 records from nearly 20 past and current research projects. The data base management system can generate simple reports as well as perform complex statistical functions for analysis of water quality data.

Keywords: *Water treatment, *Potable water, *Information systems, Water quality, Data base management, Water pollution.

PB91-162768/REB PC **A02**/MF **A01**
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
S. Campbell, and J. Finkeldey. 1989, 9p EPA/600/D-90/012
Prepared in cooperation with Computer Sciences Corp., Cincinnati, OH.

The Drinking Water Research Division of the Risk Reduction Engineering Laboratory in Cincinnati, Ohio is responsible for conducting field scale research projects on the cost and performance of drinking water treatment technology in support of the Safe Drinking Water Act. To ensure project integrity (prevent garbage in/garbage out); the data base manager should be an integral part of the project design from the beginning. Failure to use data base management techniques can lead to a variety of problems. Such problem areas include: extensive data re-entry, data entry error, duplicate or missing records, and difficulty of data analysis. The purpose of the paper is to highlight these problem areas and methods to ameliorate them. Case study control data entry and analysis to ensure relevant project results. Suggestions are also provided to improve future projects.

Keywords: *Data base management, *Water treatment, *Potable water, *Research and development, Technology utilization, Cost analysis, Performance evaluation, Information transfer, Information systems, Management planning, Data processing, Personnel management, Reprints, Safe Drinking Water Act of 1974.

PB91-162776/REB PC **A03**/MF **A01**
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
American Water Works Association Research Foundation, Denver, CO.
E. W. Rice, M. J. Allen, D. J. Brenner, and S. C. Edberg. 1990, 11p EPA/600/D-91/013
Pub. in Proceedings of the American Water Works Association, Water Quality Technical Conference, San Diego, CA., November 1990. Prepared in cooperation with Yale Univ., New Haven, CT. School of Medicine, and Centers for Disease Control, Atlanta, GA. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

Recently, Escherichia species other than Escherichia coli have been isolated from potable water. Environmental isolates as well as clinical isolates of E. fergusonii, E. hermannii, and E. vulneris were assayed for the enzyme B-glucuronidase by using EC MUG medium and the Colilert system. None of the isolates were positive for the enzyme by either method.

Keywords: *Glucuronidase, *Escherichia, *Water microbiology, *Culture media, *Potable water, Predictive value of tests, Enterobacteriaceae, Species specificity, Waste water, Reprints, *Colilert system.

PB91-162784/REB PC **A03**/MF **A01**
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
L. J. Staley. 1991, 11p EPA/600/D-91/014
Presented at Annual Conference on Plasma Applications, (1st) Idaho Falls, ID., January 15-17, 1991.

For the past ten years, the U.S. Environmental Protection Agency (EPA) has been evaluating plasma-based thermal treatment systems for hazardous waste. Although many attempts have been made to evaluate these devices, very little performance data have been gathered. EPA is still interested in evaluating the usefulness of plasma based hazardous waste treatment and routinely receives proposals for testing new and different plasma systems. Unfortunately, however, elements of many of these proposals suggest that these studies would be a little more successful than previous ones. Part of the reason for this may be that the developers of plasma systems do not clearly understand what is required of a hazardous waste treatment system, especially one which will be used to treat hazardous wastes onsite. The paper discusses factors that, based on EPA's experience, are key to the successful implementation of a plasma-based waste treatment process.

Keywords: *Superfund, *Remedial action, *Hazardous materials, *Waste treatment, *Plasma heating, On-site investigations, US EPA, Plasma devices, High temperature tests, Site characterization, Technology utilization, Operating, Soil contamination, Water pollution, Pollution regulations, Standards compliance, Reprints, *Cleanup.

PB91-162792/REB PC **A03**/MF **A01**
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides. Technical paper.
Environmental Protection Agency, Cincinnati, OH. Drinking Water Research Div.
T. J. Sorg. 1991, 15p EPA/600/D-91/015
Presented at Water Quality Association, Annual Convention and Exposition, San Antonio, TX., March 14-18, 1990.

In 1986, Congress amended the Safe Drinking Water Act requiring USEPA to regulate 83 contaminants within 3 years according to a specified scheduled time, and 25 more contaminants every three years starting in 1990. The majority of the 83 contaminants to be regulated will be organic compounds with only about 15 being inorganics and radionuclides. When EPA sets a regulation (a maximum contaminant level) for a contaminant, it must also specify the 'best available technology' (BAT) that can be used to remove the contaminant. Because the regulations apply to community water systems, the technologies selected are ones that are commonly used to treat community size water systems. Thus, EPA R&D program has focused its efforts on evaluating primarily community applied technologies such as conventional coagulation-filtration, lime softening, ion exchange, adsorption, and membrane process. When BAT is identified for a specific contaminant, frequently the BAT will be listed with its limitations because the process is often not effective under all water quality conditions. These same limitations would also apply to POU/POE treatment. The paper discusses EPA's regulations on inorganic contaminants, the best available technologies cited by EPA, and the limitations of these processes. Using arsenic as an example, the impact of the contaminant chemistry and water quality on removals is presented.

Keywords: *Potable water, *Water treatment, *Water purification, *Water pollution abatement, *Best technology, Water pollution control, Water quality control, Pollution regulations, Water pollution standards, Standards compliance, Filtration, Adsorption, Technology utilization, Membranes, Ion exchanging, Liming agents.

PB91-162800/REB PC **A03**/MF **A01**
Evaluating Capacities of GAC Preloaded with a Natural Water.
Environmental Protection Agency, Cincinnati, OH. Drinking Water Research Div.
T. F. Speth. 1991, 16p EPA/600/D-91/016
Presented at the American Water Works Association Annual Conference, Los Angeles, CA., June 18-22, 1989.

Granular activated carbon (GAC) has been shown to be a viable treatment technique for the removal of a broad spectrum of organic contaminants. To accurately model effluent concentrations from a GAC column, the effects of background organics must be taken into account. Background organics can affect adsorption by either competing directly with the target compound, or by restricting adsorption by loading onto the carbon ahead of the target compound. Recently, there has been substantial progress in evaluating the effects of preloading on adsorption. In the study, cis 1,2-dichlor-

oethene (DCE) was spiked into water from the Great Miami aquifer (GMA) and fed to pilot columns which were preloaded with unspiked GMA water for various lengths of time. The objectives of the study, therefore, were to: (a) evaluate how preloading of a natural groundwater affects the capacity and rate kinetics of adsorption in pilot columns; (b) evaluate the microcolumn scale-up procedure developed by Crittenden, et al; and (c) determine if different isotherm techniques have any effect on the final capacity of preloaded carbon.

Keywords: *Water pollution control, *Granular activated carbon treatment, Adsorption, Mass transfer, Organic matter, Aquifers, Ground water, Chlorine organic compounds, Kinetics, Isotherms, Scale(Corrosion), Performance evaluation, *Ethene/dichloro.

PB91-162818/REB PC **A03**/MF **A01**
Michigan Univ., Ann Arbor. Coll. of Engineering.
Concept of Presence Absence Testing.
Environmental Protection Agency, Cincinnati, OH. Drinking Water Research Div.
D. J. Reasoner. c1990, 17p EPA/600/D-91/017
Presented at a seminar 'Biological Advances in Water and Wastewater Treatment', Ann Arbor, MI., February 7-9, 1990. Sponsored by Michigan Univ., Ann Arbor. Coll. of Engineering, Michigan Water Pollution Control Association, Ann Arbor, and Michigan Dept. of Public Health, Lansing.

The new Coliform Rule (June 29, 1989) ushered in a new era in coliform compliance requirements for drinking water. The new Coliform Rule sets the maximum contaminant level goal (MCLG) for coliforms at 0 per 100 ml and adopts a frequency-of-occurrence concept for compliance monitoring. The presence-absence (PA) approach establishes a coliform compliance limit based on the fraction of samples that contain coliforms during a given time period, in contrast to the old rule in which compliance was based on the arithmetic average of coliforms detected in water by the membrane filter (MF) method or the percentage of positive fermentation tube (FT) tests found over a 30 day period. The paper discusses the P-A concept as applied to coliform compliance monitoring. The newest approved method for total coliform testing, the minimal medium ONPG-MUG (MMO-MUG) test, is also discussed. Although the adoption of the P-A concept simplifies coliform reporting, the P-A test may be a more sensitive test than either the standard MF or FT test for coliform detection. This factor and the sampling requirements for coliform monitoring may force utilities to be more aggressive in evaluating preventative maintenance procedures, monitoring the function of filter beds and other treatment processes, and modifying distribution system management to assist in meeting the new coliform rule compliance requirements.

Keywords: *Potable water, *Water pollution standards, *Water pollution sampling, *Water treatment, *Coliform bacteria, Aquatic microbiology, Distribution systems, Regulations, Comparison, Water quality management, Biotechnology, Reprints, *Coliform Rule, National Primary Drinking Water Regulations.

PB91-162826/REB PC **A03**/MF **A01**
Service Life of Geosynthetics in Hazardous Waste Management Facilities.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. E. Landreth, and I. D. Peggs. c1990, 11p EPA/600/D-91/018
Pub. in Geosynthetics: Microstructure and Performance, ASTM STP 1076, p26-33 1990. Presented at the ASTM Symposium on Microstructure and the Performance of Geosynthetics, Orlando, FL., January 1989. Prepared in cooperation with American Society for Testing and Materials, Philadelphia, PA.

The potential service life of synthetic polymer materials (geosynthetics) is of immediate importance in all countries where municipal solid waste and hazardous waste landfills are lined with these materials. Because of the need to know more about the aging characteristics and the potential service life of polymeric products as they are used in modern waste disposal environments, experts met (December 1987) to review the current state of knowledge of the service life of flexible membrane liners (FML) and other polymeric materials used in such environments. Part of the meeting also addressed potential research needs so that geosynthetic researchers can apply their know-how and talents to pressing, first-order research. The general unknowns of landfill liner systems are outlined here.

Keywords: *Geotechnical fabrics, Hazardous wastes, Solid wastes, Membrane structures, Polymeric films, Aging tests(Materials), Microstructure, Flexibility, Sanitary landfills, Liners.

PB91-162834/REB PC **A03**/MF **A01**
Governmental Refuse Collection and Disposal Association, Silver Spring, MD.
Geosynthetic Leachate Collection Systems.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
R. E. Landreth. c1990, 13p EPA/600/D-91/019, GR-0028
Presented at GRCDA's Annual International Solid Waste Exposition (27th), Tulsa, OK., August 14-17, 1989. Sponsored by Governmental Refuse Collection and Disposal Association, Silver Spring, MD.

The Resource Conservation and Recovery Act (RCRA) of 1976 and its 1984 Hazardous and Solid Waste Amendments (HSWA) required the U.S. Environmental Protection Agency (EPA) to develop criteria and/or standards for the management, including land disposal and long-term containment, of hazardous and nonhazardous wastes that would be protective of human health and the environment. EPA has been conducting laboratory and field investigations to improve containment strategies that incorporate state-of-the-art materials and design alternatives. Geosynthetics, including flexible membrane liners (FMLs), geonets, geotextiles, and plastic pipe, are playing an increasing role as structural components of containment facilities. One must be mindful to utilize these relatively new materials in ways that will not exceed their design limitations. The paper will discuss factors important to the use of geosynthetic materials in the design and construction of the leachate collection system parts of the containment unit. Laboratory testing of these materials to assist in material selection is also briefly discussed.

Keywords: *Leaching, *Waste disposal, *Land pollution control, *Waste management, Environmental transport, Pollution regulations, Forecasting, Performance evaluation, Design criteria, Laboratory tests, Field tests, Reprints, *Geosynthetic materials, Flexible membrane liners, Resource Conservation and Recovery Act.

PB91-163493/REB PC **A03**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin. Journal article.
Michigan Technological Univ., Houghton.
N. A. Auer, and M. T. Auer. c1987, 11p EPA/600/J-87/543
Pub. in American Fisheries Society Symposium 2, p93-101 1987. Sponsored by Environmental Research Lab.-Duluth, MN.

A substantial population of walleye Stizostedion vitreum inhabits the lower Fox River between DePere and Green Bay, Wisconsin. Once an indigenous species, walleyes are now maintained through stocking; natural recruitment has not been observed over the 7-year stocking period. In the manuscript an examination is conducted of the potential importance of water quality as a barrier to walleye egg hatching success in the river. A novel technique involving dialysis membranes was employed to study the effect of river water quality on egg development uninfluenced by factors such as fungal infestation, predation, or siltation. Gametes were stripped from several ripe walleyes collected from the lower Fox River in April 1985. Fertilized eggs and filtered river water were placed in dialysis tubes and rotated on a rack in a large tank receiving a continuous flow of river water. Hatch success averaged 61% (range, 34-82%) and varied with the size of the female used as an egg source. The observed hatching success is similar to the best egg survivals measured in many field and laboratory studies. Measurements of pH, dissolved oxygen, hydrogen sulfide, and ammonia- and nitrite-nitrogen offered additional support for the conclusion that water quality was not a barrier to walleye egg development in the Fox River. Spawning substrate, sediment chemistry, water temperature fluctuations, predation, and fungal infestation may be important barriers to natural recruitment of walleyes in the lower Fox River. (Copyright (c) American Fisheries Society, 1987.)

Keywords: *Salmon, *Fox River(Wisconsin), *Fisheries, Field tests, Reproduction(Biology), Water quality, pH, Sediments, Temperature, Fungi, Ovum, Reprints, *Stizostedion vitreum.

PB91-163501/REB PC **A02**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Optical Heterogeneity in Green Bay. Journal article.
Michigan Technological Univ., Houghton. Dept. of Civil Engineering.
S. W. Effler, and M. T. Auer. c1987, 7p EPA/600/J-87/544
Grants EPA-R810076010, EPA-R809521010
Pub. in Water Resources Bulletin, v23 n5 p937-941 1987. Prepared in cooperation with Upstate Freshwater Inst., Inc., Syracuse, NY. Sponsored by Environmental Research Lab.-Duluth, MN.

Differences in light penetration and light attenuating components and processes are documented along 112 km of the major (NE/SW) axis of Green Bay (Lake Michigan) during a three-day cruise (May 25-27, 1982). Measurements included diffuse attenuation of downwelling irradiance (K(sub d)), Secchi disk transparency (SD), phytoplankton pigments (chlorophyll a and phaeophytin), turbidity (T(sub n)), and dissolved color (absorbance). The heterogeneity is due to the characteristics and positions of entry of fluvial discharges to the bay as they influence levels of dissolved color (Gelbstoff), phytoplankton standing crop, and inorganic particulates. Identification of key processes regulating light penetration and their potential for response to pollution control measures can aid in the development of a water quality management plan for Green Bay.

Keywords: *Water quality management, *Green Bay, *Light penetration, *Attenuation, *Heterogeneity, Lake Michigan, Optical properties, Water pollution control, Turbidity, Color, Phytoplankton, Color, Reprints.

PB91-163519/REB PC **A03**/MF **A01**
Economies of Scale and Scope in Water Supply. Journal article.
Environmental Protection Agency, Cincinnati, OH. Water Engineering Research Lab.
H. Y. Kim, and R. M. Clark. c1988, 26p EPA/600/J-88/557
Pub. in Regional Science and Urban Economics 18, p479-502 1988. Prepared in cooperation with Western Kentucky Univ., Bowling Green.

The study examines the multiproduct nature of water supply relative to economies of scale and scope. The water utility is viewed as a multiproduct firm providing residential and nonresidential services with spatial variation. There are no significant economies of scale in the utility's overall operation. The utility, however, enjoys considerable economies for nonresidential water supply but suffers from diseconomies in residential supply. The economies of scale achieved in water treatment are mostly lost in the distribution of water. The utility on the whole experiences economies of scope associated with joint production of the two services. Furthermore, water utilities have no perceptible tendency to behave as a natural monopoly. (Copyright (c) 1988, Elsevier Science Publishers B.V. (North-Holland).)

Keywords: *Water supply, *Cost estimates, *Water utilities, *Economies of scale, Water treatment, Spatial distribution, Water distribution(Applied), Economic analysis, Mathematical models, Operating costs, Economic forecasting, Economic models, Cost engineering, Reprints.

PB91-163527/REB PC **A03**/MF **A01**
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification. Journal article.
Environmental Research Lab.-Duluth, MN.
C. J. Watras, and T. M. Frost. c1989, 11p EPA/600/J-89/505
Pub. in Archives of Environmental Contamination and Toxicology 18, p157-165 1989. Prepared in cooperation with Wisconsin Univ.-Madison. Center for Limnology, and Wisconsin Dept. of Natural Resources, Madison. Bureau of Research.

Ecosystem-level experiments are essential in assessing the effects of environmental perturbations like acidification. The Little Rock Lake Acidification Project was initiated to expand insights from previous acidifi-

cation experiments with whole drainage lakes to a seepage lake system. It involves the gradual acidification of a small (18 ha), seepage lake in northcentral Wisconsin. The goals are to document the biological and chemical changes which occur, to identify the direct and indirect mechanisms which regulate responses, and to expand insights to a class of lakes previously understudied. In the paper, the authors describe the history and rationale of the project and they discuss in general terms the utility and constraints of whole-ecosystem manipulations.

Keywords: *Little Rock Lake, *Acidification, *Ecosystems, *Water pollution, pH, Wisconsin, Environmental effects, Air water interactions, Air pollution, Experimental design, Biological effects, Chemical properties, Seepage, Hydrology, Acid rain, Reprints.

PB91-163535/REB PC **A03**/MF **A01**
Environmental Research Lab.-Duluth, MN.
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments. Journal article.
Wisconsin Univ.-Madison. Center for Limnology.
S. R. Carpenter, T. M. Frost, D. Heisey, and T. K. Kratz. c1989, 13p EPA/600/J-89/506
Grants NSF-DEB80-12313, NSF-BSR83-08918
Pub. in Ecology 70, n4 p1142-1152 1989. Sponsored by Environmental Research Lab.-Duluth, MN., and National Science Foundation, Washington, DC.

Randomized intervention analysis (RIA) is used to detect changes in a manipulated ecosystem relative to an undisturbed reference system. It requires paired time series of data from both ecosystems before and after manipulation. RIA is not affected by non-normal errors in data. Monte Carlo simulation indicated that, even when serial autocorrelation was substantial, the true P value (i.e., from nonautocorrelated data) was <.05 when the P value from autocorrelated data was <.01. The authors applied RIA to data from 12 lakes (3 manipulated and 9 reference ecosystems) over 3 yr. RIA consistently indicated changes after major manipulations and only rarely indicated changes in ecosystems that were not manipulated. Less than 3% of the data sets they analyzed had equivocal results because of serial autocorrelation. RIA appears to be a reliable method for determining whether a nonrandom change has occurred in a manipulated ecosystem. Ecological arguments must be combined with statistical evidence to determine whether the changes demonstrated by RIA can be attributed to a specific ecosystem manipulation. (Copyright (c) 1989 by the Ecological Society of America.)

Keywords: *Ecosystems, *Stochastic processes, *Lakes, *Random processes, Time series analysis, Monte Carlo method, Experimental design, Biological effects, Statistical analysis, Limnology, Water pollution, pH, Acidification, Little Rock Lake, Reprints.

PB91-163543/REB PC **A02**/MF **A01**
Effects of Dicofol on Mallard Eggshell Quality. Journal article.
Corvallis Environmental Research Lab., OR.
J. K. Bennett, S. E. Dominguez, and W. L. Griffis. c1990, 8p EPA/600/J-90/340
Pub. in Archives of Environmental Contamination and Toxicology 19, p907-912 1990. Prepared in cooperation with NSI Technology Services Corp., Corvallis, OR.

Dicofol is an organochlorine acaricide structurally similar to DDE and there is concern that it may effect avian reproduction. Effects of dietary dicofol on mallard (Anas platyrhynchos) egg production and eggshell quality were evaluated; the mallard is moderately sensitive to DDE shell-thinning toxicity. Hens in egg production were fed either 0, 3, 10, 30, or 100 microgram/g dicofol for 42 days (the formulation of dicofol contained <0.1% DDT-related impurities). A positive control study was also conducted in which mallard hens in egg production were fed 0, 3, 10, and 100 microgram/g DDE for 42 days. Egg weight, shell thickness, shell strength, and dried shell weight were measured for all eggs produced. Egg production was not affected by dicofol diets but the percentages of cracked and soft-shelled eggs from birds on the 100 microgram/g dicofol diet were significantly ($p < 0.05$) greater. Shell strength, thickness, and weight were negatively related to dicofol dietary concentrations.

Keywords: *Organochlorine insecticides, *Toxicology, Food consumption, Reproduction(Biology), Diet, Body weight, Reprints, *Acaricides, *Dicofol, *Mallards, *Eggshells.

PB91-163550/REB PC **A03**/MF **A01**
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards. Journal article.
Corvallis Environmental Research Lab., OR.
A. Fairbrother, and J. Fowles. c1990, 11p EPA/600/J-90/341
Pub. in Archives of Environmental Contamination and Toxicology 19, p836-844 1990.

The subchronic effects of selenomethionine (SeM) and sodium selenite (SeL) on several immunologic, hematologic, and serologic parameters in mallards were measured, using concentrations in drinking water of 0, 0.5, and 3.5 mg/L selenium (se) as SeL and 2.2 mg/L (Se) as SeM. Cyclophosphamide (CP) was used as an immunosuppressive control at 20 mg/L. A battery of in vivo and in vitro immunologic assays was performed on each bird throughout the 12 week study. The SeM-treated group also exhibited a significantly increased serum alanine aminotransferase (ALT) activity and an increased plasma glutathione peroxidase (GPX) activity ($p < \text{or} = 0.05$). Body weight and water consumption of treated birds did not differ from controls. Organ weights were not significanlty affected by any Se treatment. Sodium selenite-treated birds displayed not detectable differences in immune-function or Se accumulation in tissues as compared to controls. Serum ALT activity was significantly increased in the 3.5 mg/L group, although to a lesser extent than in SeM-treated birds. Cyclophosphamide significantly depressed white blood cell number, testes weights, and also suppressed the DTH reaction. Concentrations of Se as SeL did not affect the immune system, whereas low concentration of SeM (2.2 mg/L Se) appeared to suppress certain aspects of the mallard immune response.

Keywords: *Toxicity, *Immune system, *Water pollution effects(Animals), Body weight, Water consumption, Cyclophosphamide, Glutathione peroxidase, Leukocyte count, Cellular immunity, Antibody formation, Blood chemistry, Organ weight, Hemagglutinins, Reprints, *Sodium selenite, *Selenomethionine, *Mallards.

PB91-163568/REB PC **A03**/MF **A01**
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices. Journal article.
Environmental Research Lab.-Duluth, MN.
R. A. Hoke, J. P. Giesy, G. T. Ankley, J. L. Newsted, and J. R. Adams. c1990, 18p EPA/600/J-90/342
Pub. in Jnl. of Great Lakes Research 16, n3 p457-470 1990. Prepared in cooperation with Michigan State Univ., East Lansing, and Corps of Engineers, Buffalo, NY. Buffalo District.

The toxicity of sediments in the Maumee River, the Maumee River-western Lake Erie federal navigation channel, and selected areas of western Lake Erie was measured using four assays: Photobacterium phosphoreum 15-minute bioluminescence inhibition (Microtox) in sediment porewaters and elutriates; Ceriodaphnia dubia 7-day survival and reproduction; Pimephales promelas 7-day larval survival and growth in sediment elutriates; and Chironomus tentans 10-day growth inhibition in whole sediments. The Microtox assay generally was the most sensitive of the four assays used in the investigation. Sediment elutriates were always equally or more toxic than porewaters from the same location when tested using the Microtox assay. The greatest toxicity in the Microtox and C. tentans assays was observed with porewaters or elutriates and sediments collected near point sources of contaminants to the Maumee River. Very little toxicity was observed in any assay using open-lake navigation channel or disposal site sediments or sediment extracts. Previous investigations also have reported little acute toxicity and little or no bioaccumulation of any measured sediment contaminants from study area sediments during laboratory toxicity or bioaccumulation assays. Sediments from the Lake Erie portion of the navigation channel evaluated during the investigation were suitable for open-lake disposal based on the lack of observed effects in the four assays.

Keywords: *Toxicity, *Water pollution effects(Animals), *Sediments, *Lake Erie, *Maumee River, Bioassay, Environmental monitoring, Tables(Data), Luminescence, Dose-response relationships, Reproduction(Biology), Reprints, Pimephales promelas, Chironomus tentans, Ceriodaphnia dubia.

PB91-163576/REB PC **A03**/MF **A01**
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance. Journal article.
Environmental Research Lab.-Duluth, MN.
G. J. Niemi, P. DeVore, N. Detenbeck, D. Taylor, and A. Lima. c1990, 18p EPA/600/J-90/343
Pub. in Environmental Management, v14 n5 p571-587 Sep/Oct 90. Prepared in cooperation with Minnesota Univ.-Duluth. Natural Resources Research Inst., and Washington Univ., Seattle. Center for Streamside Studies.

An extensive review of the published literature identified more than 150 case studies in which some aspect of resilience in freshwater systems was reported. Approximately 79% of systems studied were lotic and the remainder lentic. Most of the stressor types were chemical with DDT (N = 29) and rotenone (N = 15) the most common. The most common nonchemical stressors were logging activity (N = 16), flooding (N = 8), dredging (N = 3), and drought (N = 7). Based on these criteria, all systems in these studies seem to be resilient to most disturbances with most recovery times being less than three years. Exceptions included when (1) the disturbance resulted in physical alteration of the existing habitat, (2) residual pollutants remained in the system, or (3) the system was isolated and recolonization was suppressed.

Keywords: *Aquatic ecosystems, *Environmental impact assessments, *Recovery, *Water pollution effects, Case studies, Freshwater, Site surveys, Long term effects, Quality assurance, Biological effects, Chemical compounds, Flooding, Dredging, Drought, Lumbering, Reprints.

PB91-163584/REB PC **A03**/MF **A01**
Optimal Characterization of Structure for Prediction of Properties. Journal article.
Environmental Research Lab.-Duluth, MN.
S. C. Basak, G. J. Niemi, and G. D. Veith. c1990, 22p EPA/600/J-90/344, CONTRIB-64
Pub. in Jnl. of Mathematical Chemistry 4, p185-205 1990. Prepared in cooperation with Minnesota Univ.-Duluth. Natural Resources Research Inst.

Different topological and physicochemical parameters have been used to predict hydrophobicity (log P, octanol-water) of chemicals. The authors calculated a hydrogen bonding parameter (HB1) and a large number of molecular connectivity and complexity indices for a diverse set of 382 molecules. It is known from earlier studies that topological indices (TIs) predict properties of congeneric sets reasonably well. Since HB1 is an approximate quantifier of hydrogen bonding and has integral values, the authors used HB1 to classify the diverse set into strongly and weakly hydrogen bonding subsets. In an attempt to examine the utility of TIs in predicting properties of relatively similar groups of molecules, they carried out a correlation of log P with TIs for a subset (n=139) of the original diverse set (n=382) with a weak hydrogen bonding ability (HB1=0). Results show that TIs give a better predictive model for the more homogeneous subset as compared to the diverse set of molecules.

Keywords: *Molecular structure, *Hydrogen bonding, *Physicochemical properties, *Organic compounds, *Risk assessment, Toxicology, Parametric equations, Statistical analysis, Octanols, Water, Topology, Tables(Data), Reprints, *Partition coefficients, *Structure activity relationships, Hydrophobicity.

PB91-163592/REB PC **A01**/MF **A01**
Seven-Day Tests and Chronic Tests. Journal article.
Environmental Research Lab.-Duluth, MN.
T. J. Norberg-King. c1990, 2p EPA/600/J-90/345
Pub. in Environmental Toxicology and Chemistry, v9 p1435-1436 Dec 90.

The article 'Predicting Chronic Toxicity with Fathead Minnows' by Teresa J. Norberg-King presents valuable data concerning the 5 or 7 d larval (5-7dL) test with fathead minnows. However, the literature review and the analysis of results give the reader the impression that the 5-7dL and the early life-stage (ELS) tests are equivalent to chronic (i.e., life cycle-LC) tests. The

letter to the editor questions the author's criterion for prediction of chronic toxicity.

Keywords: *Minnows, *Toxicity, Bioassay, Test methods, Reproduction(Biology), Reprints.

PB91-163600/REB PC **A03**/MF **A01**
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity. Journal article.
Health Effects Research Lab., Research Triangle Park, NC.
R. W. Chadwick, J. Chang, L. R. Forehand, J. E. Long, and M. C. Duffy. c1990, 11p EPA/600/J-90/346
Pub. in Pesticide Biochemistry and Physiology, v38 p48-56 Sep 90. Prepared in cooperation with North Carolina Univ. at Chapel Hill, and Environmental Health Research and Testing, Inc., Research Triangle Park, NC.

The effect of daily p.o. injections of 20 mg/kg lindane on nitroreductase, azoreductase, B-glucuronidase, dechlorinase and dehydrochlorinase enzyme activity in the rat intestinal tract was investigated after 2 weeks and 5 weeks of treatment. Antibiotics were administered to half of the treated rats after 4 weeks of treatment. Results of the study indicated that lindane significantly increased nitro reductase and azoreductase activity in the small intestine, that there were regional differences in the effect of lindane as well as differences dependent on the exposure duration. The results also suggest the presence of substantial levels of mucosal enzyme in the small intestine.

Keywords: *Lindane, *Small intestine, *Enzymology, Glucuronidase, Rats, Intestinal mucosa, Gas chromatography, Enterobacteriaceae, Reprints, Nitroreductase, Azoreductase, Dechlorinase, Dehydrochlorinase.

PB91-163618/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview. Journal article.
Northrop Services, Inc./Environmental Sciences, Research Triangle Park, NC.
E. C. Grose, M. J. K. Selgrade, P. J. Busnell, J. E. Simmons, and J. Allen. c1990, 15p EPA/600/J-90/347
Contract EPA-68-02-4450
Pub. in Toxicology and Industrial Health, v6 n5 p157-169 Sep 90. Sponsored by Health Effects Research Lab., Research Triangle Park, NC.

To assist the regulatory branch of the Environmental Protection Agency in addressing the risk assessment of air toxics, the Health Effects Research Laboratory initiated a comprehensive inhalation toxicology program to provide key health effects data missing from the current data base. A priority ranking of chemicals based on the potential for substantial human exposure and the need for health effects data was developed to identify candidate chemicals for toxicological research. The major goal of the program is to evaluate the concentration-response from acute, intermittent and subchronic inhalation exposures to developmental, genetic, hepatic, immunologic, neurologic, pulmonary and reproductive toxicity. Although the main emphasis is on inhalation as the primary route of exposure, some of the laboratories will compare inhalation to other routes, such as oral, to better understand the influence of route of exposure and hence the potential applicability of existing health data. Acute and intermittent exposures will be done for all compounds. Upon evaluation of the acute results, a decision will be made as to whether subchronic studies are needed. Endpoints that show unusual sensitivity may be investigated in greater detail. The total length of exposure will vary from 1 to 21 days. The daily length of exposure will range from 1 to 8 hr. If adverse effects are observed at ambient levels, the time to recovery after exposure will be investigated. (Copyright (c) 1990 Princeton Scientific Publishing Co., Inc.)

Keywords: *Air pollution effects(Humans), *Risk assessment, *Health hazards, Reproduction(Biology), Mutagenicity tests, Liver, Immune system, Nervous system, Lung, Biochemistry, Teratogens, Environmental exposure pathways, Reprints.

PB91-163626/REB PC **A03**/MF **A01**
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Reproductive Toxicology Branch.
R. L. Linder, L. F. Strader, and G. L. Rehnberg. c1990, 16p EPA/600/J-90/348
Pub. in Jnl. of Toxicology and Environmental Health, v31 n2 p133-146 Oct 90.

Adult male rats were dosed with 0 or 2000mg/kg of boric acid and killed at 2, 14, 28, or 57 d posttreatment, or dosed with 0, 250, 500, 1000, or 2000mg/kg of boric acid and killed at 14 d posttreatment. At d 14, structures which appeared to be enlarged atypical cytoplasmic lobes were observed in Stage VIII seminiferous tubules of rats dosed with 1000 and 2000mg/kg. Abnormal retention of Step 19 spermatids and residual bodies was also observed in Stage IX-XIII tubules of these rats. Abnormal caput epididymal sperm morphology, and reduced caput epididymal sperm reserves were observed at 1000mg/kg and higher. At d 28, rats dosed with 2000mg/kg exhibited continued retention of Step 19 spermatids into Stage X, abnormal caput and cauda sperm morphology and decreased percentages of motile cauda spermatozoa with reduced straight line swimming velocities. By d 57 retention of Step 19 spermatids into Stage X tubules was still present in some rats but the sperm parameters had returned to control values. The study shows that acute exposure to boric acid can adversely affect spermiation and sperm quality. These effects appeared readily reversible at the dosage levels tested.

Keywords: *Boric acid, *Reproductive system, *Males, *Toxicology, *Insecticides, Dose-response relationships, Pathology, Organ weight, Seminiferous tubules, Epididymis, Testis, Spermatozoa, Reprints.

PB91-163634/REB PC **A02**/MF **A01**
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Neurotoxicology Div.
K. M. Crofton, K. F. Dean, L. P. Sheets, and D. B. Peele. c1990, 10p EPA/600/J-90/349
Pub. in Psychobiology, v18 n4 p467-474 Dec 90. Prepared in cooperation with Northrop Services, Inc., Research Triangle Park, NC.

The experiments reported here were designed to determine the role of associative conditioning in reflex modification of the acoustic startle response using gaps in background noise. Experiments were conducted with independent, naive groups of adult Long Evans hooded rats tested using 20-msec gaps in white noise (ON 80dB/OFF 35dB) as the prestimulus (S1, ISI = 190 msec) and a 120-dB, 40-msec 13-kHz pure tone as the eliciting stimulus (S2). The first experiment characterized the effects of repeated testing for 9 days. The second experiment was a test of associative conditioning. Three groups of rats were tested daily for 6 days under one of the following conditions: S1 and S2 paired in a contingent manner, S2 only, or S1 only. All groups then received the contingent pairing of S1 and S2 for an additional 9 days of testing. In the third experiment, a separate group of rats was tested using either contingent or non-contingent presentation of stimuli in a contingent fashion. Results indicate that the amount of inhibition increases with repeated, daily testing, and achieve asymptotic levels of inhibition 5-6 daily sessions.

Keywords: *Startle reaction, *Acoustic reflex, Rats, Acoustic stimulation, Background noise, Reprints, *Psychobiology, *Associative conditioning.

PB91-163642/REB PC **A03**/MF **A01**
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Neurotoxicology Div.
P. J. Bushnell. c1990, 11p EPA/600/J-90/350
Pub. in Behavioural Pharmacology, v1 p419-427 Nov 90.

A model of working and reference memory in rats is described, based on a discrete-trial operant procedure with concurrent spatial matching and nonspatial discrimination components. Working memory was assessed by delivery of food to rats for pressing one of two retractable levers after a delay if that lever had been presented in the prior sample phase of the trial. Reference memory was assessed on other trials by delivering food by pressing the lever illuminated by a cue light after the delay interval. The model was tested with scopolamine (0.10 to 0.56 mg/kg, ip), which reduced matching accuracy in a dose-related manner. Linear slope and intercept estimates of retention gradients showed that intercepts declined and slopes remained unchanged with increasing scopolamine dose, suggesting that cholinergic blockade disrupts encoding processes while sparing retention. In contrast, scopolamine had no effect on nonspatial discrimination accuracy, suggesting insensitivity of reference memory to cholinergic blockade. To compare the effects of scopolamine on spatial and nonspatial discriminations, a second group of rats was trained to discriminate between the spatial locations of two levers.

Keywords: *Scopolamine, *Memory, *Pharmacology, Rats, Drug dose-response relationship, Cholinergic receptors, Reprints, *Delayed matching-to-position, Spatial discrimination, Methylscopolamine.

PB91-163659/REB PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin. Journal article.
Chemical Industry Inst. of Toxicology, Research Triangle Park, NC.
R. V. House, L. D. Lauer, M. J. Murray, P. T. Thomas, and J. P. Ehrlich. c1990, 15p EPA/600/J-90/351
Contract EPA-68-02-4450
Pub. in Jnl. of Toxicology and Environmental Health, v31 n3 p203-215 Nov 90. Prepared in cooperation with IIT Research Inst., Chicago, IL. Life Sciences Research Div. Sponsored by Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.

Adult female B6C3F1 mice were given a single IP dose of 0, 0.1, 1.0, or 10.0 micrograms/kg TCDD and examined for immune function and host resistance seven to ten days later. Exposure to TCDD resulted in a significant dose-related decrease in induction of both IgM and IgG antibody-forming cells. The suppression was noted for both T-dependent and T-independent antigens. TCDD at a dosage of 10 micrograms/kg was shown to suppress production of viral hemagglutinin. In contrast, TCDD exposure had no significant effect on natural killer cell function, production of interferon, or various parameters of macrophage function. Host resistance assessment revealed a significant increase in susceptibility to fatal infection with influenza virus, but no significant alteration in susceptibility to infection with the bacterium Listeria monocytogenes. (Copyright (c) 1990 by Hemisphere Publishing Corporation.)

Keywords: *Immune system, *Tetrachlorodibenzodioxins, *Toxicology, Antibody formation, Mice, IgM, IgG, Dose-response relationships, Macrophage, Disease susceptibility, Viral antigens, Virus diseases, Listeria monocytogenes, Reprints, Viral hemagglutinins.

PB91-163667/REB PC **A03**/MF **A01**
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Developmental Toxicology Div.
B. M. Francis, J. M. Rogers, K. K. Sulik, A. J. Alles, and K. H. Elstein. c1990, 12p EPA/600/J-90/352
Pub. in Teratology, v42 n5 p473-482 Nov 90. Prepared in cooperation with North Carolina Univ. at Chapel Hill, and NSI Technology Services Corp., Research Triangle Park, NC.

Cyclophosphamide (CP) administered ip to pregnant mice on day 10 of gestation causes severe malformations at 20 mg/kg and is embryolethal at higher doses. In the present study, CP was administered at 1, 5, 10 or 20 mg/kg. Embryos were removed at 8 and 28 hrs post dosing for immediate staining with Nile Blue sulfate to identify areas of cell death. Forelimb buds of other embryos were removed for flow cytometric analyses. Additional litters were examined at term for malformations. Although only the highest dose produced malformations, a dose-related increase in the percentage of limb bud cells in S phase block was detectable

at all doses at 8 hours post exposure and persisted through 28 hours for doses equal to or > 10 mg/kg. Nile Blue sulfate staining showed increased cell death in the limb buds 28 hours after exposure to 10 mg/kg CP, or higher. The cell death was most pronounced in areas of rapid cell proliferation. The absence of an obvious teratogenic response at dose levels that produced significant cellular toxicity indicates that a measure of embryonic damage can be repaired and/or compensated. The implications of these findings for the existence of thresholds in developmental toxicity are discussed.

Keywords: *Cyclophosphamide, *Toxicity, *Teratogens, Cell survival, Flow cytometry, Cell cycle, Deoxyribonucleic acids, Histology, Fluorescence spectrometry, Reprints, Nile blue sulfate.

PB91-163675/REB PC **A03**/MF **A01**
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Developmental Toxicology Div.
R. M. Zucker, K. H. Elstein, R. E. Easterling, and E. J. Massaro. c1990, 13p EPA/600/J-90/353
Pub. in American Jnl. of Pathology, v137 n5 p1187-1198 Nov 90. Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC.

The target and degree of methylmercury cytotoxicity are dose-dependent. Following 6 h exposure to 2.5 - 7.5 microMolar, methylmercury (MeHg) progressively inhibits DNA synthesis and induces chromosomal damage in murine erythroleukemic cells. However, following exposure to 10 - 50 microMolar MeHg, the plasma membrane/cytoplasm complex is grossly perturbed, cell cycle progression is blocked, and chromosomes appear in ring formations. These findings, together with those previously observed following organotin exposure, also suggest that severe and nonspecific toxicity may be a common endpoint of exposure to high levels of organometals.

Keywords: *Methylmercury compounds, *Toxicity, Fluorescence spectrometry, Cell survival, Flow cytometry, Dose-response relationships, Cell membrane, Erythro leukemia, Culture tumor cells, Cell cycle, Chromosomes, Mitosis, Computerized simulation, Reprints.

PB91-163683/REB PC **A02**/MF **A01**
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Developmental Toxicology Div.
R. M. Zucker, K. H. Elstein, E. L. Gershey, and E. J. Massaro. c1990, 6p EPA/600/J-90/354
Pub. in Cytometry, v11 n7 p848-851 Nov 90. Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC., and Rockefeller Univ., New York.

By adding Teflon tubing of varying lengths and inner diameters to the effluent line of the Ortho 50H analytical cytofluorograph, the authors were able to triple the sensitivity of fluorescence and scatter detection without compromising resolution. By increasing sheath backpressure, the additional tubing increases particle residence time within the detection area and thereby increases the total photon emission density per particle. The resulting increase in sensitivity is desirable in applications requiring detection of particles exhibiting low-level fluorescence. The effect of the altered hydrodynamics on resolution is also discussed.

Keywords: *Flow cytometry, Fluorescence spectrometry, Hydrodynamics, Photons, Signal-to-noise ratio, Reprints, Tubing.

PB91-163691/REB PC **A02**/MF **A01**
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas. Journal article.
Health Effects Research Lab., Research Triangle Park, NC.
R. E. Richmond, A. B. DeAngelo, F. B. Daniel, and R. Lindahl. c1990, 6p EPA/600/J-90/355
Pub. in Histochemical Jnl., v22 n10 p526-529 Oct 90. Prepared in cooperation with Northern Kentucky Univ., Highland Heights. Dept. of Biological Sciences, and Alabama Univ., University.

The paper describes a method and the results of the immunohistochemical (IHC) detection of tumor-associated isozyme of aldehyde dehydrogenase (B-ALDH). The method can be used to demonstrate B-ALDH expression in cells of formalin-fixed, low melting-point paraffin-embedded liver tissue of rats and mice. Thus the method is a substantial improvement over standard histochemical detection methods which require either frozen, or mild preservative-fixed tissue sections. Using the IHC method, B-ALDH expression was detected in hepatocarcinomas of Sprague-Dawley rats treated with the carcinogen diethylnitrosamine (DENA) and in mice treated with either DENA, ethylnitrosourea (ENU), or dichloroacetic acid (DCA). B-ALDH expression has not been previously reported in mice treated with the latter two carcinogens and these results substantiate further the use of B-ALDH as a histochemical marker for mouse hepatocarcinogenesis.

Keywords: *Aldehyde dehydrogenase, *Hepatoma, *Liver, Rats, Mice, Immunohistochemistry, Formalin, Fixatives, Carcinogenicity tests, Carcinogens, Dichloroacetate, Diethylnitrosamine, Ethylnitrosourea, Tumor markers, Reprints.

PB91-163709/REB PC **A03**/MF **A01**
Respiratory Tract Dosimetry Model for Air Toxics (October 1990). Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Inhalation Toxicology Div.
J. H. Overton. c1990, 12p EPA/600/J-90/356
Pub. in Toxicology and Industrial Health, v6 n5 p171-180 Oct 90. See also PB88-211735.

The development of a physiologically based pharmacokinetic model for the whole body in which inhalation, exhalation, and metabolism in respiratory tract tissues are taken into account is described. As an example of the model's use, the results of several experiments in which rats and humans were exposed to styrene were simulated; these results are discussed. The predicted results agree with the empirical data and with the modeling results of others. (Copyright (c) 1990 Princeton Scientific Publishing Co., Inc.)

Keywords: *Respiratory system, *Air pollution effects(Animals), *Air pollution effects(Humans), Respiration, Dose-response relationships, Health hazards, Pharmacokinetics, Tissue distribution, Pulmonary alveoli, Metabolism, Reprints.

PB91-163717/REB PC **A03**/MF **A01**
U.S. Environmental Protection Agency's Inhalation RfD Methodology: Risk Assessment for Air Toxics. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Inhalation Toxicology Div.
A. M. Jarabek, M. G. Menache, J. H. Overton, M. L. Dourson, and F. J. Miller. c1989, 25p EPA/600/J-90/357
Pub. in Toxicology and Industrial Health, v6 n5 p279-301 Oct 90. Prepared in cooperation with NSI Technology Services Corp., Research Triangle Park, NC.

The U.S. Environmental Protection Agency (U.S. EPA) has advocated the establishment of general and scientific guidelines for the evaluation of toxicological data and their use in deriving benchmark values to protect exposed populations from adverse health effects. The Agency's reference dose (RfD) methodology for deriving benchmark values for noncancer toxicity originally addressed risk assessment of oral exposures. The paper presents a brief background on the development of the inhalation reference dose (RfDi) methodology, including concepts and issues related to addressing the dynamics of the respiratory system as the portal of entry. Different dosimetric adjustments are described that were incorporated into the methodology to account for the nature of the inhaled agent (particle or gas) and the site of the observed toxic effects (respiratory or extrarespiratory). Impacts of these adjustments on the extrapolation of toxicity data of inhaled agents for human health risk assessment and future research directions are also discussed. (Copyright (c) 1989 Princeton Scientific Publishing Co., Inc.)

Keywords: *Air pollution effects(Humans), *Risk assessment, *Health hazards, Respiration, Neoplasms, Dose-response relationships, Reprints, *Reference doses.

PB91-163725/REB PC **A02**/MF **A01**
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa. Journal article.
Health Effects Research Lab., Research Triangle Park, NC. Reproductive Toxicology Branch.
B. J. Rogers, and S. D. Perreault. c1990, 8p EPA/600/J-90/358
Pub. in Biology of Reproduction, v43 n6 p1064-1069 Dec 90. Prepared in cooperation with Vanderbilt Univ., Nashville, TN. School of Medicine.

To investigate the importance of glycolysable substrate for supporting the ability of human sperm to capacitate and penetrate oocytes in vitro, washed spermatozoa were incubated with or without various sugars in BWW culture medium containing pyruvate and lactate. Sperm penetration was assayed using zona-free hamster oocytes. After an 18-h preincubation, glucose (1 mg/ml) supported higher penetration of sperm into oocytes than either mannose or fructose (60.7% vs 28.2% or 21.5%, respectively) at the same concentration. Penetration was even lower when medium contained the nonmetabolizable sugar galactose (2.1% at 1 mg/ml). On the other hand, higher concentrations (5 or 10 mg/ml) of glucose, but not fructose, suppressed penetration, provided the glucose was present throughout the 18-h preincubation. When caffeine, a stimulant of glycolysis in human sperm, was present along with glucose, sperm penetration was enhanced, but only after 6 h of sperm preincubation. The effect was not observed in glucose-free medium, however, where penetration remained low over a 10-h incubation period. In these experiments, the percentage of motile sperm was unaffected by treatment, but the quality of motility was diminished in the absence of glucose. Stimulation of glycolysis may promote capacitation of human spermatozoa in vitro and that optimization of penetrating ability of sperm is dependent upon both the type and concentration of glycolysable sugar present.

Keywords: *Culture media, *Spermatozoa, *Glycolysis, Humans, Sperm-ovum interactions, Sperm motility, Sugars, In vitro analysis, Dose-response relationships, Zona pellucida, Reprints.

PB91-163733/REB PC **A03**/MF **A01**
Environmental Monitoring Systems Lab., Las Vegas, NV.
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program. Journal article.
Stanford Univ., CA. Dept. of Applied Earth Sciences.
J. J. Gomez-Hernandez, and R. M. Srivastava. c1990, 50p EPA/600/J-90/359
Grant EPA-R81499
Pub. in Computers and Geosciences, v16 n4 p395-440 1990. Sponsored by Environmental Monitoring Systems Lab., Las Vegas, NV.

The indicator conditional simulation technique provides stochastic simulations of a variable that (1) honor the initial data and (2) can feature a richer family of spatial structures not limited by Gaussianity. The data are encoded into a series of indicators which then are used to estimate the conditional probability distribution (cpdf) of the variable under study at any unsampled location. Once the cpdf has been estimated, any particular simulated value is obtained by straightforward Monte-Carlo drawing. Each new simulated value is included in the conditioning data set so that the next simulated values at other locations be conditioned to it. The technique has the advantage over other more traditional techniques such as the turning bands method in that it is not multiGaussian related. The user has full control of the bivariate (2-point) statistics imposed on the simulated field instead of controlling a mere covariance model. The source code is provided in C according to the ANSI standard. (Copyright (c) 1990 Pergamon Press plc.)

Keywords: *Earth sciences, *Mathematical models, *Statistical analysis, *Computerized simulation, Data file, Kriging, Variance(Statistics), Stochastic processes, Monte Carlo method, Conditional probability, Algorithms, Three dimensional models, Computer programs, Reprints, ISIM3D computer program.

PB91-163741/REB PC **A02**/MF **A01**
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
N. Lewis, K. Topudurti, G. Welshans, and R. Foster.
c1990, 10p EPA/600/J-90/360
Pub. in Jnl. of the Air and Waste Management Association, v40 n4, Apr 90. Prepared in cooperation with PRC Environmental Management, Inc., Chicago, IL.

The paper presents the field evaluation results of the ultraviolet radiation (UV)/oxidation technology developed by Ultrox International, Santa Ana, California. The field evaluation was performed at the Lorentz Barrel & Drum (LB&D) site in San Jose, California under the Superfund Innovative Technology Evaluation program in February and March of 1989. The UV/oxidation technology uses UV radiation, ozone, and hydrogen peroxide to oxidize organic contaminants in water. At the LB&D site, this technology was evaluated in treating ground water contaminated with volatile organic compounds (VOCs). The Ultrox system achieved VOC removals greater than 90 percent. Most VOCs were removed through chemical oxidation. However, for a few VOCs, such as 1,1,1-trichloroethane and 1,1-dichloroethane, stripping also contributed toward removal. The treated ground water met the applicable discharge standards for discharge into a local waterway at 95 percent confidence level. There were no harmful air emissions to the atmosphere from the Ultrox system, which is equipped with an off-gas treatment unit. (Copyright (c) 1990--Air & Waste Management Association.)

Keywords: *Water pollution control, *Volatile organic compounds, *Ground water, *Ultraviolet radiation, *Oxidation, Waste storage, Superfund, Hazardous materials, Site surveys, Field tests, Sampling, Technology utilization, Reprints, *Ultrox system, Chemical treatment.

PB91-163758/REB PC **A02**/MF **A01**
Control Technology: Estimating Innovative Technology Costs for the SITE Program. Journal article.
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.
G. M. Evans. c1990, 7p EPA/600/J-90/361
Pub. in Jnl. of the Air and Waste Management Association, v40 n7 Jul 90.

The paper provides the reader with an overview of the cost estimation approach employed by the Superfund Innovative Technology Evaluation (SITE) Program. The paper identifies 4 areas of concern which confront the cost analyst as the question of technology cost is considered. These concerns are then addressed through a 5 part cost methodology subsequently employed on all SITE technology demonstrations. The final section of the paper review the cost data gathered from the first nine technology demonstrations completed and reported on.

Keywords: *Superfund, *Cost estimates, *Waste treatment, *Waste disposal, *Hazardous materials, Technology utilization, Substitutes, Research and development, Operating, Public information, Site surveys, Permits, Pollution regulations, Capitalized costs, Hazardous materials transportation, Maintenance, Reprints, *Superfund Innovative Technology Evaluation Program.

PB91-163766/REB PC **A03**/MF **A01**
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling. Journal article.
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
J. S. Irwin, and J. O. Paumier. c1990, 30p EPA/600/J-90/362
Pub. in Boundary-Layer Meteorology, v53 p267-296 1990. Prepared in cooperation with Computer Sciences Corp., Research Triangle Park, NC.

Estimates from semiempirical models that characterize surface heat flux, mixing depth, and profiles of temperature, wind, and turbulence are compared with observations from atmospheric field studies conducted in Colorado, Illinois, Indiana, and Minnestoa. In addition, for wind and turbulence profiles, sodar observations are compared with tower measurements at the Colorado site. The median surface heat flux, as calculated using surface-layer flux-profile relationships and an energy budget model, was consistently overestimated from 20% to 80%. Wind profiles were derived using surface-layer flux-profile relationships, a wind-profile power-law based on Pasquill stability category, and sodar measurements. The sodar measurements were superior to both types of model estimates. Turbulence profiles were derived from sodar measurements and from semiempirical similarity relationships based on mixing depth and Obukhov length. The scatter in the comparisons with the sodar observations is twice that seen in the comparisons with empirical profile relationships. Overall, it appears that uncertainty of as low as 20% to 30% in the characterization of the diffusion meteorology is the exception rather than the rule.

Keywords: *Boundary layer, *Convection, *Atmospheric diffusion, Wind velocity, Atmospheric circulation, Atmospheric motion, Turbulence, Heat flux, Mathematical models, Turbulent diffusion, Wind profiles, Colorado, Illinois, Indiana, Minnesota, Field tests, Reprints.

PB91-163774/REB PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition. Journal article.
Research Triangle Inst., Research Triangle Park, NC.
J. E. Sickles, L. L. Hodson, W. A. McClenny, R. J. Paur, and T. G. Ellestad. c1990, 13p EPA/600/J-90/363
Contract EPA-68-02-4544
Pub. in Atmospheric Environment, v24A n1 p155-165 1990. Prepared in cooperation with Atmospheric Environment Service, Downsview (Ontario), Unisearch Associates, Inc., Toronto (Ontario), and Northrop Services, Inc., Research Triangle Park, NC. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

A field study was conducted to compare methods for sampling and analysis of atmospheric constituents that are important contributors to acidic dry deposition. Three multicomponent samplers were used: the Canadian filter pack (FP), the annular denuder system (ADS), and the transition flow reactor (TFR). A tunable diode laser absorption spectrometer (TDLAS) provided continuous reference measurements of NO2 and HNO3. Nitrogen dioxide was also monitored with continuous luminol-based chemiluminescence monitors and with passive sampling devices (PSDs). The study was designed to provide a database for statistical comparison of the various methods with emphasis on the multicomponent samplers under consideration for use in a national dry deposition network. The study was conducted at the EPA dry deposition station in Research Triangle Park, NC between 29 September and 12 October, 1986. Daily averaging and/or sampling times were employed for the 13-day study; weekly samples were also collected, but results from these samples are not compared in the paper. Different measurements of ambient concentrations of the following constituents are compared: total particulate and gaseous NO3(-), HNO3, NO2, total particulate NH4(-), NH3, total particulate SO4(-), and SO2.

Keywords: *Air pollution sampling, *Air pollution detection, *Deposition, *Dry methods, Air samplers, Acidification, Nitrogen oxides, Sulfur oxides, Continuous sampling, Canada, Comparison, Gas analysis, Chemical analysis, Ammonia, Nitrogen hydrides, Field tests, Reprints, Foreign technology.

PB91-163782/REB PC **A02**/MF **A01**
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
T. Barkay, M. Gillman, and C. Liebert. c1990, 9p EPA/600/J-90/364, CONTRIB-689
Pub. in Applied and Environmental Microbiology, v56 n6 p1695-1701 1990. Prepared in cooperation with Technical Resources, Inc., Gulf Breeze, FL.

The Hg(2+) resistance mechanism was studied in four freshwater and four coastal marine bacteria that did not hybridize with a mer operonic probe. Inducible Hg(2+)-volatilization was demonstrated for all eight organisms and NADPH-dependent-mercuric reductase activities were detected in crude cell extracts of six of the strains. Hybridization with a merA probe, the gene encoding the mercuric reductase polypeptide, at a stringency permitting hybrid formation between distant merA genes (as exists between gram positive and negative bacteria) detected merA sequences in the genomes of all tested strains. Because these strains represented random selections of bacteria from three aquatic environments, it is concluded that merA encodes a common molecular mechanism for Hg(2+) resistance and volatilization in aerobic heterotrophic aquatic communities.

Keywords: *Bacterial genes, *Water microbiology, *Nucleic acid sequence homology, *Gram-negative bacteria, *DNA insertion elements, Nucleic acid hybridization, Volatization, Deoxyribonucleic acids, Reprints, *Mercuric reductase.

PB91-163790/REB PC **A03**/MF **A01**
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
J. R. Clark, and J. M. Macauley. c1990, 12p EPA/600/J-90/365
Pub. in Plants for Toxicity Assessment, p59-68 1990.

Thalassia testudinum and associated epiphytes from field plots were compared with plants from laboratory microcosms to determine if laboratory observations reflected responses characteristic of plants in natural systems. Changes in leaf chlorophyll and protein content and rhizome carbohydrate in Thalassia and standing crop and chlorophyll content of epiphyte communities were compared for 3 experiments conducted over 6-week intervals at different times of the growing season and for one 12-week laboratory-field comparison. Thalassia plants in the laboratory followed similar trends of field plants during the 6-week experiments but the laboratory plants differed significantly from field plants at 12 weeks. Chlorophyll content of epiphyte communities colonizing Thalassia leaves was significantly different in the laboratory compared to field samples.

Keywords: *Sea grasses, Leaves(Botany), Comparative evaluations, Chlorophyll, Protein, Carbohydrates, Field tests, Reprints, *Thalassia testudinum, Epiphytes.

PB91-163808/REB PC **A02**/MF **A01**
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
J. A. Couch. c1990, 10p EPA/600/J-90/366
Pub. in Anatomical Record 228, p7-14 1990.

The morphology and position of the pericyte, a periendothelial cell, is described for a teleost fish, Cyprinodon variegatus. The cell was found attached to the abluminal surfaces of capillaries, venules, and arterioles of the submucosa of the midgut of the fish. The cell was encompassed by a thin basal lamina, possessed numerous plasmalemmal vesicles, a sole region which contained thinner actin-like filaments and possibly thicker myosin-like filaments, and ranged in form from ovoid to stellate, with long cytoplasmic extensions that partially covered the endothelium of the associated microvessel. The pericyte of C. variegatus has been shown to give rise to hemangiopericytomas. The anatomical position, in relationship to microvasculature in the fish is very similar to other vertebrate pericytes. Limited evidence suggests that small fish species may be excellent study models for further elucidation of pericyte form, function, and role in disease.

Keywords: *Fishes, *Neoplasms, *Cytology, Blood vessels, Electron microscopy, Reprints, *Pericytes, *Cyprinodon variegatus.

PB91-163816/REB PC **A02**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Dynamics of Plasmid Transfer on Surfaces. Journal article.
Massachusetts Univ., Amherst. Dept. of Zoology.
L. Simonsen. c1990, 9p EPA/600/J-90/367
Grant NIH-GM33782
Pub. in Jnl. of General Microbiology 136, p1001-1007 1990. Sponsored by Environmental Research Lab., Gulf Breeze, FL., and National Institutes of Health, Bethesda, MD.

A protocol was developed to study the dynamics of growth and plasmid transfer in surface populations of bacteria. The method allows for quantitative estimates of cell population densities over time, as well as microscopic observations of colony growth and interactions. Using the 'surface slide system' (SSS), the dynamics of the plasmid R1 and its permanently derepressed mutant R1drd19 in surface cultures of Escherichia coli K12 was examined. A hypothesis for plasmid transfer between colonies that explains these observations as a consequence of the geometry of the surface habitat and the effect of transitory derepression of the synthesis of pili is proposed.

Keywords: *Plasmids, *Escherichia coli, Cultured cells, Mutation, Kinetics, Growth, Reprints, *Surface slide system.

PB91-163824/REB PC **A02**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing. Journal article.
Cornell Univ. Agricultural Experiment Station, Ithaca, NY. Dept. of Agronomy.
K. R. Gurijala, and M. Alexander. c1990, 8p EPA/600/J-90/368
Pub. in Applied and Environmental Microbiology, v56 n6 p1631-1635 Jun 90. Sponsored by Environmental Research Lab., Gulf Breeze, FL., and Andrew W. Mellon Foundation, New York.

Measurements were made of the predation by Tetrahymena thermophila on several bacterial species in media containing heat-killed Escherichia coli cells to serve as an alternative prey. If grazing pressure was initially not intense on a mixture of bacterial species, the species that survived protozoan feeding at greater densities were those that grew quickly before the onset of active predation. If members of several species were incubated individually at similar initial densities with actively grazing T. thermophila, some species survived at ca. 10,000/ml, some survived at ca. 100/ml, and others were eliminated. Members of the first two groups but not the third group were able to multiply in the medium in the absence of the protozoan, but the growth rates in the protozoan-free medium did not correlate with the number of survivors. However, the species that persisted at the higher densities possessed highly hydrophobic cell surfaces. The size of the surviving population of four bacterial species whose growth was prevented by chloramphenicol correlated with the initial cell density that was incubated with T. thermophila. It is concluded that the individual species surviving predation on a mixture of species is related to the capacity of the bacterium to grow, the hydrophobicity of its cell surface, and the population density of the species before the onset of intense grazing. (Copyright (c) 1990, American Society for Microbiology.)

Keywords: *Escherichia coli, Species diversity, Soil microbiology, Population dynamics, Graphs(Charts), Chloramphenicol, Reprints, *Protozoan predation, *Tetrahymena thermophila.

PB91-163832/REB PC **A03**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water. Journal article.
Tennessee Univ., Knoxville. Center for Environmental Biotechnology.
O. A. Ogunseitan, G. S. Sayler, and R. V. Miller. c1990. 17p EPA/600/J-90/369
Grant EPA-R8115234
Pub. in Microbial Ecology 19, p171-185 1990. Prepared in cooperation with Stritch School of Medicine, Maywood, IL. Dept. of Biochemistry. Sponsored by Environmental Research Lab., Gulf Breeze, FL.

The persistence and interaction between newly isolated strains of Pseudomonas aeruginosa and resident bacteriophages indigenous to a freshwater environment was monitored over 45 days in lake water microcosms. The interaction between susceptible and resistant bacteria with pure phage (UT1) particles or a mixed phage population (M1) was investigated by following temporal changes in host density, phage-to-bacteria ratio (PBR), and the appearance of apparent prophage carriers within the host population. Decay rates of the phage (UT1) ranged from 0.054/hour in natural water to 0.027/hour in natural water to 0.027/hour in filtered lake water. About 45% of sensitive bacteria incubated with phase UT1 were pseudolysogenic within 12 hours of incubation in natural lake water. Phage UT1 appeared to stabilize the density of host bacteria in lake water at a level of 10 to the fourth power colony-forming units (cfu)/ml. Bacterial coexistence with the mixed phage (M1) population resulted in an oscillating equilibrium with the PBR stabilizing at about 3. (Copyright (c) Springer-Verlag New York, Inc. 1990.)

Keywords: *Bacteriophages, *Water microbiology, *Pseudomonas aeruginosa, Base sequence, Lakes, Colony formation, Nucleic acid hybridization, Electron microscopy, Viral DNA, Agar gel electrophoresis, Reprints.

PB91-163840/REB PC **A03**/MF **A01**
National Science Foundation, Washington, DC.
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae). Journal article.
Environmental Research Lab., Gulf Breeze, FL.
W. P. Davis, D. S. Taylor, and B. J. Turner. c1990, 14p EPA/600/J-90/371, CONTRIB-693
Contract NSF-BSR-8506417
Pub. in Ichthyological Exploration of Freshwaters, v1 n2 p123-134 Apr 90. Prepared in cooperation with Brevard Mosquito Control District, Titusville, FL., and Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Biology. Sponsored by National Science Foundation, Washington, DC., and Smithsonian Institution, Washington, DC.

The report provides a synopsis of field studies of Rivulus marmoratus from two population surveys of mangrove islands adjacent to the Belize barrier reef and observations made over fifteen years at several sites in South Florida. This small, cryptically colored killifish is the only known vertebrate selfing hermaphrodite. Florida populations consist nearly exclusively of hermaphrodites (> 99%), while the Belize populations contained a significant proportion (10-25%) of males. The combined observations demonstrate that this species is not 'rare' as previously thought, but elusive and highly adapted to microhabitats within mangrove forests. Standard ichthyological collecting techniques are ineffective in the habitat and have previously failed to reveal the strength of the association of R. marmoratus with the mangral ecosystem. (Copyright (c) 1990 by Verlog Dr. Frederick Pfeil, Munchen, FRG.)

Keywords: *Marine fishes, *Animal behavior, *Animal ecology, Habitats, Coastal waters, Florida, Reproduction(Biology), Reprints, *Rivulus marmoratus, Belize Barrier Reef.

PB91-163857/REB PC **A03**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family. Journal article.
Illinois Univ. at Urbana-Champaign. Dept. of Veterinary Pathobiology.
R. Devereux, S. H. He, C. L. Doyle, S. Orkland, and D. A. Stahl. c1990, 13p EPA/600/J-90/372
Grants EPA-R812496, NSF-PCM-8351355
Pub. in Jnl. of Bacteriology, v172 n7 p3609-3619 Jul 90. Prepared in cooperation with Georgia Univ., Athens. Sponsored by Environmental Research Lab., Gulf Breeze, FL., National Science Foundation, Washington, DC., and Georgia Power Co., Atlanta.

The different nutritional properties of several Desulfovibrio desulfuricans strains suggest that either the strains are misclassified or there is a high degree of phenotypic diversity within the genus Desulfovibrio. The results of partial 16S rRNA and 23S rRNA sequence determinations demonstrated that Desulfovibrio desulfuricans ATCC 27774 and 'Desulfovibrio multispirans' are closely related to the type strain (strain Essex 6) and that strains ATCC 7757, Norway 4, and El Agheila are not. Therefore, these latter three strains of Desulfovibrio desulfuricans are apparently misclassified. A correlation between 16S rRNA sequence similarity and percentage of DNA relatedness showed that these five deep lineages are related at levels below the minimum genus level suggested by Johnson. It is proposed that this branch should be grouped into a single family, the Desulfovibrionaceae. The other branch includes other genera of sulfate-reducing bacteria and contains Desulfovibrio sapovorans and Desulfovibrio baarsii as separate, distantly related lineages. (Copyright (c) 1990, American Society for Microbiology.)

Keywords: *Phylogeny, Phenotype, Bacterial DNA, Bacterial genes, Ribosomal RNA, Species diversity, Base sequence, Reprints, *Desulfovibrio desulfuricans.

PB91-163865/REB PC **A03**/MF **A01**
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
D. J. Fisher, and J. R. Clark. c1990, 22p EPA/600/J-90/373
Pub. in Aquatic Toxicology 17, p167-186 1990. See also PB87-179636. Prepared in cooperation with Maryland Univ., Queenstown. Wye Research and Education Center, and Manhattan Coll., Bronx, NY.

The relative extent of dietary accumulation and bioconcentration of Kepone by grass shrimp (Palaemonetes pugio) was quantitatively evaluated at food rations of 4 and 8% of the average wet weight of the shrimp. (14)C-Kepone was utilized to determine bioconcentration and dietary accumulation separately, while (14)C-Kepone-contaminated food (grass shrimp) and unlabeled Kepone in water were used to determine accumulation from both sources simultaneously. Grass shrimp and their food were exposed to the same aqueous Kepone concentration (0.04 micrograms/l). A first-order pharmacokinetic equation was used to model Kepone accumulation kinetics during the 16-day uptake and 21-day clearance phases. A doubling of contaminated food ration caused a significant increase in the whole-body Kepone concentration in the shrimp. Shrimp fed either a 4% or 8% ration of uncontaminated food and exposed to 0.04 micrograms/l Kepone in water bioconcentrated Kepone to the same level. When shrimp were exposed to contaminated water and food, Kepone contributions from each source were additive.

Keywords: *Water pollution effects(Animals), *Pesticides, *Kepone, *Shrimp, Ingestion(Biology), Pharmacokinetics, Concentration(Composition), Reprints, *Bioaccumulation, *Palaemonetes pugio.

PB91-163873/REB PC **A03**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate. Journal article.
Technical Resources, Inc., Gulf Breeze, FL.
B. R. S. Genthner, G. T. Townsend, and P. J. Chapman. c1990, 12p EPA/600/J-90/374
Contract EPA-68-03-3479
Pub. in Biodegradation, v1 p65-74 1990. Also pub. as Environmental Research Lab., Gulf Breeze, FL. rept. no. CONTRIB-692. Sponsored by Environmental Research Lab., Gulf Breeze, FL.

Effects of fluorinated analogues on transformation of phenol to benzoate by an anaerobic, phenol-degrading consortium were examined. At concentrations of > or = to 250 microM, 2- and 3-fluorophenol inhibited transformation of phenol as seen by a lag in its disappearance. Benzoate accumulated in the presence of > or = to 250 microM 3-fluorophenol. In contrast, 4-fluorophenol had no significant effect on either phenol transformation or benzoate accumulation when present to 2 mM. Phenol and 2-, or 3-fluorophenol were transformed simultaneously, but phenol was transformed more rapidly than either fluorophenol. 2-Fluorophenol was converted to 3-fluorobenzoate in the presence or absence of phenol; however, the presence of phenol enhanced the rate and extent of its transformation.

Keywords: *Biodeterioration, *Anaerobic bacteria, *Phenols, *Benzoic acid, Sediments, Sludge, Fluorination, Reprints, Hydroxybenzoates.

PB91-163881/REB PC **A03**/MF **A01**
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
M. J. Hemmer, D. P. Middaugh, and J. C. Moore. c1990, 12p EPA/600/J-90/375, CONTRIB-667
Pub. in Aquatic Toxicology, v8 p127-136, 7 Jun 90.

Embryos of the inland silverside, Menidia beryllina, were exposed to the organophosphorus pesticide terbufos at nine combinations of temperature (20, 25 and

30 C) and salinity (5, 12.5 and 20 levels of salinity). Nominal exposure concentrations were 12.5, 25, 50 and 100 microgram terbufos/1 with an acetone and seawater control for each temperature/salinity combination. Test durations were temperature dependent and ranged from 5 to 14 days. Endpoints were embryo survival, hatching and percentage of larvae with normal vertebrae. Survival was significantly (alpha = 0.05) lower in tests conducted at 20 C for all salinities. Salinity affected survival only at combinations of 20 levels of salinity and 100 microgram terbufos/1. Both temperature and salinity affected the percentage hatch, with the lowest hatching occuring in 20 C tests, and in tests conducted at 20 levels of salinity. Anomalies in the development of vertebrae occurred across all temperature/salinity combinations.

Keywords: *Temperature, *Salinity, *Embryo, pH, Regression analysis, Multivariate analysis, Reprints, *Terbufos, *Menidia beryllina, Dissolved oxygen, *Organophosphorus insecticides.

PB91-163899/REB PC **A02**/MF **A01**
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
J. W. Fournie, S. S. Foss, L. A. Courtney, and A. H. Undeen. c1990, 10p EPA/600/J-90/376, CONTRIB-680
Pub. in Diseases of Aquatic Organisms, v8 p137-144, 7 Jun 90. Prepared in cooperation with Science and Education Administration, Gainesville, FL. Insect Affecting Man and Animals Research Lab.

The paper reports results of single-species tests with the mosquito microsporidian Nosema algerae and the orthopteran microsporidian N. locustae on nontarget aquatic organisms. Organisms tested were the freshwater grass shrimp (Palaemonetes kadiakensis), the estuarine grass shrimp (P. pugio), the marine rotifer (Brachionus plicatilis), and the inland silverside (Menidia beryllina). These organisms were exposed by intrahemocoelic injection, gavage, or ingestion. Infections did not develop in either the freshwater grass shrimp or estuarine grass shrimp that were gavaged with N. algerae spores. However, infections did develop in both species of grass shrimp after intrahemocoelic injections with N. algerae spores. Infected tissues included the gills, antennal gland, eyes, skeletal muscle, heart, and gonads. Proof of infection was demonstrated ultrastructurally by the presence of mature spores and developmental stages in infected tissues.

Keywords: *Microsporum, *Aquatic biology, *Biological pest control, Shrimp, Infections, Gills, Eye, Muscles, Myocardium, Gonads, Pathology, Reprints, *Nosema algerae, *Nosema locustae.

PB91-163907/REB PC **A03**/MF **A01**
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
W. H. Jeffrey, J. H. Paul, and G. J. Stewart. c1990, 12p EPA/600/J-90/377
Pub. in Microbial Ecology, v19 p259-268 1990. Prepared in cooperation with University of South Florida, St. Petersburg.

A series of thirty marine and estuarine bacterial isolates was examined for the ability to naturally transform with plasmid DNA. One isolate from Tampa Bay, Florida, identified as Vibrio parahaemolyticus, successfully incorporated and maintained the broad host range plasmid pKT230 in both filter transformation assays and sterile sediment microcosms, at frequencies ranging from 0.3 to 3.1 x 10 to the minus eighth power transformants per recipient. Transformation occurred without deletions and transformation of multimeric forms of the plasmid. Results suggest that natural transformation may be one mechanism by which estuarine bacteria acquire antibiotic resistance plasmids.

Keywords: *Vibrio, *Water microbiology, *Marine biology, *Deoxyribonucleic acids, Plasmids, Chromosomes, Southern blotting, Autoradiography, Reprints, *Genetic transformation.

PB91-163915/REB PC **A03**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species. Journal article.
Cornell Univ., Ithaca, NY. Ecosystems Research Center.
J. R. Kelly, D. T. Rudnick, R. D. Morton, L. A. Buttel, and S. N. Levine. c1990, 34p EPA/600/J-90/378
Pub. in Marine Environmental Research, v29 p245-276 1990. Prepared in cooperation with University of West Florida, Pensacola. Sponsored by Environmental Research Lab., Gulf Breeze, FL.

Effects of TBT dosing on common species of macroinvertebrates associated with Thalassia testudinum were documented, and compared with measured tracer burdens of different species. Species with the strongest response, some showing virtual population lethality after 3 to 5 weeks of dosing at the highest dosing rate, included polychaetes (Pista quadrilobata and Nereis pelagica), an amphipod (Cymadusa compta), and molluscs (Crepidula maculosa and Cumingia tellinoides). Tissue tracer concentration at a given dose level varied over about an order of magnitude across 18 affected and unaffected species. Accumulated burden of TBT was, in part, inversely related to the size of an organism, but the variability suggested that diet/ecological role of species may be a significant aspect to consider in dose-burden models.

Keywords: *Tributyltin, *Sea grasses, *Water pollution effects(Plants), *Aquatic ecosystems, Species specificity, Abundance, Body weight, Reprints.

PB91-163923/REB PC **A02**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c. Journal article.
Michigan Univ., Ann Arbor. Medical School.
J. J. Kukor, and R. H. Olsen. c1990, 9p EPA/600/J-90/379
Pub. in Jnl. of Bacteriology, v172 n8 p4624-4630 Aug 90. Sponsored by Environmental Research Lab., Gulf Breeze, FL., and Michigan Dept. of Natural Resources, Lansing.

A 26 kilobase BamHI restriction endonuclease DNA fragment has been cloned from Pseudomonas pickettii PKO1, a strain isolated from a soil microcosm that had been amended with benzene, toluene, and xylene. The DNA fragment, cloned into vector plasmid pRO1727 and designated pRO1957, allowed P. aeruginosa PAO1c to grow on phenol as sole source of carbon. Physical and functional restriction endonuclease maps have been derived for the cloned DNA fragment. Deletion and subcloning analyses of these fragments indicated that the gene encoding phenol hydroxylase is positively regulated. Phenol and m-cresol were shown to be inducers of the enzyme. o-Cresol and p-cresol did not induce enzymatic activity, but could be metabolized by cells that had been previously exposed to phenol or m-cresol, moreover the enzyme was sensitive to thiol-inhibiting reagents. A novel polypeptide with an estimated molecular mass of 80,000 daltons was detected in extracts of phenol-induced cells of P. aeruginosa carrying plasmid pRO1959.

Keywords: *Bacterial gene expression regulation, *Pseudomonas aeruginosa, *Bacterial DNA, Molecular cloning, Plasmids, Restriction mapping, Restriction endonucleases, Soil microbiology, Genetic transcription, Polyacrylamide gel electrophoresis, Benzene, Toluene, Xylene, Reprints, *Pseudomonas pickettii, *Phenol hydroxylase.

PB91-163931/REB PC **A03**/MF **A01**
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
J. M. Macauley, J. R. Clark, and A. R. Pitts. c1990, 14p EPA/600/J-90/380
Pub. in Plants for Toxicity Assessment, American Society for Testing and Materials, p255-266 1990. Prepared in cooperation with University of West Florida, Pensacola.

Concurrent 12-week laboratory and field studies were conducted to determine toxicity of the suspended particulate phase (SPP) of drilling fluid to Thalassia testudinum and its epiphytes. Test systems were treated once per week to achieve nominal concentrations of 100 mg/L SPP. Chlorophyll content of Thalassia leaves and epiphyte biomass and chlorophyll content were monitored during each test. Laboratory exposures were conducted in 7-L, flow-through (7 L/h) microcosms consisting of Plexiglas cylinders containing intact cores of Thalassia from a local seagrass bed. Field exposures were conducted in water-tight plexiglas chambers (2 m x 2 m x 1.5 m) placed over test plots in a seagrass bed for 24 h during SPP additions. Epiphyte biomass was reduced after 6 weeks of intermittent exposure to SPP in laboratory and field tests. After 12 weeks, epiphyte biomass had increased to densities similar to control values.

Keywords: *Environmental monitoring, *Sea grasses, *Water pollution effects(Plants), *Tributyltin, *Drilling fluids, Chlorophyll, Graphs(Charts), Leaves(Botany), Reprints, *Thalassia testudium, *Epiphytes.

PB91-163949/REB PC **A03**/MF **A01**
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
C. L. McKenney, and E. Matthews. c1990, 21p EPA/600/J-90/381
Pub. in Marine Environmental Research, v30 p1-19 1990.

Various aspects of the energy metabolism of an estuarine mysid (Mysidopsis bahia) were examined for different life stages during a life-cycle exposure to the organophosphate pesticide, fenthion. Dose-response relationships were developed for several metabolic rate functions (oxygen consumption and ammonia excretion) and their combined bioenergetic and physiological indices (K2 values and O:N ratios). Initial exposure to fenthion resulted in elevated respiration rates of juvenile mysids. As shown by lower net growth efficiency (K2 values), these increased metabolic demands reduced the amount of assimilated energy available for production of new tissue, resulting in retarded juvenile growth rates. Results, when compared with similar studies with two other pesticide classes, suggest that measurements of alterations in the energy metabolism of contaminated individuals from sensitive zooplankton populations (e.g. mysids) may be used as indicators of reductions in population performance from chronic exposure to toxic organics.

Keywords: *Organophosphate insecticides, *Water pollution effects(Animals), *Energy metabolism, *Zooplankton, *Fenthion, Stress(Physiology), Oxygen, Nitrogen, Lipids, Oxygen consumption, Ammonia, Reprints, *Mysidopsis bahia, Toxic substances.

PB91-163956/REB PC **A02**/MF **A01**
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
D. P. Middaugh, J. W. Fournie, and M. J. Hemmer. c4 Oct 90, 10p EPA/600/J-90/382, CONTRIB-695
Pub. in Disease of Aquatic Organisms, v9 p109-116 1990.

Embryos of the inland silverside, Menidia beryllina, were exposed to a nominal concentration of 50 micrograms terbufos/1 during the first five days of embryogenesis. Silversides were maintained in clean dilute seawater until 37 days after hatching. Radiographs revealed compressed and fused vertebrae and dorsal-ventral misalignment of pre- and postzygapophyseal processes. Histopathological examination of individuals exposed to terbufos during embryogenesis revealed various vertebral lesions ranging from small hyperostoses to almost complete fusion of some vertebrae.

Keywords: *Marine biology, *Teratogens, Pathology, Larvae, Reprints, *Menidia beryllina, *Terbufos, *Vertebral abnormalities, *Organophosphorus insecticides.

PB91-163964/REB PC **A03**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
General Microbiology of RecA: Environmental and Evolutionary Significance. Journal article.
Loyola Univ. Medical Center, Maywood, IL.
R. V. Miller, and T. A. Kokjohn. c1990, 32p EPA/600/J-90/383

Pub. in Annual Review of Microbiology, v44 p365-394 1990. Sponsored by Environmental Research Lab., Gulf Breeze, FL.

The recA protein, a molecule of 38,000 M(r), is a multifunctional polypeptide directing a number of activities, none of which is completely understood in detail. Its central role in homologous recombination and DNA-damage repair has created considerable interest. Numerous studies in the last eight years to identifying and characterize the gene have revealed the widespread distribution and evolutionary conservation of recA. In the review, authors explore the current knowledge of the general microbiology of recA and its protein product.

Keywords: *recA protein, *Microorganisms, Recombination(Genetics), DNA damage, DNA repair, Gene expression regulation, Mutagenesis, Base sequence, Evolution, Bacteria, Fungi, Viruses, Bacteriophages, Reprints.

PB91-163972/REB PC **A02**/MF **A01**
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
B. J. Turner, J. F. Elder, T. F. Laughlin, and W. P. Davis. c1990, 7p EPA/600/J-90/384
Pub. in Proceedings of the National Academy of Sciences, v87 p5653-5657 Aug 90. Prepared in cooperation with Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Biology.

Measurement of clonal heterogeneity is central to understanding evolutionary and population genetics of roughly 50 species of vertebrates lack effective genetic recombination. A simple-sequence DNA fingerprinting with oligonucleotide probes (CAG)5 and (GACA)4 was used to detect heterogeneity in natural populations of two clonal fishes, Poecilia formosa, an apomictic unisexual, and Rivulus marmoratus, a selfing hermaphrodite. The technique clearly differentiates allozymically identical laboratory lines of R. marmoratus that were previously distinguishable only by histocompatibility analysis. The technique also revealed the first documented cases of apparent clonal turnover in a natural population of each species.

Keywords: *Vertebrates, *Evolution(Development), *Genetics, *Fishes, Measurement, Deoxyribonucleic acids, Variations, Populations, Divergence, Histology, Hybridization, Comparison, Breeding, Reprints, DNA fingerprinting, *Clonal diversity, Poecilia formosa, Rivulus marmoratus.

PB91-163980/REB PC **A02**/MF **A01**
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
W. K. Vogelbein, J. W. Fournie, P. A. Van Veld, and R. J. Huggett. 1990, 10p EPA/600/J-90/385
Pub. in Cancer Research, v50 p5978-5986, Sep 90. Also pub. as Virginia Inst. of Marine Science, Gloucester Point rept. no. CONTRIB-1603. Prepared in cooperation with Virginia Inst. of Marine Science, Gloucester Point, and Virginia State Water Control Board, Richmond.

High prevalences of idiopathic hepatic lesions were found in mummichog, Fundulus heteroclitus from a site in the southern branch of the Elizabeth River, Virginia contaminated with polycyclic aromatic hydrocarbons (PAHs). Gross hepatic lesions occurred in 93% of the individuals from this site, whereas no hepatic lesions were detected in fish from two less contaminated sites. Lesions included foci of cellular alteration, hepatocellular adenoma, early and advanced hepatocellular carcinomas and cholangiocellular proliferative lesions. Advanced carcinomas exhibited several distinct cellular patterns and some livers contained multiple neoplasms occupying up to 80% of the hepatic parenchyma. These findings indicate a strong positive association between exposure to creosote-contaminated sediments and the high prevalence of hepatic neoplasms in a feral population of mummichog, and support the putative role of PAHs in fish hepatocarcinogenesis. Additionally, they suggest that the mummichog may be a useful indicator of exposure to carcinogens in aquatic environments.

Keywords: *Water pollution, *Toxicity, *Creosote, *Liver neoplasms, *Water pollution effects(Animals), Carcinogenicity tests, Polycyclic aromatic hydrocarbons, Sediments, Elizabeth River(Virginia), Pathology, Reprints, *Fundulus heteroclitus.

PB91-163998/REB PC **A03**/MF **A01**
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae). Journal article.
Environmental Research Lab., Gulf Breeze, FL.
G. E. Walsh. c1990, 19p EPA/600/J-90/386
Pub. in Aquatic Botany 38, p177-193 1990.

Members of the genus Spartina are dominant macrophytes in many salt marshes of North and South America, Europe, and Africa. Although the genus is of great ecological importance, seeds and seedlings of its 16 species have not been described. The seed and seedling of an American species, Spartina alterniflora, are described. The embryo is enclosed in a lemma, a palea, and two glumes. Vascularization of the embryo is panicoid. After germination, leaves arise by periclinal division of cells of the first tunica layer. Laminae assume the adult form by growth of ribs and formation of furrows on the adaxial surface. The panicoid anatomy of each furrow contains a vascular bundle surrounded by a mestome sheath and large, nucleated, parenchyma (Kranz) cells.

Keywords: *Seeds, *Seedlings, Plant growth, Plant cells, Plant tissues, Plant anatomy, Germination, Species specificity, Reprints, *Spartina alterniflora.

PB91-164004/REB PC **A02**/MF **A01**
Artificial Sediments for Use in Tests with Wetland Plants. Journal article.
Environmental Research Lab., Gulf Breeze, FL.
G. E. Walsh, D. E. Weber, L. K. Brashers, and T. L. Simon. c1990, 9p EPA/600/J-90/387
Pub. in Environmental and Experimental Botany, v30 n3 p391-396 1990.

Artificial sediments are described for use in studies on rooted plants. The sediments are formulated from commercially available sand, silt, clay and organic matter. Survival of seedlings of Echinochloa crusgalli var. crusgalli, Scirpus paludosus and Spartina alterniflora was the same in natural and artificial sediments. Average seedling weight of each species was greater in artificial than in natural sediment, probably, because of a more suitable pH in the artificial sediments. Particle size of sand, silt, or clay, percentage sand, silt or clay, percentage organic matter, and cation exchange capacity did not affect growth of E. crusgalli and S. alterniflora. Growth of S. paludosus was related to percentage organic matter in sediment and to interaction between particle size and percentage sand.

Keywords: *Rooted aquatic plants, *Sediments, *Wetlands, *Toxic substances, *Soil-water-plant relationships, Particle size, pH, Water pollution effects(Plants), Plant growth, Aquatic ecosystems, Statistical analysis, Freshwater, *Artificial sediments.

PB91-164012/REB PC **A03**/MF **A01**
Environmental Research Lab., Gulf Breeze, FL.
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria. Journal article.
Technical Resources, Inc., Gulf Breeze, FL.
R. B. Coffin, D. J. Velinsky, R. Devereux, W. A. Price, and L. A. Cifuentes. c1990, 11p EPA/600/J-90/388
Pub. in Applied and Environmental Microbiology, v56 n7 p2012-2020 Jul 90. Prepared in cooperation with Carnegie Institution of Washington, DC. Geophysical Lab., and Illinois Univ. at Urbana-Champaign. Dept. of Veterinary Pathobiology. Sponsored by Environmental Research Lab., Gulf Breeze, FL.

The natural abundance of stable carbon isotopes measured in bacterial nucleic acids that were extracted from estuarine bacterial concentrates were used to trace sources of organic matter for bacteria in aquatic environments. The stable carbon isotope ratios of P. aeruginosa and nucleic acids extracted from cultures resembled the carbon source on which bacteria were grown. The carbon isotope discrimination (delta) between substrate and bacterial cultures averages +2.3 + or - 0.6% (n=13). Generally the lack of isotope discrimination between bacteria and nucleic acids that was noted in the laboratory was observed in the field. Exceptions to this comparison were due to changes in bacterial substrate sources as a result of the incubation experiments that were used to obtain bacteria for isotope analysis. The authors results from work in the field and laboratory indicate that the approach is useful for tracing sources of and describing the bacterial role in cycling of dissolved organic matter in aquatic environments.

Keywords: *Aquatic microbiology, *Tracer studies, *Organic matter, *Nucleic acids, *Isotopic labeling, Estuaries, Carbon isotopes, Substrates, Aquatic ecosystems, Bioassay, Deoxyribonucleic acids, Mass spectroscopy, Ribonucleic acids, Extraction, Microorganisms, Bacteria, Water pollution detection, Environmental transport, Reprints.

PB91-164277/REB PC **A03**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Movement of Bacteria through Soil and Aquifer Sand. Rept. for 1 Oct 87-31 Dec 90.
Cornell Univ., Ithaca, NY.
M. Alexander, R. J. Wagenet, P. C. Baveye, J. T. Gannon, and U. Mingelgrin. Mar 91, 45p EPA/600/2-91/010
Grant EPA-R-814487
Sponsored by Robert S. Kerr Environmental Research Lab., Ada, OK.

The transport of microorganisms in soils is of major importance for bioremediation of subsurface polluted zones. A procedure for evaluating the relative mobility and recovery of bacteria in the soil matrix was developed. Nineteen bacterial strains were selected that differed in their ability to be transported through soils. Measurements were made of sorption partition coefficient, hydrophobicity, net surface electrostatic charge, zeta potential, cell size, encapsulation, and flagellation of the cells. Only sorption and cell length were correlated with transport of the bacteria through soil. The breakthough curves for Pseudomonas sp. KL2 moving through a column packed with a sandy aquifer material were determined. Ionic strength of the inflowing solution, bacterial density, and velocity of water flow were found to have an effect on breakthrough.

Keywords: *Biodeterioration, *Land pollution control, *Environmental transport, *Hazardous materials, Biological treatment, Microorganisms, Waste disposal, Water pollution control, Remedial action, Aquifers, Potable water, Bacteria, Soil microbiology, Cleanup operations.

PB91-164285/REB PC **A04**/MF **A01**
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel. Rept. for Jun 88-Sep 90.
Robert S. Kerr Environmental Research Lab., Ada, OK.
S. R. Hutchins, W. C. Downs, G. B. Smith, J. T. Wilson, and D. J. Hendrix. Mar 91, 64p EPA/600/2-91/009
Prepared in cooperation with Solar Universal Technologies, Inc., Traverse City, MI. Ground Water Remediation Div., NSI Technology Services Corp., Ada, OK., Traverse Group, Inc., Traverse City, MI., and Coast Guard District (9th), Cleveland, OH. Shore Maintenance Detachment.

There is little information available in the open literature on the performance of bioremediation at field scale. The report documents the rate and extent of treatment of a spill of JP-4 in a drinking-water aquifer, using nitrate as the primary electron acceptor for microbial respiration of the contaminant hydrocarbons. Nitrate has theoretical advantages over the more traditional electron acceptors used in the United States. It is much more soluble than oxygen, and less costly and less toxic than hydrogen peroxide. Ground water amended with nitrate and mineral nutrients was recirculated through a 10 m by 10 m study area. After 165 days the individual concentrations of benzene, toluene, ethylbenzene, and xylenes were below 5 microgram/l in monitoring wells under the study area. The concentration of benzene was below 0.1 microgram/l. Some of the removal of alkylbenzenes may have been due to low concentrations of oxygen (0.5 mg/l) in the recirculation water.

Keywords: *Oil pollution removal, *Jet engine fuels, *Water pollution control, *Potable water, *Biological treatment, Remedial action, Ground water, Aquifers, Nitrates, Electron acceptors, Biodeterioration.

PB91-164293/REB PC **A13**/MF **A02**
Environmental Protection Agency, Washington, DC. Office of Health and Environmental Assessment.

Histological and Histopathological Evaluation of the Testis.
Dynamac Corp., Rockville, MD.
L. D. Russell, A. P. Sinha Hikim, R. A. Ettlin, and E. D. Clegg. c1990, 297p ISBN-0-9627422-0-1, EPA/600/8-91/012, , OHEA-R-382
Contract EPA-68-01-7266
Library of Congress catalog card no. 90-83144. Prepared in cooperation with Southern Illinois Univ. School of Medicine, Carbondale. Lab. of Structural Biology, and Sandoz Pharma Ltd., Basel (Switzerland). Sponsored by Environmental Protection Agency, Washington, DC. Office of Health and Environmental Assessment.

The book, the first to describe how the testis is evaluated in research and toxicology testing settings, is a resource for individuals who wish to perform a systematic evaluation of the testis. The book contains 728 illustrations and drawings. The book begins with a description of normal testis structure. It provides staging schemes for the three species (rat, mouse and dog) most commonly used in research and toxicology testing situations. Staging of spermatogenesis is designed to be self-taught. A chapter on tissue preparation is written for the investigator to examine the options of tissue preparation available and to make a selection that suits a particular purpose. Perfusion fixation of the testis is described in detail. Histopathology of the testis is amply illustrated. Both qualitative and quantitative evaluation of the testis are stressed.

Keywords: *Pathology, *Testis, *Histology, Comparative anatomy, Spermatogenesis, Fixatives, Rats, Mice, Dogs, Stains and staining, Fertility, Organ weight, Toxicology, Reprints.

PB91-168435/REB PC **A09**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990. Final rept.
Radian Corp., Research Triangle Park, NC.
C. A. Owen, L. Y. Cooper, and C. E. Norris. Jul 90, 177p DCN-90-203-099-26-09, EPA/450/3-90/014
Contract EPA-68-D8-0065
See also PB90-270570 and PB91-168443. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The purpose of the report is to provide State and local agencies with citations of reports and Federal Register notices useful in developing and operating air toxics control programs. The reports selected for the bibliography were published by the following agencies: EPA, NAS, NCI, NIEHS, NTP, NIOSH, ATSDR, CPSC, WHO, and IARC. Relevant reports published by various State and local agencies are also included in this edition. The citations selected this year were compiled from sources available through January 31, 1990.

Keywords: *State government, *Toxicity, *Air pollution control, *Bibliographies, Public health, Risk, Project planning, Carcinogens, Local government, Technical reports, Government agencies.

PB91-168443/REB PC **A21**/MF **A03**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990. Final rept.
Radian Corp., Research Triangle Park, NC.
C. A. Owen, L. Y. Cooper, and C. E. Norris. Jul 90, 492p DCN-90-203-099-26-11, EPA/450/3-90/014A
Contract EPA-68-D8-0065
See also PB90-113523 and PB90-270570. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

The purpose of the report is to provide State and local agencies with citations of reports of Federal Register notices useful in developing and operating air toxics control programs. The reports selected for the bibliography were published by the following agencies: EPA, NAS, NCI, NIEHS, NTP, NIOSH, ATSDR, CPSC, WHO, and IARC. Relevant reports published by various State and local agencies are also included in the edition. The citations selected this year were compiled from sources available through January 31, 1990.

Keywords: *Toxicity, *Air pollution, *Bibliographies, Government agencies, Sources, Industrial wastes, Organic chemicals, Hydrocarbons, Carcinogens, Public health, Manufacturing, State government, Local government, Technical reports, Listings.

PB91-172247/REB PC **A07**/MF **A01**
National Air Quality and Emissions Trends Report, 1989.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
T. Curran, R. Faoro, T. Fitz-Simons, N. Frank, and W. Freas. Feb 91, 134p* EPA/450/4-91/003
See also report for 1988, PB90-200114.

The report presents national and regional trends in air quality from 1980 through 1989 for total suspended particulate, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone and lead. Air quality trends are also presented for 14 metropolitan areas. Both national and regional trends in each of these pollutants are examined. National air quality trends are also presented for both the National Air Monitoring Sites (NAMS) and other site categories. In addition to ambient air quality, trends are also presented for annual nationwide emissions. The emissions are estimated using the best available engineering calculations; the ambient levels presented are averages of direct measurements. The report also includes a section, Air Quality Levels in Metropolitan Statistical Areas (MSAs). Its purpose is to provide interested members of the air pollution control community, the private sector and the general public with greatly simplified air pollution information. Air quality statistics are presented for each of the pollutants for all MSAs with data in 1989.

Keywords: *Air pollution, *Air quality, Emission factors, Particulates, Sulfur dioxide, Carbon monoxide, Nitrogen dioxide, Ozone, Lead, Metropolitan Statistical Area, Regions, Trends, Statistical data, Tables(Data), *Environmental Protection Agency, NAMS(National Air Monitoring Stations).

PB91-505578/REB CP **T18**
Urban Airshed Model. Data file.
Environmental Protection Agency, Research Triangle Park, NC.
15 Jun 90, mag tape EPA/SW/MT-91/002
System: MVS/ESA operating system. Language: FORTRAN. Supersedes PB87-173217.
Available in 9-track EBCDIC character set, 1600 bpi. For 6250 bpi, the price is T18. Price includes documentation, PB91-131227, PB91-131235, PB91-131243, PB91-131250, and PB91-131268.

The Urban Airshed Model and user's guide consists of five volumes: (one volume per magnetic tape) (1) Model description and a user's manual describing how to run the core model using pre-prepared air quality, meteorological, topographical, and emissions input files. (2) A summary description and user's manual for all UAM preprocessor programs and their input requirements. These preprocessors can be used to generate the input files needed to run the core model described in volume 1. (3) The Diagnostic Wind Model (DWM) user's manual contains a detailed description of the DWM (summarized in volume 2), its underlying rationale and input requirements. The DWM is used to generate three dimensional wind fields. (4) The Emissions Preprocessor System (EPS) user's manual contains a detailed description of the EPS (summarized briefly in volume 2), including required emission inputs and their format. A description of the biogenics emissions processor, its operation and how it is eventually merged within the manmade area sources emissions file to produce the gridded, hourly speciated emissions data required by the core model, is contained in volume IV as an appendix. (5) ROM/UAM Interface Program System user's manual describes procedures for using Regional Oxidant Model (ROM) simulations to generate required air quality, meteorological, and biogenic emissions files to operate the UAM core model described in volume I.

Keywords: *Models-Simulation, *Software, Magnetic tapes, Air quality, Meteorological data, File maintenance(Computers), Pollution sources, Air pollution, Atmospheric diffusion, Photochemical reactions, Wind(Meteorology), *Urban Airshed Model, Diagnostic Wind Model, Carbon-Bond Chemical Mechanism, Regional Oxidant Model, Emission inventories, Emission factors.

PB91-505586/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/004
System: IBM 3090; OS - TSO operating system. Approximate bytes: 250,381,092. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains U.S. point source data for 59 chemical species and the associated factors required to spatially and temporally allocate emissions to grids 1/4 degree longitude by 1/6 degree latitude.

Keywords: *Data file, *Point sources, *Air pollution, Mathematical models, Magnetic tapes, Spatial distribution, Temporal distribution, Chemical compounds, Pollution sources, States(United States), USA, Grids(Coordinates), *National Acid Precipitation Assessment Program, *Emission inventories.

PB91-505594/REB CP **T02**
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/005
System: IBM 3090; OS - TSO operating system. Approximate bytes: 10,867,505. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Canadian emissions data for 59 chemical species and allocation factors required to distribute the data to grids 1/4 degree longitude by 1/6 degree latitude and to hourly values for 12 representative scenarios.

Keywords: *Data file, *Point sources, *Air pollution, Mathematical models, Magnetic tapes, Chemical compounds, Grids(Coordinates), Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505602/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/006
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical winter weekday, temporal scenario Number 1.

Keywords: *Data file, *Mobile pollutant sources, *Air pollution, Mathematical models, Magnetic tapes, States(United States), USA, Winter, Exhaust emissions, Hydrocarbons, Nitrogen oxides, Pollution sources, Grids(Coordinates), *Emission inventories, *National Acid Precipitation Assessment Program, Canada.

PB91-505610/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/007
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Weekday, temporal scenario Number 1.

Keywords: *Data file, *Stationary sources, *Air pollution, Mathematical models, USA, States(United States), Magnetic tapes, Pollution sources, Grids(Coordinates), Temporal distribution, Hydrocarbons, Nitrogen oxides, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505628/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/008
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Weekday, temporal scenario Number 1.

Keywords: *Data file, *Mobile pollutant sources, *Air pollution, Total suspended particulates, Magnetic tapes, USA, States(United States), Grids(Coordinate), Winter, Temporal distribution, Ammonia, Pollution sources, Mathematical models, Sulfur dioxide, Carbon monoxide, Sulfur oxides, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505636/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/009
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Weekday, temporal scenario Number 1.

Keywords: *Data file, *Stationary sources, *Air pollution, Total suspended particulates, USA, States(United States), Magnetic tapes, Mathematical models, Sulfur oxides, Carbon monoxide, Ammonia, Temporal distribution, Winter, Pollution sources, *Emission inventories, *National Acid Precipitation Assessment Program, Canada.

PB91-505644/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/010
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Saturday, temporal scenario Number 2.

Keywords: *Data file, *Mobile pollutant sources, *Air pollution, Mathematical models, Winter, Magnetic tapes, Pollution sources, States(United States), USA, Hydrocarbons, Nitrogen oxides, Grids(Coordinates), Temporal distribution, Exhaust emissions, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505651/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/011
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Saturday, temporal scenario Number 2.

Keywords: *Data file, *Stationary sources, *Air pollution, Mathematical models, Magnetic tapes, Pollution sources, Grids(Coordinates), States(United States), USA, Temporal distribution, Winter, Temporal distribution, Nitrogen oxides, Hydrocarbons, *Emission inventories, *National Acid Precipitation Assessment Program, Canada.

PB91-505669/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/012
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Saturday, temporal scenario Number 2.

Keywords: *Data file, *Mobile pollutant sources, *Air pollution, Mathematical models, Magnetic tapes, Pollution sources, Grids(Coordinates), Exhaust emissions, States(United States), USA, Total suspended particulates, Winter, Sulfur oxides, Carbon monoxide, Ammonia, Temporal distribution, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505677/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/013
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Saturday, temporal scenario Number 2.

Keywords: *Data file, *Stationary sources, *Air pollution, Mathematical models, Magnetic tapes, Pollution sources, Winter, Temporal distribution, Grids(Coordinates), USA, Sulfur oxides, Ammonia, Carbon monoxide, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505685/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/014
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical winter Sunday, temporal scenario Number 3.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Pollution sources, Grids(Coordinates), States(United States), USA, Exhaust emissions, Nitrogen oxides, Hydrocarbons, Temporal distribution, Winter, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505693/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/015
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Sunday, temporal scenario Number 3.

Keywords: *Data file, *Stationary sources, *Air pollution, Magnetic tapes, Mathematical models, Winter, Pollution sources, Grids(Coordinates), USA, States(United States), Temporal distribution, Hydrocarbons, Nitrogen oxides, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505701/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/016
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Sunday, temporal scenario Number 3.

Keywords: *Data file, *Mobile pollutant sources, *Air pollution, Magnetic tapes, Exhaust emissions, Mathematical models, Pollution sources, Temporal distribution, States(United States), Ammonia, Carbon monoxide, USA, Grids(Coordinates), Winter, Total suspended particulates, Sulfur oxides, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505719/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/017

System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Sunday, temporal scenario Number 3.

Keywords: *Data file, *Stationary sources, *Air pollution, Magnetic tapes, Mathematical models, Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, Pollution sources, Winter, States(United States), USA, Temporal-distribution, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505727/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/018
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Weekday, temporal scenario Number 10.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Pollution sources, Grids(Coordinates), States(United States), USA, Ammonia, Temporal distribution, Autumn, Total suspended particulates, Sulfur oxides, Carbon monoxide, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505735/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/019
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Saturday, temporal scenario Number 11.

Keywords: *Data file, *Mobile pollutant sources, *Air pollution, Magnetic tapes, Mathematical models, Autumn, Exhaust emissions, Pollution sources, States(United States), USA, Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Temporal distribution, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505743/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/020
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Saturday, temporal scenario Number 11.

Keywords: *Data file, *Stationary sources, *Air pollution, Magnetic tapes, Mathematical models, Pollution sources, Temporal distribution, USA, States(United States), Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Autumn, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505750/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/021
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Saturday, temporal scenario Number 11.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Pollution sources, Temporal distribution, Exhaust emissions, USA, States(United States), Grids(Coordinates), Autumn, Total suspended particulates, Sulfur oxides, Ammonia, Carbon monoxide, *Emission inventories, *National Acid Precipitation Assessment Program, Canada.

PB91-505768/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/022
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Saturday, temporal scenario Number 11.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Pollution sources, Autumn, USA, Temporal distribution, Grids(Coordinates), Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505776/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/023
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Sunday, temporal scenario Number 12.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Nitrogen oxides, Autumn, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Exhaust emissions, Pollution sources, Grids(Coordinates), Hydrocarbons, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505784/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/024
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Sunday, temporal scenario Number 12.

Keywords: *Data file, *Air pollution, *Stationary sources, Nitrogen oxides, Autumn, Magnetic tapes, Mathematical models, Pollution sources, USA, States(United States), Grids(Coordinates), Temporal distribution, Hydrocarbons, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505792/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/025
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Sunday, temporal scenario Number 12.

Keywords: *Data file, *Mobile pollutant sources, *Air pollution, Autumn, Magnetic tapes, Mathematical models, Pollution sources, Grids(Coordinates), Carbon monoxide, Ammonia, Exhaust emissions, Temporal distribution, USA, States(United States), Total suspended particulates, Sulfur oxides, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505800/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/026
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Sunday, temporal scenario Number 12.

Keywords: *Data file, *Air pollution, *Stationary sources, Autumn, Magnetic tapes, Mathematical models, Pollution sources, USA, States(United States), Temporal distribution, Grids(Coordinates), Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505818/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/027
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Weekday, temporal scenario Number 1.

Keywords: *Data file, *Air pollution, *Natural emissions, Winter, Magnetic tapes, Mathematical models, Roads, States(United States), Grids(Coordinates), Temporal distribution, Particles, Wind erosion, Dust, USA, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505826/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/028
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Saturday, temporal scenario Number 2.

Keywords: *Data file, *Air pollution, *Natural emissions, Winter, Magnetic tapes, Mathematical models, Wind erosion, Particles, Grids(Coordinates), Roads, Dust, USA, States(United States), Temporal distribution, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505834/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/029
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Winter Sunday, temporal scenario Number 3.

Keywords: *Data file, *Air pollution, *Natural emissions, Winter, Magnetic tapes, Mathematical models, USA, States(United States), Grids(Coordinates), Particles, Roads, Dust, Temporal distribution, Wind erosion, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505842/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/030
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Weekday, temporal scenario Number 4.

Keywords: *Data file, *Air pollution, *Natural emissions, Mathematical models, Magnetic tapes, Temporal distribution, Spring, Particles, Grids(Coordinates), USA, States(United States), Dust, Wind erosion, Roads, *National Acid Precipitation Assessment Programs, *Emission inventories, Canada.

PB91-505859/REB CP **T02**
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/031
System: IBM 3090; OS - TSO operating system. Approximate bytes: 71,726,967. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file includes annual emissions and operating data for U.S. point sources that emitted greater than 100 TPY at the plant level in base year 1985.

Keywords: *Data file, *Air pollution, *Point sources, Magnetic tapes, Operating, Industrial wastes, USA, States(United States), Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories.

PB91-505867/REB CP **T02**
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/032
System: IBM 3090; OS - TSO operating system. Approximate bytes: 992,970. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains annual emissions and facility data for Canadian point sources.

Keywords: *Data file, *Air pollution, *Point sources, Magnetic tapes, Pollution sources, Industrial wastes, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505875/REB CP **T02**
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/033
System: IBM 3090; OS - TSO operating system. Approximate bytes: 41,695,683. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains emissions and activity rate data for U.S. area source categories at the county level.

Keywords: *Data file, *Air pollution, Magnetic tapes, Pollution sources, USA, States(United States), *Area sources, *National Acid Precipitation Assessment Program, *Emission inventories.

PB91-505883/REB CP **T02**
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/034
System: IBM 3090; OS - TSO operating system. Approximate bytes: 236,408. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains annual emissions and activity data for Canadian area source categories.

Keywords: *Data file, *Air pollution, Magnetic tapes, Pollution sources, *Area sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505891/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/035
System: IBM 3090; OS - TSO operating system. Approximate bytes: 692,346. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains annual emissions for U.S. source categories of natural particulate for unpaved roads, wind erosion and dust devils.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, USA, States(United States), Particles, Roads, Wind erosion, Dust, *National Acid Precipitation Assessment Program, *Emission inventories.

PB91-505909/REB CP **T02**
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/036
System: IBM 3090; OS - TSO operating system. Approximate bytes: 14,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains the annual emissions data for Canadian natural particulate sources of paved and unpaved roads and wind erosion.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, Particles, Roads, Wind erosion, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505917/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/037
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Weekday, temporal scenario Number 4.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Spring, Temporal distribution, USA, States(United States), Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505925/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/038
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,78,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and

in hourly resolution for the typical Spring Weekday, temporal scenario Number 4.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Spring, Temporal distribution, USA, States(United States), Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505933/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/039
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Weekday, temporal scenario Number 4.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Exhaust emissions, Magnetic tapes, Mathematical models, Temporal distribution, Spring, Pollution sources, USA, States(United States), Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505941/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/040
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Weekday, temporal scenario Number 4.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Spring, USA, States(United States), Temporal distribution, Grids(Coordinates), Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505958/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/041
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Saturday, temporal scenario Number 5.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Exhaust emissions, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Hydrocarbons, Nitrogen oxides, Grids(Coordinates), Spring, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505966/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/042
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Saturday, temporal scenario Number 5.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Spring, Grids(Coordinates), Pollution sources, Hydrocarbons, Nitrogen oxides, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505974/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/043
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Saturday, temporal scenario Number 5.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Exhaust emissions, Temporal distribution, USA, States(United States), Total suspended particulates, Grids(Coordinates), Pollution sources, Sulfur oxides, Carbon monoxide, Spring, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505982/REB CP **T02**
NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/044
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Saturday, temporal scenario Number 5.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Pollution sources, Ammonia, Grids(Coordinates), Spring, Total suspended particulates, Sulfur oxides, Carbon monoxide, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-505990/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/045
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Sunday, temporal scenario Number 6.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Exhaust emissions, USA, States(United States), Temporal distribution, Spring, Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506006/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/046
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Sunday, temporal scenario Number 6.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Spring, Temporal distribution, USA, States(United States), Grids(Coordinates), Pollution sources, Hydrocarbons, Nitrogen oxides, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506014/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/047
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Sunday, temporal scenario Number 6.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Exhaust emissions, Mathematical models, Temporal distribution, Spring, USA, States(United States), Grids(Coordinates), Pollution sources, Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506022/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/048
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in

the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Sunday, temporal scenario Number 6.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Spring, Grids(Coordinates), Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506030/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/049
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Weekday, temporal scenario Number 7.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Summer, Temporal distribution, USA, States(United States), Grids(Coordinates), Hydrocarbons, Pollution sources, Nitrogen oxides, Exhaust emissions, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506048/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/050
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Weekday, temporal scenario Number 7.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Summer, Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Pollution sources, *National Acid Precipitation Assessment Programs, *Emission inventories, Canada.

PB91-506055/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/051
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Weekday, temporal scenario Number 7.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Exhaust emissions, Temporal distribution, USA, States(United States), Summer, Grids(Coordinates), Pollution sources, Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506063/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/052
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Weekday, temporal scenario Number 7.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Summer, Grids(Coordinates), Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506071/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/053
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Saturday, temporal scenario Number 8.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Summer, Exhaust emissions, Temporal distribution, USA, States(United States), Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506089/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/054
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Saturday, temporal scenario Number 8.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Summer, Temporal distribution, USA, States(United States), Grids(Coordinates), Nitrogen oxides, Hydrocarbons, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506097/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/055
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Saturday, temporal scenario Number 8.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Summer, Magnetic tapes, Total suspended particulates, Mathematical models, Temporal distribution, USA, Exhaust emissions, States(United States), Grids(Coordinates), Sulfur oxides, Carbon monoxide, Ammonia, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506105/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/056
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Saturday, temporal scenario Number 8.

Keywords: *Data file, *Air pollution, *Stationary sources, Summer, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Grids(Coordinates), Pollution sources, Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506113/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/057
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Sunday, temporal scenario Number 9.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Exhaust emissions, Mathematical models, Temporal distribution, USA, States(United States), Grids(Coordinates), Pollution sources, Nitrogen oxides, Hydrocarbons, Summer, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506121/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/058

System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Sunday, temporal scenario Number 9.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Summer, Temporal distribution, USA, States(United States), Grids(Coordinates), Pollution sources, Nitrogen oxides, Hydrocarbons, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506139/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/059
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Sunday, temporal scenario Number 9.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Exhaust emissions, Mathematical models, Summer, Temporal distribution, USA, States(United States), Grids(Coordinates), Pollution sources, Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506147/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/060
System: IBM 3090; OS - TSO operating system. Approximate bytes: 122,567,760. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Sunday, temporal scenario Number 9.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Summer, Grids(Coordinates), Pollution sources, Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506154/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/061
System: IBM 3090; OS - TSO operating system. Approximate bytes: 220,147,680. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Weekday, temporal scenario Number 10.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Exhaust emissions, Autumn, Temporal distribution, USA, States(United States), Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506162/REB CP **T03**
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/062
System: IBM 3090; OS - TSO operating system. Approximate bytes: 221,789,280. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T03.

The data file contains Hydrocarbon, Hydrocarbon Species, NOx, NO and NO2 data for nonmobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Weekday, temporal scenario Number 10.

Keywords: *Data file, *Air pollution, *Stationary sources, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Autumn, Grids(Coordinates), Hydrocarbons, Nitrogen oxides, Pollution sources, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506170/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/063
System: IBM 3090; OS - TSO operating system. Approximate bytes: 121,660,560. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains Particulate, Particulate Species, SO2, CO, NH3 and SO4 data for mobile sources in the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Weekday, temporal scenario Number 10.

Keywords: *Data file, *Air pollution, *Mobile pollutant sources, Magnetic tapes, Mathematical models, Exhaust emissions, Temporal distribution, USA, States(United States), Autumn, Grids(Coordinates), Total suspended particulates, Sulfur oxides, Carbon monoxide, Ammonia, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506188/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/064
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Saturday, temporal scenario Number 5.

Keywords: *Data file, *Air pollution, *Natural emissions, Spring, Magnetic tapes, Mathematical models, USA, States(United States), Particulates, Roads, Wind erosion, Dust, Grids(Coordinates), Temporal distribution, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506196/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/065
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Spring Sunday, temporal scenario Number 6.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, Mathematical models, USA, States(United States), Temporal distribution, Roads, Wind erosion, Dust, Spring, Grids(Coordinates), Particulates, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506204/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/066
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Weekday, temporal scenario Number 7.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Summer, Grids(Coordinates), Roads, Wind erosion, Dust, *Natural Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506212/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/067
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Saturday, temporal scenario Number 8.

Keywords: *Data file, *Air pollution, *Natural emissions, Particulates, Magnetic tapes, Mathematical models, Temporal distribution, USA, States(United States), Grids(Coordinates), Summer, Dust, Roads, Wind erosion, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506220/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/068
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).

Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Summer Sunday, temporal scenario Number 9.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, Mathematical models, Summer, Temporal distribution, USA, States(United States), Grids(Coordinates), Wind erosion, Roads, Dust, Particulates, *Natural Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506238/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/069
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Weekday, temporal scenario Number 10.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, Mathematical models, USA, Particulates, States(United States), Autumn, Temporal distribution, Grids(Coordinates), *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506246/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/070
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Saturday, temporal scenario Number 11.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, Mathematical models, Particulates, USA, States(United States), Temporal distribution, Autumn, Grids(Coordinates), Wind erosion, Roads, Dust, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506253/REB CP **T02**
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985. Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
30 Sep 89, mag tape EPA/DF/MT-91/071
System: IBM 3090; OS - TSO operating system. Approximate bytes: 126,262,080. Other formats available as PB91-119669 (Paper Copy).
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02.

The data file contains particulate and particulate species data for sources unpaved roads, wind erosion and dust devils for the U.S. and Canada formatted for model input on grids 1/4 degree longitude by 1/6 degree latitude and in hourly resolution for the typical Fall Sunday, temporal scenario Number 12.

Keywords: *Data file, *Air pollution, *Natural emissions, Magnetic tapes, Mathematical models, Autumn, Temporal distribution, USA, States(United States), Grids(Coordinates), Particulates, Dust, Wind erosion, Dust, *National Acid Precipitation Assessment Program, *Emission inventories, Canada.

PB91-506295/REB CP **D02**
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers). Data file.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
6 Feb 90, 3 diskettes EPA/DF/DK-91/073
System: IBM/PC AT; MS DOS operating system. Other formats available as PB91-133314 (5 Volume Set - Paper Copy).
The datafile is contained on three 1.2M, 5 1/4 inch diskettes, high density. File format: ASCII.

The cost results for all the technologies presented in the report entitled, 'Retrofit Costs for SO2 and NOx Control Options at Coal-Fired Plants', are available in three DBASE III+ files. Disks 1 and 2 are high density diskettes which contain the following: plant name, technology, boiler number, capacity in megawatts, capacity factor, removal efficiency for both SO2 and NOx removed per year, tons of NOx removed per year, capital cost in dollars, annual cost in dollars, dollars per kilowatt, mills per kilowatt hour, dollars per ton of SO2 removed and dollars per ton of NOx removed. Disk 1 is in current 1988 dollars, and Disk 2 is in constant 1988 dollars. Disk 3 contains a third DBASE file (200.DBF) with general plant boiler and company information based on Department of Energy Form 767 data. It also contains an ASCII file (README.ASC) with a list of abbreviations used in all three database files. The cost result database can be used to estimate total costs and emissions for individual or combined control technologies for the 200 plants presented in the report.

Keywords: *Data file, *Air pollution control, *Retrofitting, *Air pollution economics, Diskettes, Site surveys, Cost estimates, Sulfur dioxide, Nitrogen oxides, Combustion products, Performance evaluation, State government, Coal preparation, Calcium oxides, Limestone, Injection, Spray drying, Afterburning, Catalysis, Coal fired power plants, Flue gas desulfurization.

PB91-506469/REB CP **D02**
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers). Model-Simulation.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
29 Oct 90, 1 diskette* EPA/SW/DK-91/074
System: IBM PC/AT; MS DOS operating system, 640K. Language: FORTRAN and C. Other formats available as PB91-506477 (Executable Model and Source Model).
The software is contained on one 1.2M, 5 1/4 inch diskette, high density. File format: ASCII. Price includes documentation, PB91-133512 and PB91-133520.

The Integrated Air Pollution Control System (IAPCS) Cost Model is an IBM PC cost model that can be used to estimate the cost of installing SO2, NOx, and particulate matter control systems at coal-fired utility electric generating facilities. The model integrates various combinations of the following technologies: physical coal cleaning, coal switching, overfire air/low NOx burners, natural gas reburning, LIMB, ADVACATE, electrostatic precipitator, fabric filter, gas conditioning, wet lime or limestone FGD, lime spray drying/duct spray drying, dry sorbent injection, pressurized fluidized bed combustion, integrated gasification combined cycle, and pulverized coal burning boiler. The model generates capital, annualized, and unitized pollutant removal costs in either constant or current dollars for any year.

Keywords: *Models-simulation, *Software, *Coal fired power plants, *Air pollution control equipment, *Cost estimates, Particulates, Sulfur dioxide, Nitrogen oxides, Stationary sources, Combustion, Diskettes, Integrated Air Pollution Control System.

PB91-506477/REB CP **D03**
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers). Model-Simulation.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
29 Oct 90, 3 diskettes* EPA/SW/DK-91/075
System: IBM PC/AT; MS DOS operating system, 640K. Language: FORTRAN and C. Other formats available as PB91-506469 (Executable Model).
The software is contained on three 1.2M, 5 1/4 inch diskettes, high density. File format: ASCII. Price includes documentation, PB91-133512, PB91-133520, and PB91-133538.

The Integrated Air Pollution Control System (IAPCS) Cost Model is an IBM PC cost model that can be used to estimate the cost of installing SO2, NOx, and particulate matter control systems at coal-fired utility electric generating facilities. The model integrates various combinations of the following technologies: physical coal cleaning, coal switching, overfire air/low NOx burners, natural gas reburning, LIMB, ADVACATE, electrostatic precipitator, fabric filter, gas conditioning, wet lime or limestone FGD, lime spray drying/duct spray drying, dry sorbent injection, pressurized fluidized bed combustion, integrated gasification combined cycle, and pulverized coal burning boiler. The model generates capital, annualized, and unitized pollutant removal costs in either constant or current dollars for any year.

Keywords: *Models-simulation, *Software, *Coal fired power plants, *Air pollution control equipment, *Cost estimates, Particulates, Sulfur dioxide, Nitrogen oxides, Stationary sources, Combustion, Diskettes, Integrated Air Pollution Control System.

PB91-506816/REB CP **T02**
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses. Data file.
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
1988, mag tape* EPA/DF/MT-91/077
System: IBM 3090; MVS/XA operating system. Approximate bytes: 4,629,520. The data are derived as a subset of the 1988 Toxic Release Inventory reporting requirements. See also PB89-186118 and PB90-502030.
Available in 9-track ASCII character set, 1600 bpi. For 6250 bpi, the price is T02. Documentation is on a file.

Section 313 of the Emergency Planning and Community Right-to-Know Act (also known as Title III) of the Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) requires EPA to establish a National Inventory of toxic chemical emissions from certain facilities. The list of toxic chemicals subject to reporting consisted initially of chemicals listed for similar reporting purposes by the States of New Jersey and Maryland. There are over 300 chemicals and categories on these lists. The reporting requirement applies to owners and operators of facilities that have 10 or more full-time employees, that are in Standard Industrial Classification (SIC) codes 20 through 39 (i.e., manufacturing facilities) and that manufacture (including importing), process or otherwise use a listed toxic chemical in excess of specified threshold quantities. The database contains only the name, location and type of business of facilities that have been reported for 1988.

Keywords: *Data file, *Industrial wastes, *Toxic substances, *Chemical effluents, *Pollution regulations, Inventories, Magnetic tapes, Standard Industrial Classification, Listings, Emergency Planning and Community Right-to-Know Act, Superfund Amendments and Reauthorization Act of 1986.

PB91-506964/REB CP **D02**
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers). Data file.
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Jan 91, 1 diskette EPA/DF/DK-91/078
System: IBM-PC; dBase III operating system. Supersedes PB90-501479.
The datafile is contained on one 360K, 5 1/4 inch diskette, double density. File format: ASCII. Documentation may be ordered separately as PB91-110502.

This is the disk based version of the Office of Toxic Substances Consolidated list of chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and SARA

Section 302 Extremely Hazardous Substances, as well as CERCLA Hazardous Substances. Title III is also known as the Emergency Planning and Community Right to Know Act. The disks are designed to generate either a printout or a dBase III file from any IBM or IBM compatible system.

Keywords: *Data file, *Chemical compounds, *Hazardous materials, *Toxic substances, *Waste management, Listings, Diskettes, Superfund, Emergency planning, *Superfund Amendments and Reauthorization Act of 1986, *Emergency Planning and Community Right to Know Act, Comprehensive Environmental Response Compensation and Liability Act.

PB91-592000/REB Subscription$5,320.00
Hazardous Waste Data Management System Extract Tape. Data file.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
15 Mar 91, mag tape*
System: IBM 3090-600S; MVS/XA operating system. File format: Unlabeled. Approximate bytes: 148,570,340. Supersedes PB90-591300.
Available on subscription, U.S., Canada and Mexico price $5,320; price for others $10,640. Issued quarterly. Available in 9-track EBCDIC character set, 1600 bpi. The 6250 bpi price is $5,320. Also available individually; order number PB91-592001, price T12 for either 1600 or 6250 bpi. Documentation may be ordered separately as PB91-156737 and PB91-156745.

The file contains data compiled for the Resource Conservation and Recovery Act, using the Hazardous Waste Data Management System (HWDMS) database. Notification of Regulated Waste Activity, EPA Form 8700-12 was used to collect the data. The file was updated with information compiled from the Application for a Hazardous Waste Permit-Part A, EPA form 8700-23. The data includes each facility name, EPA Identification number, addresses, owner and operator information, facility contact name and phone number. The data also indicate whether a facility is a generator, treatment/storer/disposer, and/or transporter of hazardous waste. Also included is a listing of wastes handled, taken from 40CFR Pt. 261, SIC codes, Permit Process Codes, Permit Issuance data, and non-sensitive compliance and enforcement data. Data is included for all Regions and states except for Mississippi, which has already been implemented in RCRIS. PLEASE NOTE: The computer tape product consists of two separate tape files: the Hazardous Waste Data Management System (HWDMS) database, and the Resource Conservation and Recovery Information System (RCRIS) database. RCRIS is replacing HWDMS as the official RCRA notification database. During the first year of RCRIS implementation, both systems will be operational. As a state converts to RCRIS from HWDMS, the HWDMS data for that state is archived; the current plan is to archive all data that is stored in HWDMS by the end of 1991. In order to have a complete record of all RCRA notification data, the User must have both tapes.

Keywords: *Data file, *Hazardous materials, *Information systems, *Waste management, Magnetic tapes, Pollution regulations, Waste treatment, Waste disposal, Waste storage, Permits, Information transfer, States(United States), Compliance, Law enforcement, State government, Standard industrial classification, Regional analysis, Mississippi, *Hazardous Waste Data Management System, *Resource Conservation and Recovery Information System, Resource Conservation and Recovery Act.

PB91-904200/REB Subscription
EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin. Quarterly.
Environmental Protection Agency, Washington, DC. Office of Administration.
1991,4 issues
Supersedes PB90-904200.
Paper copy available on Subscription, U.S., Canada, and Mexico price $120.00/year; all others $240.00. Single copies also available.

EPA Publications Bibliography is a quarterly abstract bulletin containing the abstracts, corporate source, subject, contract number and title indexes. The fourth issue of the year contains bibliographic citations with abstracts for the proceeding quarter and cumulative indexes for the calendar year.

Keywords: *Bibliographies, *Air pollution, *Water pollution, Abstracts, Subject indexing, Authors, Technical reports, Regulations, Standards, Waste disposal, Public health, *Environmental protection, Air quality maintenance, Air pollution effects.

PB91-911600/REB Subscription
Pesticide Compact Label File - 1990 Updates. Irregular repts.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1991, open series
Supersedes PB90-911600.
Microfiche available on subscription, U.S., Canada, and Mexico price $140/year; all others 280.00. Basic set available as PB90-911699.

Photographs of updated and new pesticide labels plus updated index to the entire Compact Label File. Contains a collection of information on registered pesticide labels. Information includes active ingredients and percentages of same; common name of active chemicals, sites and pests for usage, dosage and safety information. The subscription update service provides current updates to the manual (base set).

Keywords: *Documentation, *Pesticides, Photographs, Microfilm, Labels, Information retrieval, Indexes(Documentation).

PB91-911699/REB MF**$1450.00**
Compact Label File - 1991 (Fiche 1 - 4833).
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1991, 4833p
Supersedes PB90-911699.
Demand item. Updates also available on subscription as PB91-911600.

Photographs of pesticide labels plus updated index to the entire compact label file. The 1991 file contains fiche No. 1 - No. 4833 plus the updated index.

Keywords: *Pesticides, *Labels, Photographs, Indexes(Documentation), Data storage devices, Microfilm.

PB91-921204/REB PC **A16**/MF **A02**
Progress Toward Implementing Superfund. Fiscal Year 1989. Report to the Congress (Final).
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Dec 90, 369p* EPA/540/8-90/017
Supersedes PB91-921201. See also PB90-249442.
Paper copy available on Standing Order, deposit account required (minimum deposit $100 U.S., Canada, and Mexico; all others $200). Single copies also available in paper copy or microfiche.

The EPA's Annual Report includes the progress made by the Agency in implementing the national hazardous waste law and its amendments (CERCLA and SARA). The reports provide an overall perspective on progress, contain information that Congress specifically requested, and an evaluation of newly developed feasible and achieveable permanent treatment technologies.

Keywords: *National government, *Hazardous materials, *Waste disposal, *Pollution control, Guidelines, Regulations, Waste treatment, Removal, Law enforcement, Contract administration, Local government, Citizen participation, Requirements, Statutes, *Superfund, Record of decision, Contract awards.

PB91-921205/REB PC **A14**/MF **A02**
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Feb 91, 307p* EPA/540/P-91/001, OSWER DIRECTIVE-9355.3-11
Paper copy available on Standing Order, deposit account required (minimum deposit $100 U.S., Canada, and Mexico; all others $200). Single copies also available in paper copy or microfiche.

The study aids in the development of methodologies and tools to assist in streamlining the Remedial Investigations/Feasibility Studies (RI/FS) and selection of remedy process for landfills. The study: (1) develops tools to assist in scoping the RI/FS for municipal landfill sites, (2) defines strategies for characterizing municipal landfill sites that are on the NPL, and (3) identifying practicable remedial action alternatives for addressing these types of sites.

Keywords: *Hazardous materials, *Waste disposal, *Earth fills, *Municipalities, Investigations, Sites, Technical assistance, Engineering, Water pollution control, Cost effectiveness, Containment, Flushing, Regulations, *Superfund, Remedial action, Alternative planning.

PB91-921206/REB PC **A07**/MF **A01**
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Aug 90, 148p EPA/540/G-90/007, OSWER DIRECTIVE-9355.4-01
Paper copy available on Standing Order, deposit account required (minimum deposit $200 U.S., Canada, and Mexico; all others $400). Single copies also available in paper copy or microfiche.

The document describes the recommend approach for evaluating and remediating Superfund sites with PCB contamination. It should be used as aguide in the investigation and remedy selection process for PCB-contaminated Superfund sites. The guidance provides preliminary remediation goals for various media that may be contaminated and identifies other considerations important to ensuring protection of human health and the environment. In addition, potential applicable or relevant and appropriate requirements (ARARs) and 'to-be-considered' criteria pertinent to Superfund sites with PCB contamination and their integration into the RI/FS and remedy selection process are summarized. The guidance also describes how to develop remedial alternatives for PCB contaminated materials that are consistent with Superfund program expectations and ARARs. To identify the areas for which a response action should be considered, starting point concentrations (preliminary cleanup goals) for each media are identified.

Keywords: *Public health, *Hazardous materials, *Pollution control, Field tests, Sites, Guidelines, Regulations, Containment, Industrial wastes, Concentration(Composition), Liquids, Waste treatment, Water pollution, Environmental transport, Ground water, Solvent extraction, Incinerators, Dechlorination, Biodeterioration, *Superfund, Remedial action, *Polychlorinated biphenyl, Cleanup.

PB91-921208/REB PC **A12**/MF **A02**
Guidance for Data Useability in Risk Assessment. Interim Report.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Oct 90, 272p EPA/540/G-90/008
Paper copy available on Standing Order, deposit account required (minimum deposit $200 U.S., Canada, and Mexico; all others $400). Single copies also available in paper copy or microfiche.

The Environmental Protection Agency has established a Data Useability Workgroup to develop national guidance for minimum data quality requirements to increase the useability of environmental analytical data in the cleanup of hazardous waste sites under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended in the Superfund Amendments and Reauthorization Act of 1986 (SARA). The guidance manual prvides direction for planning and assessing analytical data collection activities for the baseline human health risk assessment, conducted as part of the remedial investigation (RI) process. The guidance does not address the use of environmental data for purposes other than baseline risk asssessment for human health.

Keywords: *Hazardous materials, *Public health, *Data acquisition, *Management planning, Manuals, Sampling, Guidelines, Instructions, Quality assurance, Removal, Data management, Detection, Selection, Requirements, Exposure, Toxicity, *Superfund, *Risk assessment, Remedial action, Comprehensive Environmental Response Compensation and Liability Act of 1980.

PB91-921312/REB PC **A02**/MF **A01**
Guidance for Data Useability in Risk Assessment.
Fact sheet.
Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
Sep 90, 8p EPA/9285.7-05/FS
Paper copy available on Standing Order, deposit account required (minimum deposit $150 U.S., Canada, and Mexico; all others $300). Single copies also available in paper copy or microfiche.

EPA is establishing national guidance for minimum data quality requirements to optimize the useability of data collected under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Data useability is the process of assuring or determining that the quality of data generated meets the intended use. The guidance is designed to provide data users with a nationally-consistent basis for making decisions about the minimum quality and quantity of environmental analytical data that are sufficient to support Superfund decisions, regardless of which parties conduct the investigation. EPA workgroups are defining the current uses and associated quality requirements of Superfund data, and developing minimum requirements for each data use category. The fact sheet provides an overview of Guidance for Data Useability in Risk Assessment (EPA/540/G-90/008), highlights key points of the manual, and details where additional guidance is found.

Keywords: *Public health, *Hazardous materials, *Data acquisition, *Management planning, Manuals, Sampling, Instructions, Quality assurance, Guidelines, Concentration(Composition), Toxicity, Sites, Exposure, Detection, Decision making, *Superfund, *Risk assessment, Comprehensive Environmental Response Compensation and Liability Act of 1980, Chemicals.

AD-A230 429/3/REB PC **A13**/MF **A02**
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
Final rept. 1 Aug 88-24 Jul 89.
Corps of Engineers North Atlantic, Baltimore, MD. Construction Div.
W. C. Wickboldt. Jun 90, 289p Rept no. CENAB-CO/HTW/90-1/EPA(S)-VOL-1
Contract DACW-45-88-C-0213
See also Volume 2, AD-A230 430.

The Lansdowne radioactive residence complex and 250' of municipal sewer became contaminated during the period 1924-1944 by radium processing. Clean-up of the site necessitated the removal of contaminated rubble generated by building and sewer dismantlement, and of radioactive soil that became contaminated because waste products from the radium processing activity were buried in the ground around the site. Prior to remediation, radium levels in the soil ranged as high as 700 pCi/g; following remediation, radium levels had been reduced to no greater than 5 pCi/g above the local background of 2.5 pCi/g. Following removal of contamination, the site was backfilled to near original grade and restored as a grassed lot. A replacement sewer line was constructed. (MM)

Keywords: Cleaning, Contamination, Corrections, Processing, Radioactivity, Radium, Removal, Replacement, Sewers, Sites, Soils, Wastes, Radium 226, Borrow material, Lansdowne(Pennsylvania), Envirocare disposal facility(Utah), Superfund sites, *Radiation hazard removal, Nuclear waste clean-up, *Radioactive site remediation, Hazardous and toxic waste clean-up, Decontamination, Radiation dosage, Health physics, Ionizing radiation, Hazardous materials, Nuclear radiation, Half life, Radium processing, Residentials section, *Hazardous wastes.

DE91002995/REB PC **A04**/MF **A01**
Department of Energy, Washington, DC.
Guidance document for prepermit bioassay testing of low-level radioactive waste.
Lawrence Livermore National Lab., CA.
S. L. Anderson, and F. L. Harrison. Nov 90, 60p UCRL-ID-105266, EPA-520/1-90-012
Contract W-7405-ENG-48
Sponsored by Department of Energy, Washington, DC.

In response to the mandate of Public Law 92-532, the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972, as amended, the Environmental Protection Agency (EPA) has developed a program to promulgate regulations and criteria to control the ocean disposal of radioactive wastes. The EPA seeks to understand the mechanisms for biological response of marine organisms to the low levels of radioactivity that may arise from the release of these wastes as a result of ocean-disposal practices. Such information will play an important role in determining the adequacy of environmental assessments provided to the EPA in support of any disposal permit application. Although the EPA requires packaging of low-level radioactive waste to prevent release during radiodecay of the materials, some release of radioactive material into the deep-sea environment may occur when a package deteriorates. Therefore, methods for evaluating the impact on biota are being evaluated. Mortality and phenotypic responses are not anticipated at the expected low environmental levels that might occur if radioactive materials were released from the low-level waste packages. Therefore, traditional bioassay systems are unsuitable for assessing sublethal effects on biota in the marine environment. The EPA Office of Radiation Programs (ORP) has had an ongoing program to examine sublethal responses to radiation at the cellular level, using cytogenetic end points. This technical guidance report represents prepermit bioassay procedures that potentially may be applicable to the assessment of effects from a mixture of radionuclides that could be released from a point source at the ocean bottom. Methodologies along with rationale and a discussion of uncertainty are presented for the sediment benthic bioassay protocols identified in this report.

Keywords: Aquatic Organisms, *Low-Level Radioactive Wastes, Aquatic Ecosystems, Bioassay, *Biological Radiation Effects, Casks, Environmental Exposure, Genetics, Marine Disposal, Mortality, Radiation Effects, Radioactive Waste Management, Risk Assessment, Seas, Toxicity, EDB/052002, EDB/560152, Phenotype.

DE91005910/REB PC **A08**/MF **A01**
Department of Energy, Washington, DC.
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
Environmental Monitoring Systems Lab., Las Vegas, NV.
May 90, 154p DOE/DP/00539-062, EPA-600/4-90/016
Contracts AI08-86NV10522, AI08-76DP00539
Sponsored by Department of Energy, Washington, DC.

This report describes the Offsite Radiation Safety Program conducted during 1989 by the Environmental Protection Agency's (EPA's) Environmental Monitoring Systems Laboratory-Las Vegas (EMSL-LV). This laboratory operates an environmental radiation monitoring program in the region surrounding the Nevada Test Site (NTS) and at former test sites in Alaska, Colorado, Mississippi, Nevada, and New Mexico. The surveillance program is designed to measure levels, and trends of radioactivity, if present, in the environment surrounding testing areas to ascertain whether the testing is in compliance with existing radiation protection standards, and to take action to protect the health and well being of the public in the event of any accidental release of radioactive contaminants. Offsite levels of radiation and radioactivity are assessed by sampling milk, water, and air; by deploying thermoluminescent dosimeters (TLDs) and using pressurized ion chambers (PICs); and by biological monitoring of both animals and humans. To implement protective actions, provide immediate radiation monitoring, and obtain environmental samples rapidly after any release of radioactivity, personnel with mobile monitoring equipment are placed in areas downwind from the test site prior to each test. Comparison of the measurements and sample analysis results with background levels and with appropriate standards and regulations indicated that there was no radioactivity detected offsite by the various EPA monitoring networks and no exposure above natural background to the population living in the vicinity of the NTS that could be attributed to NTS activities. Trends were evaluated in the Noble Gas and Tritium, Milk Surveillance, TLD, and PIC networks, and the Long-Term Hydrological Monitoring Program. 35 refs., 68 figs., 32 tabs.

Keywords: Air, Food, Milk, *Nevada Test Site, Plants, Rare Gases, Water, ALARA, Abandoned Sites, Alaska, Animals, Colorado, Environmental Exposure, Mississippi, Nevada, New Mexico, Public Health, Radiation Hazards, *Radiation Monitoring, Radiation Protection, Radioactive Materials, Thermoluminescent Dosimetry, Toxicity, Tritium, EDB/540130, EDB/540230, EDB/540330, *Environmental monitoring.

DE91724862/REB PC **A05**/MF **A01**
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
Eidgenoessische Technische Hochschule, Zurich (Switzerland).
P. Hasler. Oct 89, 93p ETDE-mf-1724862, BBW-PROC-(89)3, EPA-217.102
In German.
U.S. Sales Only.

This report contains an extensive literature review on palladium and its alloys. The emphasis is on the following topics: diffusion coefficient of hydrogen, hydrogen solubility of various palladium alloys, alternative hydrogen-permeating materials, characteristics of the palladium surface as well as the chemical behaviour and the stability of permeating materials. figs., refs. (ERA citation 16:000242)

Keywords: *Hydrogen, *Palladium, Copper, Experimental Data, Gaseous Diffusion, Palladium Alloys, Surface Properties, Ternary Alloy Systems, Yttrium, Tables(data), *Foreign technology, EDB/080800, Reviews, Permeability, Catalysts.

TITLE INDEX

Reports are listed alphabetically by title. A, An, and The at the beginning of a title are ignored in alphabetizing.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

Title	**PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations**
NTIS Order Number/Media Codes Price Codes	PB85-169697/REB PC A02/MF A01

TITLE INDEX

1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671 PC **A03**/MF **A01**

1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630 PC **A03**/MF **A01**

1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697 PC **A03**/MF **A01**

1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655 PC **A03**/MF **A01**

1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606 PC **A03**/MF **A01**

1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045 PC **A02**/MF **A01**

5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838 PC **A03**/MF **A01**

32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578 PC **A03**/MF **A01**

Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649 PC **A04**/MF **A01**

Acid Rain Control Options.
PB91-162545 PC **A03**/MF **A01**

Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732 PC **A03**/MF **A01**

Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740 PC **A03**/MF **A01**

Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324 PC **A02**/MF **A01**

Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453 PC **A12**/MF **A02**

Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885 PC **A07**

Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832 PC **A03**/MF **A01**

Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378 PC **A03**/MF **A01**

Adsorption of Organic Cations to Natural Materials.
PB91-144881 PC **A02**/MF **A01**

Advanced Screening Model for Complex Terrain Applications.
PB91-162693 PC **A03**/MF **A01**

Air Emissions from the Incineration of Hazardous Waste.
PB91-149641 PC **A03**/MF **A01**

Air Quality and Deposition (Chapter 3).
PB91-136606 PC **A04**/MF **A01**

Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420 PC **A05**/MF **A01**

Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136 PC **A02**/MF **A01**

Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712 PC **A03**/MF **A01**

Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949 PC **A03**/MF **A01**

Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270 PC **A09**/MF **A01**

Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441 PC **A08**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497 PC **A03**/MF **A01**

Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570 PC **A03**/MF **A01**

Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067 PC **A03**/MF **A01**

Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026 PC **A03**/MF **A01**

Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998 PC **A03**/MF **A01**

Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664 PC **A04**/MF **A01**

Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867 CP **T02**

Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859 CP **T02**

Approach for Estimating Global Landfill Methane Emissions.
PB91-149534 PC **A04**/MF **A01**

Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004 PC **A02**/MF **A01**

Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211 PC **A08**/MF **A01**

Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695 PC **A04**/MF **A01**

Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776 PC **A03**/MF **A01**

Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706 PC **A09**/MF **A02**

Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338 PC **A05**/MF **A01**

Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594 PC **A02**/MF **A01**

Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949 PC **A02**/MF **A01**

ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083 PC **A02**/MF **A01**

Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667 PC **A06**/MF **A01**

Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316 PC **A02**/MF **A01**

Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737 PC **A06**/MF **A01**

Bilateral Wastewater Land Treatment Research.
PB91-162636 PC **A02**/MF **A01**

Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865 PC **A03**/MF **A01**

Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560 PC **A03**/MF **A01**

Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625 PC **A03**/MF **A01**

Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025 PC **A02**/MF **A01**

Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679 PC **A09**/MF **A02**

Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060 PC **A02**/MF **A01**

BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622 PC **A03**/MF **A01**

Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548 PC **A02**/MF **A01**

Bromochloromethane: Health Advisory.
PB91-160572 PC **A03**/MF **A01**

Bromomethane: Drinking Water Health Advisory.
PB91-160614 PC **A03**/MF **A01**

TITLE INDEX

Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542 PC **A05**/MF **A01**

Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624 PC **A08**/MF **A01**

Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
PB91-159632 PC **A11**/MF **A02**

Catalog of Superfund Program Publications, FY-91.
PB91-144683 PC **A05**/MF **A01**

CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531 PC **A11**/MF **A02**

Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998 PC **A02**/MF **A01**

Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563 PC **A03**/MF **A01**

Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766 PC **A03**/MF **A01**

Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361 PC **A03**/MF **A01**

Chloromethane: Health Advisory.
PB91-160564 PC **A03**/MF **A01**

Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376 PC **A08**/MF **A01**

Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332 PC **A02**/MF **A01**

Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953 PC **A03**/MF **A01**

Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514 PC **A01**/MF **A01**

Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552 PC **A02**/MF **A01**

Compact Label File - 1991 (Fiche 1 - 4833).
PB91-911699 MF**$1450.00**

Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477 PC **A09**/MF **A01**

Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621 PC **A03**/MF **A01**

Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495 PC **A03**/MF **A01**

Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331 PC **A05**/MF **A01**

Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790 PC **A03**/MF **A01**

Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846 PC **A05**/MF **A01**

Concept of Presence Absence Testing.
PB91-162818 PC **A03**/MF **A01**

Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205 PC **A14**/MF **A02**

Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506 PC **A03**/MF **A01**

Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964 CP **D02**

Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758 PC **A03**/MF **A01**

Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431 PC **A03**/MF **A01**

Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109 PC **A03**/MF **A01**

Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911 PC **A03**/MF **A01**

Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639 PC **A02**/MF **A01**

Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758 PC **A02**/MF **A01**

Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537 PC **A02**/MF **A01**

Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865 PC **A03**/MF **A01**

Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420 PC **A03**/MF **A01**

Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453 PC **A03**/MF **A01**

Cross-Connection Control Manual.
PB91-145490 PC **A03**/MF **A01**

Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667 PC **A03**/MF **A01**

Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733 PC **A02**/MF **A01**

Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768 PC **A02**/MF **A01**

Dense Gas Removal from a Valley by Crosswinds.
PB91-146597 PC **A03**/MF **A01**

Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766 PC **A03**/MF **A01**

Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530 PC **A03**/MF **A01**

Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750 PC **A03**/MF **A01**

Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412 PC **A02**/MF **A01**

Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011 PC **A03**/MF **A01**

Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265 PC **A12**/MF **A02**

Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742 PC **A03**/MF **A01**

Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580 PC **A03**/MF **A01**

Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812 PC **A09**/MF **A02**

Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857 PC **A03**/MF **A01**

DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895 PC **A03**/MF **A01**

Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677 PC **A03**/MF **A01**

Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633 PC **A02**/MF **A01**

Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993 PC **A03**/MF **A01**

Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815 PC **A03**/MF **A01**

Drinking Water Criteria Document for Aldicarb.
PB91-142810 PC **A09**/MF **A01**

Drinking Water Criteria Document for Atrazine.
PB91-142794 PC **A07**/MF **A01**

Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396 PC **A09**/MF **A02**

Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877 PC **A14**/MF **A02**

Drinking Water Criteria Document for Lindane.
PB91-142851 PC **A09**/MF **A02**

Drinking Water Criteria Document for Methoxychlor.
PB91-143461 PC **A08**/MF **A01**

Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802 PC **A07**/MF **A01**

Drinking Water Criteria Document for Styrene.
PB91-143370 PC **A12**/MF **A02**

Drinking Water Criteria Document for Toluene.
PB91-143487 PC **A09**/MF **A01**

Drinking Water Criteria Document for Toxaphene.
PB91-143404 PC **A10**/MF **A02**

Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388 PC **A05**/MF **A01**

Drinking Water Criteria Document on Barium.
PB91-142869 PC **A08**/MF **A01**

Drinking Water Criteria Document on Carbofuran.
PB91-143412 PC **A06**/MF **A01**

Drinking Water Criteria Document on Chromium.
PB91-142844 PC **A09**/MF **A01**

Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836 PC **A08**/MF **A01**

Drinking Water Criteria Document on Selenium.
PB91-142828 PC **A09**/MF **A01**

Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832 PC **A03**/MF **A01**

Dynamics of Plasmid Transfer on Surfaces.
PB91-163816 PC **A02**/MF **A01**

Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460 PC **A08**/MF **A01**

Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986 PC **A03**/MF **A01**

Economies of Scale and Scope in Water Supply.
PB91-163519 PC **A03**/MF **A01**

Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626 PC **A03**/MF **A01**

Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091 PC **A03**/MF **A01**

Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029 PC **A03**/MF **A01**

Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873 PC **A03**/MF **A01**

Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824 PC **A02**/MF **A01**

Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600 PC **A03**/MF **A01**

Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647 PC **A03**/MF **A01**

Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808 PC **A02**/MF **A01**

Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662 PC **A03**/MF **A01**

Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757 PC **A03**/MF **A01**

Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956 PC **A03**/MF **A01**

Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543 PC **A02**/MF **A01**

Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741 PC **A03**/MF **A01**

Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449 PC **A02**/MF **A01**

Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086 PC **A02**/MF **A01**

Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840 PC **A02**/MF **A01**

Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575 PC **A03**/MF **A01**

Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308 PC **A03**/MF **A01**

Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881 PC **A03**/MF **A01**

Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in *Greenhouse-Grown Seedlings.*
PB91-146381 PC **A02**/MF **A01**

Effects of Wastewater Treatment and Seawater Dilution in *Reducing Lethal Toxicity of Municipal Wastewater to* Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781 PC **A03**/MF **A01**

Elliot Bay Action Program: 1988 Action Plan.
PB91-149583 PC **A06**/MF **A01**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators.
PB91-151472 PC **E99**/MF **E99**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480 PC **A03**/MF **A01**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final *Emission Test Report.*
PB91-151498 PC **A13**/MF **A02**

Emissions of Metals and Organics from Municipal *Wastewater Sludge Incinerators. Volume 3. Site 2 Final* Emission Test Report.
PB91-151506 PC **A12**/MF **A02**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514 PC **A02**/MF **A01**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522 PC **A06**/MF **A01**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530 PC **A13**/MF **A02**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548 PC **A09**/MF **A01**

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555 PC **A06**/MF **A01**

Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195 PC **A18**/MF **A03**

Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203 PC **A20**/MF **A03**

Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857 PC **A02**/MF **A01**

Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
PB91-148387 PC **A99**/MF **A04**

Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775 PC **A04**/MF **A01**

Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783 PC **A22**/MF **A03**

Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796 PC **A19**/MF **A03**

Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526 PC **A09**/MF **A01**

Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961 PC **A05**/MF **A01**

EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin.
PB91-904200 Subscription

Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800 PC **A03**/MF **A01**

Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320 PC **A05**/MF **A01**

Evaluation of an Atmospheric Corrosion Rate Monitor as a *Time-of-Wetness Meter.*
PB91-137034 PC **A03**/MF **A01**

Evaluation of Exposure Markers.
PB91-144675 PC **A06**/MF **A01**

Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522 PC **A03**/MF **A01**

Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972 PC **A02**/MF **A01**

Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503 PC **A03**/MF **A01**

Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423 PC **A03**/MF **A01**

Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169 PC **A02**/MF **A01**

Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567 PC **A03**/MF **A01**

Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634 PC **A02**/MF **A01**

Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to *2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.*
PB91-163659 PC **A03**/MF **A01**

Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133 PC **A03**/MF **A01**

Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743 PC **A02**/MF **A01**

Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598 PC **A02**/MF **A01**

Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784 PC **A03**/MF **A01**

Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622 PC **A04**/MF **A01**

Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774 PC **A03**/MF **A01**

Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741 PC **A02**/MF **A01**

Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493 PC **A03**/MF **A01**

Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857 PC **A03**/MF **A01**

Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840 PC **A03**/MF **A01**

Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357 PC **A02**/MF **A01**

Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529 PC **A03**/MF **A01**

Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075 PC **A03**/MF **A01**

Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845 PC **A02**/MF **A01**

Flexibility in Bacteriological Monitoring.
PB91-137166 PC **A03**/MF **A01**

Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675 PC **A03**/MF **A01**

Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177 PC **A02**/MF **A01**

Fluid Modeling Applied to Atmospheric Diffusion in Complex *Terrain.*
PB91-144717 PC **A03**/MF **A01**

Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407 PC **A02**/MF **A01**

Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602 PC **A03**/MF **A01**

Future of Expert Systems in the Environmental Protection Agency.
PB91-162727 PC **A02**/MF **A01**

Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317 PC **A07**/MF **A01**

*General Microbiology of RecA: Environmental and Evolu*tionary Significance.
PB91-163964 PC **A03**/MF **A01**

Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782 PC **A02**/MF **A01**

Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972 PC **A02**/MF **A01**

Geosynthetic Leachate Collection Systems.
PB91-162834 PC **A03**/MF **A01**

Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687 PC **A04**/MF **A01**

Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608 PC **A04**/MF **A01**

Great Lakes Demonstration Program, Section 108a.
PB91-148437 PC **A03**/MF **A01**

Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995 PC **A04**/MF **A01**

Guidance for Data Useability in Risk Assessment.
PB91-921312 PC **A02**/MF **A01**

Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208 PC **A12**/MF **A02**

Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865 PC **A02**/MF **A01**

Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508 PC **A12**/MF **A02**

Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360 PC **A03**/MF **A01**

Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345 PC **A03**/MF **A01**

Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466 PC **A08**/MF **A01**
PB91-921206 PC **A07**/MF **A01**

Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014 PC **A03**/MF **A01**

Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755 PC **A07**/MF **A01**

Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516 PC **A09**/MF **A02**

TITLE INDEX

Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987 PC **A07**/MF **A01**

Hazardous Waste Data Management System Extract Tape.
PB91-592000 Subscription$5,320.00

Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737 PC **A20**/MF **A03**

Health Advisory for Hexachloroethane.
PB91-159657 PC **A04**/MF **A01**

Health Advisory for 1,3-Dinitrobenzene.
PB91-159640 PC **A05**/MF **A01**

Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980 PC **A02**/MF **A01**

Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663 PC **A03**/MF **A01**

High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688 PC **A03**/MF **A01**

High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670 PC **A03**/MF **A01**

Histological and Histopathological Evaluation of the Testis.
PB91-164293 PC **A13**/MF **A02**

Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944 PC **A03**/MF **A01**

Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340 PC **A02**/MF **A01**

Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669 PC **A03**/MF **A01**

Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899 PC **A03**/MF **A01**

IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614 PC **A01**/MF **A01**

Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931 PC **A02**/MF **A01**

Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605 PC **A01**/MF **A01**

Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773 PC **A03**/MF **A01**

Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691 PC **A02**/MF **A01**

Immunotoxicology of Captive and Wild Birds.
PB91-137117 PC **A03**/MF **A01**

Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141 PC **A03**/MF **A01**

Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696 PC **A02**/MF **A01**

Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052 PC **A03**/MF **A01**

Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725 PC **A02**/MF **A01**

In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346 PC **A06**/MF **A01**

In vitro Assessment of Gamete Integrity.
PB91-162610 PC **A03**/MF **A01**

Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144 PC **A03**/MF **A01**

Incineration Research Facility.
PB91-145128 PC **A03**/MF **A01**

Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683 PC **A02**/MF **A01**

Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273 PC **A03**/MF **A01**

Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446 PC **A09**/MF **A01**

Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685 PC **A03**/MF **A01**

Injection Well Mechanical Integrity.
PB91-145631 PC **A06**/MF **A01**

Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477 CP **D03**

Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469 CP **D02**

Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512 PC **A04**/MF **A01**

Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520 PC **A10**/MF **A02**

Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538 PC **A07**/MF **A01**

Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923 PC **A02**/MF **A01**

Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618 PC **A03**/MF **A01**

Interim CERCLA Settlement Policy.
PB91-139329 PC **A03**/MF **A01**

Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337 PC **A03**/MF **A01**

ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733 PC **A03**/MF **A01**

Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452 PC **A03**/MF **A01**

Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964 PC **A02**/MF **A01**

Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078 PC **A03**/MF **A01**

Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527 PC **A03**/MF **A01**

Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
PB91-145920 PC **A03**/MF **A01**

Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353 PC **A06**/MF **A01**

Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699 PC **A04**/MF **A01**

Material Selection.
PB91-136978 PC **A02**/MF **A01**

Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613 PC **A02**/MF **A01**

Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774 PC **A02**/MF **A01**

Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782 PC **A02**/MF **A01**

Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027 PC **A11**/MF **A02**

Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307 PC **A15**/MF **A02**

Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792 PC **A03**/MF **A01**

Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644 PC **A03**/MF **A01**

Modal Aerosol Dynamics Modeling.
PB91-161729 PC **A13**/MF **A02**

Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436 PC **A03**/MF **A01**

Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642 PC **A03**/MF **A01**

Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630 PC **A03**/MF **A01**

Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923 PC **A02**/MF **A01**

Most Dilute Lake in the World.
PB91-144816 PC **A02**/MF **A01**

Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277 PC **A03**/MF **A01**

Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691 PC **A03**/MF **A01**

Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703 PC **A04**/MF **A01**

Municipal Settlements.
PB91-139311 PC **A03**/MF **A01**

Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531 PC **A03**/MF **A01**

Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155 PC **A02**/MF **A01**

NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875 CP **T02**

NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982 CP **T02**

NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883 CP **T02**

NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909 CP **T02**

NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985
PB91-505826 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693 CP **T03**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891 CP **T02**

NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586 CP **T03**

Naphthalene: Drinking Water Health Advisory.
PB91-160689 PC **A03**/MF **A01**

National Air Quality and Emissions Trends Report, 1989.
PB91-172247 PC **A07**/MF **A01**

National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443 PC **A21**/MF **A03**

National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435 PC **A09**/MF **A01**

National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300 PC **A10**/MF **A02**

National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222 PC **A07**/MF **A01**

National Stream Survey Database Guide.
PB91-141804 PC **A06**/MF **A01**

National Water Quality Inventory. 1988 Report to Congress.
PB91-145730 PC **A12**/MF **A02**

Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907 PC **A03**/MF **A01**

Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591 PC **A03**/MF **A01**

Neurotoxic Effects of Colchicine.
PB91-149658 PC **A03**/MF **A01**

New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158 PC **A02**/MF **A01**

Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285 PC **A04**/MF **A01**

Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042 PC **A03**/MF **A01**

Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523 PC **A06**/MF **A01**

Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487 PC **A03**/MF **A01**

NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854 PC **A05**/MF **A01**

NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870 PC **A07**/MF **A01**

NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680 PC **A06**/MF **A01**

NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672 PC **A05**/MF **A01**

o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598 PC **A03**/MF **A01**

Ongoing Research and Regulatory Development Projects.
PB91-161752 PC **A10**/MF **A02**

Optical Heterogeneity in Green Bay.
PB91-163501 PC **A02**/MF **A01**

Optimal Characterization of Structure for Prediction of Properties.
PB91-163584 PC **A03**/MF **A01**

ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482 PC **A03**/MF **A01**

Organic Chemical Transport to Groundwater.
PB91-137059 PC **A03**/MF **A01**

Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576 PC **A03**/MF **A01**

Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945 PC **A03**/MF **A01**

Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672 PC **A03**/MF **A01**

Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438 PC **A03**/MF **A01**

p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705 PC **A03**/MF **A01**

Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709 PC **A03**/MF **A01**

Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862 PC **A05**/MF **A01**

Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415 PC **A02**/MF **A01**

Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808 PC **A02**/MF **A01**

Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617 PC **A04**/MF **A01**

Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394 PC **A03**/MF **A01**

Pesticide Compact Label File - 1990 Updates.
PB91-911600 Subscription

Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528 PC **A02**/MF **A01**

Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
PB91-159673 PC **A02**/MF **A01**

Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536 PC **A02**/MF **A01**

Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681 PC **A03**/MF **A01**

Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PB91-145433 PC **A11**/MF **A02**

Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896 PC **A10**/MF **A02**

PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472 PC **A02**/MF **A01**

PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
PB91-148411 PC **A04**/MF **A01**

Policy for Managing Leachate at PCB Landfills.
PB91-139907 PC **A03**/MF **A01**

Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304 PC **A10**/MF **A02**

Polymer Manufacturing Industry - Enabling Document.
PB91-161745 PC **A08**/MF **A01**

Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3 PC **A13**/MF **A02**

Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
PB91-145847 PC **A04**/MF **A01**

Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711 PC **A08**/MF **A01**

Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312 PC **A04**/MF **A01**

Principal Components Analysis and Partial Least Squares Regression.
PB91-146373 PC **A03**/MF **A01**

Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701 PC **A03**/MF **A01**

Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st). Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549 PC**$95.00**/MF **E09**

Program Recommendations for State Section 313 Program Coordinators.
PB91-145698 PC **A05**/MF **A01**

Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204 PC **A16**/MF **A02**

Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572 PC **A10**/MF **A02**

Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018 PC **A03**/MF **A01**

Public-Private Partnership Case Studies: Profiles of Success in Providing Environmental Services.
PB91-145904 PC **A06**/MF **A01**

Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714 PC **A03**/MF **A01**

Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555 PC **A03**/MF **A01**

Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979 PC **A05**/MF **A01**

Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912 PC **A03**/MF **A01**

Quantification of Toxicological Effects for Alachlor.
PB91-143420 PC **A04**/MF **A01**

Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479 PC **A03**/MF **A01**

Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807 PC **A03**/MF **A01**

Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910 PC **A08**/MF **A01**

Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535 PC **A03**/MF **A01**

RCRA Orientation Manual 1990 Edition.
PB91-145888 PC **A10**/MF **A02**

RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840 PC **A03**/MF **A01**

Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656 PC **A10**/MF **A02**

Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704 PC **A03**/MF **A01**

Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834 PC **A02**/MF **A01**

Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873 PC **A03**/MF **A01**

Region 10 Environmental Indicators, FY 89 Summary.
PB91-136560 PC **A09**/MF **A01**

Regional Framework for Establishing Recovery Criteria.
PB91-146480 PC **A03**/MF **A01**

Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498 PC **A03**/MF **A01**

Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th), Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524 PC **A99**/MF **A04**

Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379 PC **A99**/MF **A04**

Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094 PC **A01**/MF **A01**

Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745 PC **A20**/MF **A03**

Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709 PC **A03**/MF **A01**

Results from the Stabilization Technologies Evaluated by the Site Program, New England Environmental Expo 90.
PB91-162479 PC **A03**/MF **A01**

Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952 PC **A03**/MF **A01**

Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295 CP **D02**

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants.
PB91-133314 PC **E99**/MF **E99**

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322 PC **A05**/MF **A01**

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330 PC **A19**/MF **A03**

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348 PC **A18**/MF **A03**

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355 PC **A23**/MF **A03**

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363 PC **A24**/MF **A03**

Review of Sources of Ground-Water Contamination from Light Industry.
PB91-145938 PC **A04**/MF **A01**

Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818 PC **A02**/MF **A01**

Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352 PC **A03**/MF **A01**

Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429 PC **A05**/MF **A01**

Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724 PC **A03**/MF **A01**

Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739 PC **A17**/MF **A03**

Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747 PC **A11**/MF **A02**

Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474 PC **A08**/MF **A01**

Seaming of Geosynthetics.
PB91-145151 PC **A02**/MF **A01**

Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571 PC **A03**/MF **A01**

Self-Consistent Deutschian ESP Model.
PB91-149518 PC **A05**/MF **A01**

Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722 PC **A05**/MF **A01**

Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826 PC **A03**/MF **A01**

Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790 PC **A02**/MF **A01**

Seven-Day Tests and Chronic Tests.
PB91-163592 PC **A01**/MF **A01**

Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720 PC **A02**/MF **A01**

Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651 PC **A03**/MF **A01**

SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110 PC **A02**/MF **A01**

Small Cost Recovery Referrals.
PB91-139006 PC **A02**/MF **A01**

Soil Bioventing Demonstration Project.
PB91-162628 PC **A03**/MF **A01**

Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817 PC **A04**/MF **A01**

Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907 PC **A03**/MF **A01**

Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980 PC **A03**/MF **A01**

Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012 PC **A03**/MF **A01**

Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456 PC **A02**/MF **A01**

Standardized Costs for Water Supply Distribution Systems.
PB91-162461 PC **A03**/MF **A01**

State Authorization Manual. Volume 1.
PB91-130211 PC **A03**/MF **A01**

State Authorization Manual. Volume 2. Appendices.
PB91-130229 PC **A99**/MF **A99**

State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609 PC **A07**/MF **A01**

Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118 PC **A03**/MF **A01**

Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994 PC **A03**/MF **A01**

Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550 PC **A03**/MF **A01**

Succeeding at Waste Minimisation.
PB91-162446 PC **A03**/MF **A01**

Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264 PC **A03**/MF **A01**

Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969 PC **A03**/MF **A01**

Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438 PC **A13**/MF **A02**

Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590 PC **A11**/MF **A02**

Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899 PC **A02**/MF **A01**

Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037 PC **A02**/MF **A01**

Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719 PC **A03**/MF **A01**

Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281 PC **A07**/MF **A01**

Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205 PC **A03**/MF **A01**

Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654 PC **A02**/MF **A01**

Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903 PC **A04**/MF **A01**

Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816 CP **T02**

Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665 PC **A13**/MF **A02**

Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458 PC **A13**/MF **A02**

Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511 PC **A03**/MF **A01**

Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568 PC **A03**/MF **A01**

Toxicological Mechanisms of Implantation Failure.
PB91-149765 PC **A03**/MF **A01**

Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951 PC **A03**/MF **A01**

Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003 PC **A02**/MF **A01**

Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915 PC **A03**/MF **A01**

Treatment Technology Background Document.
PB91-160556 PC **A12**/MF **A02**

Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915 PC **A03**/MF **A01**

Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648 PC **A03**/MF **A01**

Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707 PC **A03**/MF **A01**

U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717 PC **A03**/MF **A01**

Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404 PC **A03**/MF **A01**

Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759 PC **A05**/MF **A01**

UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365 PC **A03**/MF **A01**

Up and Running: New EPA Case History Database and Library System.
PB91-149617 PC **A01**/MF **A01**

Update of the Regulation and Policy Matrices Dated September 1988.
PB91-143081 PC **A03**/MF **A01**

Update on Building and Structure Decontamination.
PB91-145102 PC **A02**/MF **A01**

Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288 PC **A07**/MF **A01**

Urban Air Toxics Monitoring Program, 1989.
PB91-148262 PC **A13**/MF **A02**

Urban Airshed Model.
PB91-505578 CP **T18**

Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931 PC **A03**/MF **A01**

Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799 PC **A03**/MF **A01**

User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227 PC **A12**/MF **A02**

User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235 PC **A22**/MF **A03**

User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243 PC **A04**/MF **A01**

User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250 PC **A13**/MF **A02**

User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268 PC **A11**/MF **A02**

User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564 PC **A04**/MF **A01**

User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549 PC **A04**/MF **A01**

User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820 PC **A03**/MF **A01**

UV-B Effects on Terrestrial Plants.
PB91-146399 PC **A03**/MF **A01**

Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824 PC **A03**/MF **A01**

Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915 PC **A03**/MF **A01**

Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956 PC **A02**/MF **A01**

Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826 PC **A01**/MF **A01**

Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556 PC **A07**/MF **A01**

Water Quality Modeling in Distribution Systems.
PB91-130153 PC **A04**/MF **A01**

Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315 PC **A06**/MF **A01**

Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403 PC **A05**/MF **A01**

Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395 PC **A10**/MF **A02**

Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616 PC **A04**/MF **A01**

White Phosphorus Health Advisory.
PB91-161026 PC **A05**/MF **A01**

Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589 PC **A03**/MF **A01**

Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296 PC **A04**/MF **A01**

X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125 PC **A03**/MF **A01**

KEYWORD INDEX

Index entries in this section are selected to indicate important ideas and concepts presented in a report. When using the keyword index, be sure to look under terms narrower, broader, or related to a particular topic. Although some of the keywords are not selected from a controlled vocabulary of terms, most of them have been selected from the DoD, DoE, NASA, or NTIS controlled vocabularies. The entries are arranged by keyword and then by the NTIS order number.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

Keyword Term	**PLANTS (Botany)**
Title	PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations
NTIS Order Number/Media Code Price Code	PB85-169597/REB PC A02/MF A01

KEYWORD INDEX

2-AMINOFLUORENE
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

5-METHYLHEXANOIC ACID
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838

ABATEMENT
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136

ACARICIDES
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543

ACCOUNTABILITY
Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516

ACENAPHTHENE
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513

ACER MACROPHYLLUM
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685

ACETALDEHYDE
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

ACETONE
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

ACID NEUTRALIZING CAPACITY
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

ACID PRECIPITATION
National Stream Survey Database Guide.
PB91-141804

ACID RAIN
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709
Acid Rain Control Options.
PB91-162545

ACIDIFICATION
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572
National Stream Survey Database Guide.
PB91-141804
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527

ACOUSTIC REFLEX
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634

ACROLEIN
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612

ACRYLONITRILES
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398

ACTIVATED CARBON
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091

ACTIVATED CARBON TREATMENT
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

ADIPOSE TISSUE
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

ADIRONDACK LAKE
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

ADSORPTION
Adsorption of Organic Cations to Natural Materials.
PB91-144881

AEROSOLS
Modal Aerosol Dynamics Modeling.
PB91-161729

AGING (PHYSIOLOGY)
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449

AIR POLLTION ECONOMICS
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330

AIR POLLUTANTS
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594

AIR POLLUTION
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
PB91-148411
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534
Air Emissions from the Incineration of Hazardous Waste.
PB91-149641
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687
Ongoing Research and Regulatory Development Projects.
PB91-161752
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503
Advanced Screening Model for Complex Terrain Applications.
PB91-162693
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443
National Air Quality and Emissions Trends Report, 1989.
PB91-172247
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974
NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506154
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253
EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin.
PB91-904200

AIR POLLUTION ABATEMENT

Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737
Acid Rain Control Options.
PB91-162545

AIR POLLUTION CONTROL

Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri, Draft Report.
PB91-130203
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952
Material Selection.
PB91-136978
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144
Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
PB91-145920
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696
Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537
Acid Rain Control Options.
PB91-162545
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations. 1990.
PB91-168435
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295

AIR POLLUTION CONTROL EQUIPMENT

Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911
Self-Consistent Deutschian ESP Model.
PB91-149518
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477

AIR POLLUTION DETECTION

Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621
Urban Air Toxics Monitoring Program, 1989.
PB91-148262
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

AIR POLLUTION ECONOMICS

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295

AIR POLLUTION EFFECT (PLANTS)

Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506

AIR POLLUTION EFFECTS (ANIMALS)

Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment
PB91-149815
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578

Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709

AIR POLLUTION EFFECTS (HUMANS)
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
PB91-159632
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618
Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

AIR POLLUTION EFFECTS (PLANTS)
Air Quality and Deposition (Chapter 3).
PB91-136606
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460

AIR POLLUTION MONITORING
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357
Urban Air Toxics Monitoring Program, 1989.
PB91-148262
Urban Air Toxics Monitoring Program *Aldehyde Results*, 1989.
PB91-148288
Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338

AIR POLLUTION MONITORS
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

AIR POLLUTION SAMPLING
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589
Comparison of Measurements of Atmospheric Ammonia by *Filter Packs, Transition-Flow Reactors, Simple* and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final *Emission Test Report. Appendices.*
PB91-151548
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

AIR POLLUTION STANDARDS
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737

AIR QUALITY
Two Indoor Air Exposure Modeling Studies: CONTAM *Modeling Results, and Serial Correlation Effects.*
PB91-159707
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

AIR QUALITY DISPLAY MODEL
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

AIR SAMPLERS
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

AIR SAMPLES
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317

ALACHLOR
Quantification of Toxicological Effects for Alachlor.
PB91-143420

ALASKA
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109

ALDEHYDE DEHYDROGENASE
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

ALDEHYDES
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288

ALDICARB
Drinking Water Criteria Document for Aldicarb.
PB91-142810

ALDRIN
Ambient Water Quality Criteria Document: Addendum for *Aldrin/Dieldrin.*
PB91-161521

ALGORITHMS
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340

ALIPHATIC ACIDS
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838

ALTERNATIVE FUELS
Characterization of Emissions from a Variable Gasoline/Methanol *Fueled* Car.
PB91-146563

ALUMINUM
Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441

AMMONIA
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621

ANAEROBIC BACTERIA
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873

ANAEROBIC PROCESSES
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067

ANIMAL BEHAVIOR
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (*Teleostei: Cyprinodontiformes: Rivulidae*).
PB91-163840

ANIMAL ECOLOGY
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840

ANNOUNCEMENT BULLETIN
Up and Running: New EPA Case History Database and Library System.
PB91-149617

ANTIMONY
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539

AQUATIC BIOLOGY
Evaluation of Sucrose as an Alternative to Sodium Chloride in the *Microtox (Trade Name)* Assay: *Comparison* to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353
Testing of Insect Microsporidians (Microspora: Nosematidae) in *Nontarget Aquatic Species.*
PB91-163899

AQUATIC ECOSYSTEMS
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472
Regional Framework for Establishing Recovery Criteria.
PB91-146480
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

AQUATIC MICROBIOLOGY
Flexibility in Bacteriological Monitoring.
PB91-137166
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

AQUIFERS
Total Organic Carbon Determinations in Natural and Contaminated *Aquifer Materials, Relevance* and Measurement.
PB91-129205
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857

AREA SOURCES
NAPAP Annual Emissions Inventory (Version 2): U.S. *Annual Area Sources*, 1985.
PB91-505875
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883

ARTIFICIAL SEDIMENTS
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

ASBESTOS
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136
Evaluation of Two Cleaning Methods for the Removal of *Asbestos Fibers from Carpet. (Journal Article).*
PB91-145169
Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
PB91-145920

Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695

ASSAYING
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376

ASSESSMENT GUIDELINES
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394

ASSESSMENTS
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614

ASSOCIATIVE CONDITIONING
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634

ASTROCYTES
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

ATMOSPHERIC CIRCULATION
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495

ATMOSPHERIC CORROSION
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034

ATMOSPHERIC DIFFUSION
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766

ATMOSPHERIC TRANSFORMATION
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594

ATRAZINE
Drinking Water Criteria Document for Atrazine.
PB91-142794

ATTENUATION
Optical Heterogeneity in Green Bay.
PB91-163501

AUTOEX STUDIES
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042

AUTOMOBILE EXHAUST
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911

AVIAN DIETARY TOXICITY TEST
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449

AVOIDANCE LEARNING
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807

BACILLUS THURINGIENSIS
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
PB91-159673

BACTERIA
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141
Flexibility in Bacteriological Monitoring.
PB91-137166

BACTERIAL DNA
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

BACTERIAL GENE EXPRESSION REGULATION
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

BACTERIAL GENES
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

BACTERIOPHAGES
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832

BARIUM
Drinking Water Criteria Document on Barium.
PB91-142869

BARRIER MATERIALS
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846

BASS
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845

BAYS (TOPOGRAPHIC FEATURES)
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474

BENTONITE
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846

BENZENE
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737

BENZIDINE
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604

BENZOIC ACID
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873

BEST TECHNOLOGY
Treatment Technology Background Document.
PB91-160556
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792

BIBLIOGRAPHIES
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443
EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin.
PB91-904200

BIOACCUMULATION
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865

BIOASSAY
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724

BIODEGRADATION
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679

BIODETERIORATION
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487
Soil Bioventing Demonstration Project.
PB91-162628
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

BIOGEOCHEMISTRY
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403

BIOINDICATORS
NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854

BIOLOGICAL COMMUNITIES
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704

BIOLOGICAL EFFECTS
Regional Framework for Establishing Recovery Criteria.
PB91-146480
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438

BIOLOGICAL EFFECTS (PLANTS)
UV-B Effects on Terrestrial Plants.
PB91-146399

BIOLOGICAL MARKERS
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994
Evaluation of Exposure Markers.
PB91-144675

BIOLOGICAL PEST CONTROL
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
PB91-159673
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

BIOLOGICAL RADIATION EFFECTS
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995

BIOLOGICAL TREATMENT
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

BIOTRANSFORMATION
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346

BIRDS
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677

BIS (CHLOROMETHYL ETHYL)ETHER
BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622

BODY TEMPERATURE REGULATION
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037

BODY WEIGHT
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449

BOREHOLES
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

BORIC ACID
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

BOUNDARY LAYER
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766

BRAIN
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

BROMINATED DIPHENYLETHERS
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

BROMOCHLOROMETHANE
Bromochloromethane: Health Advisory.
PB91-160572

BROMOMETHANE
Bromomethane: Drinking Water Health Advisory.
PB91-160614

BRONCHOALVEOLAR LAVAGE FLUID
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060

BUFFALOES
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964

BUILDINGS
Update on Building and Structure Decontamination.
PB91-145102
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896
Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
PB91-145920

BUTADIENE/HEXACHLORO
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455

CALIBRATING
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542

CALORIMETRY
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

CANCER
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
PB91-159632

CARBAMATE INSECTICIDES
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677

CARBOFURAN
Drinking Water Criteria Document on Carbofuran.
PB91-143412
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316

CARBON-BOND CHEMICAL MECHANISM
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227

CARBON DIOXIDE
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685

CARBON MONOXIDE
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

CARBON TETRACHLORIDE
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554

CARCINOGENS
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578

CARPET
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695

CARPETS
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

CAS NUMBERS
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665

CASE STUDIES
Up and Running: New EPA Case History Database and Library System.
PB91-149617

CATALOGS (PUBLICATIONS)
Catalog of Superfund Program Publications, FY-91.
PB91-144683

CATALYSIS
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647

CATIONS
Adsorption of Organic Cations to Natural Materials.
PB91-144881

CELL FLOW SYSTEMS
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

CHALLENGE 5100
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

CHEMICAL ANALYSIS
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376
Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

CHEMICAL BONDS
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949

CHEMICAL COMPOUNDS
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964

CHEMICAL EFFLUENTS
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816

CHEMICAL PROPERTIES
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361

CHEMICAL REMOVAL (WATER TREATMENT)
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091

CHEMICAL SPILLS
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669

CHEMICAL STABILIZATION
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

CHEMICAL WATER POLLUTANTS
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332
Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799

CHEMICAL WATER POLLUTION
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361

CHICKENS
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011

CHIRONOMUS DECORUS
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332

CHLORDANE
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547

CHLORINATED DIPHENYLETHERS
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

CHLORINATION
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845

CHLORINE
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511

CHLORINE ALIPHATIC COMPOUNDS
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857

CHLORINE DIOXIDE
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

CHLORINE ORGANIC COMPOUNDS
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161520
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703

CHLOROBENZENES
Drinking Water Criteria Document for Lindane.
PB91-142851
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

CHLOROFORM
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562

KEYWORD INDEX

CHLOROPROPANES
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388

CHROMIUM
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523
Drinking Water Criteria Document on Chromium.
PB91-142844

CHROMOSOME ABERRATION ASSAY
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376

CHROMOSOME ABERRATIONS
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

CHROMOSOMES
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376

CIGARETTE SMOKE
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578

CLAY MINERALS
Adsorption of Organic Cations to Natural Materials.
PB91-144881

CLEANUP
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784

CLEANUP OPERATIONS
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296
Soil Bioventing Demonstration Project.
PB91-162628

CLIMATIC CHANGES
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514

CLONAL DIVERSITY
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

CLOUD SEEDING
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613

COAGULATION
Modal Aerosol Dynamics Modeling.
PB91-161729

COAL FIRED POWER PLANTS
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477

COASTS
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474

COLCHICINE
Neurotoxic Effects of Colchicine.
PB91-149658

COLIFORM BACTERIA
Concept of Presence Absence Testing.
PB91-162818

COLIFORM RULE
Concept of Presence Absence Testing.
PB91-162818

COLILERT SYSTEM
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

COLINUS VIRGINIANUS
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449

COLIS (COMPUTERIZED ON-LINE INFORMATION SYSTEM)
Up and Running: New EPA Case History Database and Library System.
PB91-149617

COMBINED ANTINEOPLASTIC AGENTS
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

COMBINED SEWERS
Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264

COMBUSTION EFFICIENCY
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

COMBUSTION PRODUCTS
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654

COMPLEX EFFLUENT TOXICITY TESTING PROGRAM
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799

COMPLEX TERRAIN DISPERSION MODEL
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

COMPREHENSIVE ENVIRONMENT RESPONSE COMPENSATION AND LIABILITY ACT
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826
Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834

COMPUTER APPLICATIONS
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

COMPUTERIZED SIMULATION
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141620
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733

CONDENSATES
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742

CONFIDENCE LIMITS
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506

CONSERVATION
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474

CONSTRUCTION
Update of the Regulation and Policy Matrices Dated September 1986.
PB91-143081

CONSTRUCTION MATERIALS
Material Selection.
PB91-136978
Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211

CONSUMER PRODUCTS
New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158

CONTAMINATION
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530

CONTRACTOR PERSONNEL
National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222

CONVECTION
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766

COOPERATIVE AGREEMENT
Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714

COPPER
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332

CORPUS STRIATUM
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

COST ANALYSIS
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885
Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783

COST ESTIMATES
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453
Economies of Scale and Scope in Water Supply.
PB91-163519
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477

COSTS
Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
PB91-145847

CREOSOTE
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

CROP YIELD
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506

CRUDE OIL
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018

CRYPTOSPORIDIUM
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

CTDMPLUS MODEL
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503

CTSCREEN MODEL
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

CULTURE MEDIA
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725

CURRENT METERS
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331

CWB MODEL
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495

CYCLOPENTADIENE/HEXACHLORO
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422

CYCLOPHOSPHAMIDE
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667

CYPRINODON VARIEGATUS
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808

CYTOCHROME P450
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

CYTOLOGY
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808

DATA ACQUISITION
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208
Guidance for Data Useability in Risk Assessment.
PB91-921312

DATA ANALYSIS
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373

DATA BASE MANAGEMENT
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768

DATA BASES
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083

DATA FILE
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974
NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964
Hazardous Waste Data Management System Extract Tape.
PB91-592000

DATA PROCESSING
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743

DCP 2-4 HERBICIDE
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596

DDD INSECTICIDE
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471

DDE INSECTICIDE
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471

DDT
Drinking Water Criteria Document for Methoxychlor.
PB91-143461
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471

DECONTAMINATION
Update on Building and Structure Decontamination.
PB91-145102

DEFOLIATION
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456

DEGRADATION
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

DEHALOGENATION
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873

DELAYED MATCHING-TO-POSITION
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642

DEOXYRIBONUCLEIC ACIDS
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907

DEPOSITION
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

DESORPTION
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415

DESULFOVIBRIO DESULFURICANS
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857

DEVELOPMENTAL NEUROTOXICITY
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity, Addendum 10.
PB91-154617

DIBENZODIOXIN/BROMO
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

DIBENZODIOXIN/BROMOCHLORO
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

DIBENZODIOXIN/TETRACHLORO
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415

DIBENZOFURAN/BROMO
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

DIBENZOFURAN/BROMOCHLORO
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

DICHLORODIFLUOROMETHANE
Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580

DICHLOROETHYLENE
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396

DICHLOROPROPANE
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388

DICOFOL
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543

DIELDRIN
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521

DIFFERENTIAL THERMAL ANALYSIS
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

DINITROBENZENE
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

DIOXINS
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan
PB91-148429

DISEASE OUTBREAKS
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307
Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315

DISSIPATION
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

DISTRIBUTION SYSTEMS
Water Quality Modeling in Distribution Systems.
PB91-130153
Standardized Costs for Water Supply Distribution Systems.
PB91-162461

DNA DAMAGE
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895
Evaluation of Exposure Markers.
PB91-144675
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578

DNA INSERTION ELEMENTS
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

DOCUMENTATION
Pesticide Compact Label File - 1990 Updates.
PB91-911600

DOPAMINE RECEPTORS
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

DOUGLAS FIR
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498

DREDGE SPOIL
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

DREDGED SPOIL
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296

DRILLING FLUIDS
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

DRINKING WATER
Drinking Water Criteria Document for Atrazine.
PB91-142794
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802
Drinking Water Criteria Document for Aldicarb.
PB91-142810
Drinking Water Criteria Document on Selenium.
PB91-142828
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836
Drinking Water Criteria Document on Chromium.
PB91-142844
Drinking Water Criteria Document for Lindane.
PB91-142851
Drinking Water Criteria Document on Barium.
PB91-142869
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885
Drinking Water Criteria Document for Styrene.
PB91-143370
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396
Drinking Water Criteria Document for Toxaphene.
PB91-143404
Drinking Water Criteria Document on Carbofuran.
PB91-143412
Quantification of Toxicological Effects for Alachlor.
PB91-143420
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446
Drinking Water Criteria Document for Methoxychlor.
PB91-143461
Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479
Drinking Water Criteria Document for Toluene.
PB91-143487
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722
Methods for the Determination of Organic Compounds in Drinking Water, Supplement 1.
PB91-146027
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625

DRY CLEANING
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

DRY METHODS
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

DURSBAN
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956

DUST
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

DYNAMICS
Modal Aerosol Dynamics Modeling.
PB91-161729

EARTH FILLS
Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205

EARTH SCIENCES
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733

ECOLOGY
Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526

ECONOMIC ANALYSIS
Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
PB91-145847
Standardized Costs for Water Supply Distribution Systems.
PB91-162461

ECONOMIES OF SCALE
Economies of Scale and Scope in Water Supply.
PB91-163519

ECOSYSTEMS
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

EGG HATCHABILITY
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332

EGGSHELLS
Effects of Dicofol on Mallard Eggshell Quality
PB91-163543

EICOSANOIDS
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

ELECTROMAGNETIC FIELDS
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340

ELECTROPHILIC REACTIONS
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949

ELECTROSTATIC PRECIPITATORS
Self-Consistent Deutschian ESP Model.
PB91-149518

ELLIOTT BAY
Elliot Bay Action Program: 1988 Action Plan.
PB91-149583

EMBRYO
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881

EMERGENCIES
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755

EMERGENCY MEDICAL SERVICES
Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964

EMISSION FACTORS
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
PB91-148411
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

EMISSION INVENTORIES
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974
NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253

ENDRIN
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505

ENERGY METABOLISM
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

ENOPHRYS BISON
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964

ENVIRONMENTAL EXPOSURE PATHWAYS
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782

ENVIRONMENTAL IMPACT ASSESSMENTS
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576

ENVIRONMENTAL IMPACT STATEMENTS-FINAL
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304

ENVIRONMENTAL IMPACTS
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

ENVIRONMENTAL MANAGEMENT
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727

ENVIRONMENTAL MONITORING
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003
NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680
NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854
NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986

ENVIRONMENTAL POLLUTANTS
Evaluation of Exposure Markers.
PB91-144675
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602

ENVIRONMENTAL POLLUTION
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994

ENVIRONMENTAL PROTECTION
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133
Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714
Public-Private Partnership Case Studies: Profiles of Success in Providing Environmental Services.
PB91-145904
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312
EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin.
PB91-904200

ENVIRONMENTAL PROTECTION AGENCY
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

ENVIRONMENTAL STANDARDS
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

ENVIRONMENTAL SURVEYS
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743

ENVIRONMENTAL TESTS
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743

ENVIRONMENTAL TRANSPORT
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

ENZYMOLOGY
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

EPA MODEL
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495

EPA REGION 10
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

EPICHLOROHYDRIN
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732

EPIDIDYMIS
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

EPIPHYTES
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

ERYTHROCYTES
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

ESCHERICHIA
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

ESCHERICHIA COLI
Dynamics of Plasmid Transfer on Surfaces.
PB91-163816
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824

ESTIMATING
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534

ESTUARIES
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474

ETHANE DIMETHANESULFONATE
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

ETHANOL
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037

ETHENE/DICHLORO
Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800

ETHERS
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620

ETHYL BENZENE
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489

ETHYLENE
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091

EVERETT HARBOR
Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567

EVOLUTION (DEVELOPMENT)
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

EXHAUST EMISSIONS
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

EXPERT SYSTEMS
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743

FARM CROPS
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506

FATHEAD MINNOWS
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423

FATS (FISH ACUTE TOXICITY SYNDROME)
Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075

FEEDING BEHAVIOR
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956

FENTHION
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

FERTILITY
In vitro Assessment of Gamete Integrity.
PB91-162610

FIELD IMPLEMENTATION PLAN
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403

FIELD TESTS
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

FISH ACUTE TOXICITY SYNDROME
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529

FISHERIES
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493

FISHES
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614

Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075

Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808

Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

FLOW CYTOMETRY
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683

FLOWMETERS
Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404

FLUE GAS DESULFURIZATION
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952

High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

FLUE GASES
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742

FLUID FLOW
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717

FLUORANTHENE
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430

FLUORESCENCE
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790

Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

FLY ASH
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647

FOREIGN TECHNOLOGY
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862

Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953

FOREST TREES
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572

FORESTRY
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456

Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498

Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

FORESTS
Air Quality and Deposition (Chapter 3).
PB91-136606

FORMALDEHYDE
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

FORMATION TESTS
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530

FOX RIVER (WISCONSIN)
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493

FRESHWATER FISHES
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915

Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956

FUEL EFFICIENCY AUTOMOBILE TEST
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

FUEL TANKS
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531

FUGITIVE EMISSIONS
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

FUNDULUS HETEROCLITUS
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

FUNGICIDES
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528

Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536

FURANS
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667

GARDENING
Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953

GAS CHROMATOGRAPHY
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317

Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357

GAS PRODUCTION
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st), Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549

GAS SPILLS
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644

Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651

GASES
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

GASOHOL
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563

Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

GENERATOR SETTLEMENTS
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826

GENETIC TOXICOLOGY
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376

GENETIC TRANSFORMATION
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907

GENETICS
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

GEOCHEMISTRY
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706

GEOSYNTHETIC MATERIALS
Seaming of Geosynthetics.
PB91-145151

Geosynthetic Leachate Collection Systems.
PB91-162834

GEOTECHNICAL FABRICS
Seaming of Geosynthetics.
PB91-145151

Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826

GILLS
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720

GLIOCLADIUM VIRENS GL-21
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528

GLOBAL WARMING
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

GLUCURONIDASE
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

GLYCOLYSIS
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725

GOVERNMENT/INDUSTRY RELATIONS
Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714

GRAM-NEGATIVE BACTERIA
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

GRANTS
Update of the Regulation and Policy Matrices Dated September 1988.
PB91-143081

GRANULAR ACTIVATED CARBON TREATMENT
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420

Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800

GREAT LAKES
Great Lakes Demonstration Program, Section 108a.
PB91-148437

GREEN BAY
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758

Optical Heterogeneity in Green Bay.
PB91-163501

GROUND WATER
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

Organic Chemical Transport to Groundwater.
PB91-137059

Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067

Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857

Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865

ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482

Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755

Review of Sources of Ground-Water Contamination from Light Industry.
PB91-145938
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

GUIDELINES
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633

HALOGENATED AROMATIC HYDROCARBONS
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646

HANDBOOKS
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

HANKEL TRANSFORMATION
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340

HAZARDOUS MATERIALS
State Authorization Manual. Volume 1.
PB91-130211
State Authorization Manual. Volume 2. Appendices.
PB91-130229
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556
Small Cost Recovery Referrals.
PB91-139006
Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014
Interim CERCLA Settlement Policy.
PB91-139329
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337
Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345
Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352
Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360
Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436
Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477
RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840
Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857
Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865
Policy for Managing Leachate at PCB Landfills.
PB91-139907
Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820
Catalog of Superfund Program Publications, FY-91.
PB91-144683
Update on Building and Structure Decontamination.
PB91-145102
Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PB91-145433
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524
Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649
Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664
Program Recommendations for State Section 313 Program Coordinators.
PB91-145698
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722
RCRA Orientation Manual 1990 Edition.
PB91-145888
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597
Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379
Air Emissions from the Incineration of Hazardous Waste.
PB91-149641
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394
Treatment Technology Background Document.
PB91-160556
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412
Succeeding at Waste Minimisation.
PB91-162446
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479
Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964
Hazardous Waste Data Management System Extract Tape.
PB91-592000
Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208
Guidance for Data Useability in Risk Assessment.
PB91-921312

HAZARDOUS MATERIALS TRANSPORTATION
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737

HAZARDOUS WASTE DATA MANAGEMENT SYSTEM
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737
Hazardous Waste Data Management System Extract Tape.
PB91-592000

HAZARDOUS WASTES
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3

HEALTH
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614

HEALTH ASSESSMENT
Drinking Water Criteria Document for Atrazine.
PB91-142794
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802
Drinking Water Criteria Document for Aldicarb.
PB91-142810
Drinking Water Criteria Document on Selenium.
PB91-142828
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836
Drinking Water Criteria Document on Chromium.
PB91-142844
Drinking Water Criteria Document for Lindane.
PB91-142851
Drinking Water Criteria Document on Barium.
PB91-142869
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Drinking Water Criteria Document for Styrene.
PB91-143370
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396
Drinking Water Criteria Document for Toxaphene.
PB91-143404
Drinking Water Criteria Document on Carbofuran.
PB91-143412
Quantification of Toxicological Effects for Alachlor.
PB91-143420
Drinking Water Criteria Document for Methoxychlor.
PB91-143461
Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479
Drinking Water Criteria Document for Toluene.
PB91-143487
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724

HEALTH HAZARDS
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

HEALTH RISK ASSESSMENT
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

HEART
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964

HEAT OF FUSION
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

HEAT-SHOCK PROTEINS
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994

HEAVY METALS
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

HEIGHT
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495

HEPATOMA
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

HEPTACHLOR
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463

HERBICIDES
Drinking Water Criteria Document for Atrazine.
PB91-142794
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681

HETEROGENEITY
Optical Heterogeneity in Green Bay.
PB91-163501

HEXACHLOROBUTADIENE
Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663

HEXACHLOROETHANE
Health Advisory for Hexachloroethane.
PB91-159657

HISTOLOGY
Histological and Histopathological Evaluation of the Testis.
PB91-164293

HOME USAGE
Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953

HORTICULTURE
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308

HOUSES
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896

HUMANS
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281

HYDRAULIC CONDUCTIVITY
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

Determination of Hydraulic Conductivity and Porosity *Logs in Wells with a Disturbed Annulus.*
PB91-146530

HYDRAZINE/DIPHENYL
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448

HYDROCARBONS
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357

Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669

HYDROGEN
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862

HYDROGEN BONDING
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

HYDROLOGIC CYCLE
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613

HYDROLOGY
Organic Chemical Transport to Groundwater.
PB91-137059

HYPOTHESES
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616

IMINODIPROPIONITRILES
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

IMMUNE SYSTEM
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550

Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

IMMUNOLOGY
Immunotoxicology of Captive and Wild Birds.
PB91-137117

INCINERATION
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555

Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537

INCINERATORS
Incineration Research Facility.
PB91-145128

Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639

Air Emissions from the Incineration of Hazardous Waste.
PB91-149641

Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552

INDOOR AIR POLLUTION
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

Material Selection.
PB91-136978

Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273

Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281

Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896

Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654

Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695

Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560

INDUCED INFILTRATION
Bilateral Wastewater Land Treatment Research.
PB91-162636

INDUSTRIAL WASTE TREATMENT
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

INDUSTRIAL WASTES
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899

Bilateral Wastewater Land Treatment Research.
PB91-162636

Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816

INFLAMMATION
Biomarkers of Inflammation in Ozone-Exposed Humans: *Comparison of the Nasal and Bronchoalveolar Lavage.*
PB91-145060

INFORMATION SYSTEMS
Up and Running: *New EPA Case History Database and Library System.*
PB91-149617

Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737

Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745

Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750

Hazardous Waste Data Management System Extract Tape.
PB91-592000

INFORMATION TRANSFER
Ongoing Research and Regulatory Development Projects.
PB91-161752

INFRARED SPECTROSCOPY
Gas *Chromatography/Matrix Isolation-Infrared Spectrometry* for Air Sample Analysis.
PB91-136317

INJECTION
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688

INJECTION WELLS
Injection Well Mechanical Integrity.
PB91-145631

Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706

INORGANIC CHEMICALS
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453

INORGANIC NITRATES
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836

INSECTICIDES
Drinking Water Criteria Document for Aldicarb.
PB91-142810

Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877

Drinking Water Criteria Document for Toxaphene.
PB91-143404

Drinking Water Criteria Document on Carbofuran.
PB91-143412

Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

INSPECTION
Seaming of Geosynthetics.
PB91-145151

NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672

NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854

NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

INSTRUCTIONAL MATERIALS
NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680

NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854

NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

INVENTORIES
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458

Toxic Substances Control Act Chemical Substance Inventory: 1990 *Supplement to the* 1985 *Edition of the* TSCA Inventory. User Guides and Indices.
PB91-159665

INVESTMENTS
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775

Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783

ISOTOPIC LABELING
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

JET ENGINE FUELS
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

KEPONE
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865

KILNS
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195

Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203

LABELS
Compact Label File - 1991 (Fiche 1 - 4833).
PB91-911699

LABORATORY EVALUATION
Manual for the *Evaluation of Laboratories Performing* Aquatic Toxicity Tests.
PB91-148353

KEYWORD INDEX

LABORATORY TESTS
NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

LAKE ERIE
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

LAKE ONTARIO
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415

LAKES
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709
Most Dilute Lake in the World.
PB91-144816
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

LAND APPLICATION
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508

LAND DISPOSAL
Bilateral Wastewater Land Treatment Research.
PB91-162636

LAND POLLUTION
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873
Up and Running: New EPA Case History Database and Library System.
PB91-149617
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651

LAND POLLUTION ABATEMENT
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

LAND POLLUTION CONTROL
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487
Soil Bioventing Demonstration Project.
PB91-162628
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644
Geosynthetic Leachate Collection Systems.
PB91-162834
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

LAND RECLAMATION
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487

LEACHING
Geosynthetic Leachate Collection Systems.
PB91-162834

LEAD (METAL)
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420

LEAK TESTING
Injection Well Mechanical Integrity.
PB91-145631

LEAKAGE
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531

LEARNING DISORDER
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

LEGAL ASPECTS
NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680

LEPOMIS MACROCHIRUS
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915

LICENSES
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508
NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672

LIGHT PENETRATION
Optical Heterogeneity in Green Bay.
PB91-163501

LIMNOLOGY
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472

LINDANE
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

LININGS
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846

LIQUID CHROMATOGRAPHY
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931

LITTLE ROCK LAKE
Little Rock Lake (Wisconsin): Perspectives on an Experi*mental Ecosystem Approach to Seepage Lake Acidifica*tion.
PB91-163527

LITTORAL ZONE
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956

LIVER
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

LIVER NEOPLASMS
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

LOW-LEVEL RADIOACTIVE WASTES
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995

LOW TEMPERATURE TESTS
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

LOWEST OBSERVED EFFECT CONCENTRATION (LOEC)
Evaluation of the Fathead Minnow Seven-Day Subchronic *Test for Estimating Chronic Toxicity.*
PB91-146423

MACROPHAGES
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

MAGNETIC FIELDS
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052

MALES
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

MALLARDS
Avoidance Behavior of Mallards and Northern Bobwhite *Exposed to Carbofuran-Contaminated Food and Water.*
PB91-146316
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543
*Subchronic Effects of Sodium Selenite and Selenometh*ionine on Several Immune-Functions in Mallards.
PB91-163550

MANAGEMENT
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722

MANAGEMENT PLANNING
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208
Guidance for Data Useability in Risk Assessment.
PB91-921312

MANUALS
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549
RCRA Orientation Manual 1990 Edition.
PB91-145888
Preparation Aids for the Development of Category 1: *Quality Assurance Project Plans.*
PB91-148312

MAPLE TREES
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685

MARINE BIOLOGY
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

MARINE FISHES
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840

MARSHES
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526

MASS SPECTROSCOPY
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

MATERIALS RECOVERY
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

MATHEMATICAL MODELING
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453

MATHEMATICAL MODELS
Water Quality Modeling in Distribution Systems.
PB91-130153
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758
*Meta-Analytic Reappraisal of Statistical Results in the En*vironmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688
Self-Consistent Deutschian ESP Model.
PB91-149518
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment *Model (TEEAM).*
PB91-161711
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733

MAUMEE RIVER
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

MEASURING INSTRUMENTS
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034

MEETINGS
Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PB91-145433

Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524

Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649

Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664

Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722

Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896

Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296

Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379

Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
PB91-148387

Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st). Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549

Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679

MEIOSIS
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

MEMORY
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642

MENIDIA BERYLLINA
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881

Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

MERCURIC REDUCTASE
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

MERCURY (METAL)
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712

META-ANALYSIS
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613

METAL WORKING
Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441

METHANE
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534

METHANOL FUELS
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563

METHIOCARB
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807

METHYL BENZOATES
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681

METHYL CHLORIDE
Chloromethane: Health Advisory.
PB91-160564

METHYL PHENYL TETRAHYDROPYRIDINE
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

METHYLMERCURY COMPOUNDS
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675

MICROORGANISM CONTROL (WATER)
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307

Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315

MICROORGANISMS
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945

General Microbiology of RecA: Environmental and Evolutionary Significance.
PB91-163964

MICROORGANISMS CONTROL (WATER)
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625

MICROSPORUM
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

MICROTOX ASSAY
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972

MINNOWS
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

Seven-Day Tests and Chronic Tests.
PB91-163592

MITIGATION
National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300

National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222

Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

MITOGENS
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

MOBILE POLLUTANT SOURCES
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170

MODEL TESTS
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717

MODELS
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340

MODELS-SIMULATION
Urban Airshed Model.
PB91-505578

Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469

Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477

MOLECULAR STRUCTURE
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

MONOCHLORAMINE
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

MOTOR VEHICLES
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911

MULTIVARIATE ANALYSIS
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

Principal Components Analysis and Partial Least Squares *Regression.*
PB91-146373

MUNICIPAL SETTLEMENT POLICY
Municipal Settlements.
PB91-139311

KEYWORD INDEX

MUNICIPAL WASTES
Municipal Settlements.
PB91-139311
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555

MUNICIPALITIES
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205

MUSSELS
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799

MUTAGENICITY TESTS
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951
Evaluation of Exposure Markers.
PB91-144675
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594

MUTAGENS
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602

MYOGLOBIN
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964

MYSIDOPSIS BAHIA
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

MYTILUS EDULIS
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799

MYTILUS GALLOPROVINCIALIS
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

NAPHTHALENE/CHLORO
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380

NAPHTHALENE COMPOUNDS
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380

NAPHTHLENE
Naphthalene: Drinking Water Health Advisory.
PB91-160689

NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAM
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974
NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253

NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAMS

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048

NATIONAL AIR TOXICS INFORMATION CLEARINGHOUSE

Ongoing Research and Regulatory Development Projects.
PB91-161752

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737

NATIONAL GOVERNMENT

Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516

Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680

NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PROGRAM

NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

NATURAL ACID PRECIPITATION ASSESSMENT PROGRAM

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220

NATURAL EMISSIONS

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842

NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891

NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253

NATURAL KILLER CELLS

Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

NATURAL RESOURCES

Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605

(NCLAN)NATIONAL CROP LOSS ASSESSMENT NETWORK

Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832

NEOPLASMS

Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808

NERVOUS SYSTEM

Neurotoxic Effects of Colchicine.
PB91-149658

Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617

NEVADA TEST SITE

Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910

NEW SOURCE PERFORMANCE STANDARDS

Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696

NEW YORK CITY (NEW YORK)

Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026

NITRITES

Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836

NITROBENZENES

Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808

NITROGEN FERTILIZERS

Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498

NITROGEN OXIDES

Air Quality and Deposition (Chapter 3).
PB91-136606

NITROPHENOLS

Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414

NITROSAMINES

Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406

NO OBSERVABLE EFFECT CONCENTRATION (NOEC)

Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423

NONFERROUS METALS

Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441

NORTHERN BOBWHITE

Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316

Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449

Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807

NOSEMA ALGERAE

Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

NOSEMA LOCUSTAE

Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

NUCLEIC ACID SEQUENCE HOMOLOGY

Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

NUCLEIC ACIDS

Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

NUCLEOSIDES

Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931

NUTRIENTS

Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487

O-CHLOROTOLUENE

o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598

OCEAN CURRENTS

Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818

Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826

Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834

Small Cost Recovery Referrals.
PB91-139006

Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014

Municipal Settlements.
PB91-139311

Interim CERCLA Settlement Policy.
PB91-139329

Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337

Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345

Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352

Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360

Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378

Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436

Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477

RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840

Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857

Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865

Policy for Managing Leachate at PCB Landfills.
PB91-139907

Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915

OIL POLLUTION REMOVAL
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

OIL RECOVERY
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st). Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549

OIL SPILLS
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669

ORGANIC ACIDS
Sorption of Organic Acid Compounds to *Sediments: Initial* Model Development.
PB91-144980

ORGANIC COMPOUNDS
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802
Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555
Nearthes Long-Term Exposure Experiment: *The Relationship between Juvenile Growth and Reproductive Success.* Puget Sound Estuary Program.
PB91-149591
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

ORGANIC MATTER
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

ORGANOCHLORINE INSECTICIDES
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543

ORGANOPHOSPHATE INSECTICIDES
Alterations in the Energy Metabolism of an Estuarine Mysid *Mysidopsis bahia* as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

ORGANOPHOSPHORUS INSECTICIDES
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881
Vertebral *Abnormalities in Juvenile Inland Silversides* 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

OVERFLOWS
Swirl Device for Regulating and Treating Combined *Sewer Overflows.*
PB91-133264

OVUM
In vitro Assessment of Gamete Integrity.
PB91-162610

OVUM IMPLANTATION
Toxicological Mechanisms of Implantation Failure.
PB91-149765

OXIDATION
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

OXYGENATION
Novel Delivering of Nutrients and Oxygen to Aid in *situ Bioreclamation.*
PB91-162487

OZONATION
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438

OZONE
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598
Air Quality and Deposition (Chapter 3).
PB91-136606
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026
Adequacy of Interval Estimates of Yield Responses to *Ozone Estimated from NCLAN Data.*
PB91-144832
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

P-CHLOROTOLUENE
p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705

PALAEMONETES PUGIO
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865

PALEOECOLOGICAL INVESTIGATION OF RECENT LAKE ACIDIFICATION PROJECT
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472

PALEOECOLOGY
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709

PALEONTOLOGY
PIRLA Project (Paleoecological Investigation of Recent *Lake Acidification): An Introduction to the Synthesis* of the Project.
PB91-146472

PALLADIUM
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its *alloys as hydrogen permeation membranes. Literature* study).
DE91724862

PARASITIC DISEASES
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

PARTIAL LEAST SQUARES REGRESSION
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373

PARTICLE SIZE DISTRIBUTION
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

PARTICLES
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

PARTICULATES
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
PB91-148411

PARTITION COEFFICIENT
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of *Koc for Lake Ontario* Sediment.
PB91-146415

PARTITION COEFFICIENTS
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

PATHOLOGY
Histological and Histopathological Evaluation of the Testis.
PB91-164293

PENALTIES
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826
Redelegation of Civil Judicial Settlement Authorities *under Delegation* 14-13-B and 14-14-E.
PB91-138834

PENTACHLOROPHENOL
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802

PERFORMANCE EVALUATION
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

PERICYTES
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163608

PERMITS
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633

PESTICIDES
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528
Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110535
Organic Chemical Transport to Groundwater.
PB91-137055
Immunotoxicology of Captive and Wild Birds.
PB91-137117
Drinking Water Criteria Document for Lindane.
PB91-142851
Quantification of Toxicological Effects for Alachlor.
PB91-143420
Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656
Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. *Series 81, 82, and 83 Neurotoxicity. Addendum 10.*
PB91-154617
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis (Revised).
PB91-159673
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711
Do Behavioral Responses to Pesticide Exposure Affect *Wildlife Population Parameters.*
PB91-162677
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865
Pesticide Compact Label File - 1990 Updates.
PB91-911600
Compact Label File - 1991 (Fiche 1 - 4833).
PB91-911699

PETROLEUM PRODUCTS
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531

PH
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

PHARMACOKINETICS
Simple Flow-Limited Model for Exchange of Organic Chemicals a: *Fish Gills.*
PB91-146720

PHARMACOLOGY
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642

PHENOL
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638

PHENOL/CHLORO
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570

PHENOL/DICHLORO
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596

PHENOL HYDROXYLASE
Molecular Cloning, Characterization, and Regulation of a 'Pseudomonas pickettii' PKO1 Gene Encoding *Phenol* Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

PHENOLS
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661
Effect of Fluorinated Analogues of Phenol and *-Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.*
PB91-163873

PHTHALATES
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653

PHTHLATE ESTERS
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

PHYLOGENY
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857

PHYSICOCHEMICAL PROPERTIES
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

PHYSIOLOGY
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944

PHYTOTOX DATABASE
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733

PILOT PLANTS
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

PIMEPHALES PROMELAS
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

PIMEPHALES PROMELASE
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423

PINE TREES
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381

PINK SHRIMP
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

PINUS TAEDA L.
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381

PITUITARY GLAND
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903

PLANT CHEMISTRY
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622

PLANT GENETICS
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622

PLANT GROWTH
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498

PLANT METABOLISM
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622

PLANT REPRODUCTION
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832

PLANTS (BOTANY)
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308
UV-B Effects on Terrestrial Plants.
PB91-146399

PLASMA HEATING
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784

PLASMIDS
Dynamics of Plasmid Transfer on Surfaces.
PB91-163816

PLASTICS INDUSTRY
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304

PLUMBING
Cross-Connection Control Manual.
PB91-145490

PLUMES
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

POINT SOURCES
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867

POISONING
Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656

POLLUTION
Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796
Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean *Technologies and Clean Products. Held in Washington,* DC. on June 10-13, 1990.
PB91-148387

POLLUTION ABATEMENT
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412
Succeeding at Waste Minimisation.
PB91-162446

POLLUTION CONTROL
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136560
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429
*Environmental Monitoring and Assessment Program: Re*search Plan for Monitoring Wetland Ecosystems.
PB91-149526
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747
Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206

POLLUTION REGULATIONS
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531
Ongoing Research and Regulatory Development Projects.
PB91-161752
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816

POLLUTION TRANSPORT
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667

POLYCHLORINATED BIPHENYL
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206

POLYCHLORINATED BIPHENYLS
Policy for Managing Leachate at PCB Landfills.
PB91-139907
Update on Building and Structure Decontamination.
PB91-145102
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

POLYCHLORINATED DIBENZODIOXINS
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552

POLYCHLORINATED DIBENZOFURANS
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552

POLYETHYLENE FIBERS
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

POLYMERS
Polymer Manufacturing Industry - Enabling Document.
PB91-161745

POLYVINYL CHLORIDE
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

POROSITY
Determination of Hydraulic Conductivity and Porosity *Logs in Wells with a Disturbed Annulus.*
PB91-146530

POTABLE WATER
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125
Impact of Drinking Water Treatment on Assimilable Or*ganic Carbon.*
PB91-137141
Flexibility in Bacteriological Monitoring.
PB91-137166
Drinking Water Criteria Document for Atrazine.
PB91-142794
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802
Drinking Water Criteria Document for Aldicarb.
PB91-142810
Drinking Water Criteria Document on Selenium.
PB91-142828
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836
Drinking Water Criteria Document on Chromium.
PB91-142844
Drinking Water Criteria Document for Lindane.
PB91-142851
Drinking Water Criteria Document on Barium.
PB91-142869
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885
Drinking Water Criteria Document for Styrene.
PB91-143370
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396
Drinking Water Criteria Document for Toxaphene.
PB91-143404
Drinking Water Criteria Document on Carbofuran.
PB91-143412
Quantification of Toxicological Effects for Alachlor.
PB91-143420
Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453
Drinking Water Criteria Document for Methoxychlor.
PB91-143461

Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479
Drinking Water Criteria Document for Toluene.
PB91-143487
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094
Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640
Health Advisory for Hexachloroethane.
PB91-159657
Chloromethane: Health Advisory.
PB91-160564
Bromochloromethane: Health Advisory.
PB91-160572
Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580
o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598
1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606
Bromomethane: Drinking Water Health Advisory.
PB91-160614
BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622
1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630
Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648
1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655
Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671
Naphthalene: Drinking Water Health Advisory.
PB91-160689
1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697
p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453
Standardized Costs for Water Supply Distribution Systems.
PB91-162461
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669
Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792
Concept of Presence Absence Testing.
PB91-162818
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

POTENTIALLY RESPONSIBLE PARTIES
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436

PRECIPITATION (METEOROLOGY)
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572

PREVENTION
Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
PB91-148387

PRINCIPAL COMPONENT ANALYSIS
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373

PRIORITIES
Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516

PRIVATE ORGANIZATIONS
Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714

PROFICIENCY REPORT
National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222

PROGRAM MANAGEMENT
Program Recommendations for State Section 313 Program Coordinators.
PB91-145698

PROGRAMS
Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
PB91-145847

PROJECT PLANNING
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312
Great Lakes Demonstration Program, Section 108a.
PB91-148437

PROTECTIVE CLOTHING
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

PROTOTYPES
Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264

PROTOZOAN PREDATION
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824

PSEUDOMONAS AERUGINOSA
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

PSEUDOMONAS PICKETTII
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

PSYCHOBIOLOGY
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634

PUBLIC HEALTH
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987
Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747
White Phosphorus Health Advisory.
PB91-161026
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208
Guidance for Data Useability in Risk Assessment.
PB91-921312

PUBLIC-PRIVATE PARTNERSHIPS
Public-Private Partnership Case Studies: Profiles of Success in Providing Environmental Services.
PB91-145904

PUBLIC RELATIONS
Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714

PUGET SOUND
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575
Elliot Bay Action Program: 1988 Action Plan.
PB91-149583
Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591

PULMONARY ALVEOLI
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

PYRIDINIUM COMPOUNDS
Adsorption of Organic Cations to Natural Materials.
PB91-144881

QUALITY ASSURANCE PROJECT PLANS
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312

RADIATION HAZARD REMOVAL
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3

RADIATION MONITORING
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910

RADICAL GROWTH REDUCTION
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456

RADIOACTIVE SITE REMEDIATION
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3

RADON
National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222

RANDOM PROCESSES
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

RECA PROTEIN
General Microbiology of RecA: Environmental and Evolutionary Significance.
PB91-163964

RECLAMATION
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704

RECOVERY
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576

RED SPRUCE
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456

REFERENCE DOSES
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

REFUSE DISPOSAL
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826
Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834

REGULATIONS
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453

REMEDIAL ACTION
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018
Municipal Settlements.
PB91-139311
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337
Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436
Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479
Soil Bioventing Demonstration Project.
PB91-162628
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784

REMEDIAL ACTIONS
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

REMEDIAL RESPONSE
RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840

REMOTE SENSING
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

REMOVAL
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169
Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338

REPRODUCTIVE SYSTEM
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

REQUIREMENTS
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508

RESEARCH AND DEVELOPMENT
Ongoing Research and Regulatory Development Projects.
PB91-161752
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768

RESEARCH PROGRAM ADMINISTRATION
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605

RESEARCH PROJECTS
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094
ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482

RESOURCE CONSERVATION AND RECOVERY ACT
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531
RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840
RCRA Orientation Manual 1990 Edition.
PB91-145888

RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745
Hazardous Waste Data Management System Extract Tape.
PB91-592000

RESPIRATION
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915

RESPIRATORY DISEASES
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993

RESPIRATORY SYSTEM
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578
Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709

RETROFITTING
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295

RHEPOXYNIUS ABRONIUS
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741

RISK ASSESSMENT
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208
Guidance for Data Useability in Risk Assessment.
PB91-921312

RIVULUS MARMORATUS
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840

ROOTED AQUATIC PLANTS
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

RUBBER INDUSTRY
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304

RURAL AREAS
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598

SAFE DRINKING WATER ACT OF 1974
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094

SALINITY
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881

SALMON
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493

SALT MARSH PLANTS
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308

SAMPLING
Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542

SAN FRANCISCO BAY
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331

SANTA CLARA VALLEY
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

SCALE (CORROSION)
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125

SCHOOL BUILDINGS
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211

SCOPOLAMINE
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642

SEA GRASSES
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

SEAMING
Seaming of Geosynthetics.
PB91-145151

SEASONAL VARIATIONS
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590

SEAWATER
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

SEDIMENT WATER INTERFACES
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679

SEDIMENTS
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575
Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

KEYWORD INDEX

SEEDLINGS
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998

SEEDS
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998

SELENIUM
Drinking Water Criteria Document on Selenium.
PB91-142828
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

SELENOMETHIONINE
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550

SEPARATION
Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PB91-145433

SEWAGE DISPOSAL
Bilateral Wastewater Land Treatment Research.
PB91-162636

SEWAGE TREATMENT
Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

SEWAGE TREATMENT PLANTS
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531
Update of the Regulation and Policy Matrices Dated September 1988.
PB91-143081

SHEEPSHEAD MINNOW
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

SHRIMP
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865

SILICON ORGANIC COMPOUNDS
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

SINGLE GEL ELECTROPHORESIS
Evaluation of Exposure Markers.
PB91-144675

SITE DISCHARGES
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

SITE SURVEYS
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363

SLUDGE DISPOSAL
Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555

SMALL INTESTINE
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

SMOKE
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

SNOHOMISH RIVER
Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567

SODIUM CHLORIDE
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972

SODIUM SELENITE
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550

SOFTWARE
Urban Airshed Model.
PB91-505578
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477

SOIL ANALYSIS
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205

SOIL GASES
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651

SOIL SURVEYS
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812

SOIL VENTING
Soil Bioventing Demonstration Project.
PB91-162628

SOIL WATER
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308

SOIL-WATER-PLANT RELATIONSHIPS
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

SOLAR ULTRAVIOLET RADIATION
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381
UV-B Effects on Terrestrial Plants.
PB91-146399

SOLID WASTE DISPOSAL
RCRA Orientation Manual 1990 Edition.
PB91-145888

SOLIDIFICATION
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

SOLIDITECH PROCESS
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

SOLVENT EXTRACTION
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

SORBENTS
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688

SORPTION
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980

SOURCE REDUCTION
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556

SOYBEANS
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840

SPACE HEATERS
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654

SPARTINA ALTERNIFLORA
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998

SPERM MOTILITY
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732

SPERMATOZOA
In vitro Assessment of Gamete Integrity.
PB91-162610
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725

STABILIZATION
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479

STARTLE REACTION
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634

STATE GOVERNMENT
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435

STATES (UNITED STATES)
National Water Quality Inventory. 1988 Report to Congress.
PB91-145730

STATIONARY POLLUTANT SOURCES
Polymer Manufacturing Industry - Enabling Document.
PB91-161745

STATIONARY SOURCES
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966

NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162

STATISTICAL ANALYSIS

Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118

Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613

ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733

STIFFNESS TESTS

Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

STIZOSTEDION VITREUM

Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493

STOCHASTIC PROCESSES

Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

STORAGE TANKS

Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531

State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

Up and Running: New EPA Case History Database and Library System.
PB91-149617

STOVES

Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662

STREAMS

Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511

STRUCTURE-ACTIVITY RELATIONSHIP

Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075

STRUCTURE ACTIVITY RELATIONSHIPS

Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

STYRENE

Drinking Water Criteria Document for Styrene.
PB91-143370

SUBSTITUTES

New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158

SUCROSE

Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972

SULFATION

High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688

SULFUR DIOXIDE

Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840

SULFUR HEXAFLUORIDE

Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

SULFUR OXIDES

Air Quality and Deposition (Chapter 3).
PB91-136606

SUPERFUND

Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

Small Cost Recovery Referrals.
PB91-139006

Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014

Municipal Settlements.
PB91-139311

Interim CERCLA Settlement Policy.
PB91-139329

Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337

Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345

Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352

Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360

Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378

Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436

Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477

RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840

Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857

Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865

Policy for Managing Leachate at PCB Landfills.
PB91-139907

Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915

Catalog of Superfund Program Publications, FY-91.
PB91-144683

Update on Building and Structure Decontamination.
PB91-145102

SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466

Program Recommendations for State Section 313 Program Coordinators.
PB91-145698

Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479

Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784

Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758

Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204

Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205

Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206

Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208

Guidance for Data Useability in Risk Assessment.
PB91-921312

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986

Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964

SUPERFUND INNOVATIVE TECHNOLOGY EVALUATION PROGRAM

Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758

SURFACE IMPOUNDMENTS

Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633

SURFACE SLIDE SYSTEM

Dynamics of Plasmid Transfer on Surfaces.
PB91-163816

SURFACE WATERS

National Stream Survey Database Guide.
PB91-141804

Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590

SURFACTANTS

Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998

SWAMPS

Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526

SYNAPTONEMAL COMPLEXES

Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

SYNTHESIS (CHEMISTRY)

Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647

SYNTHETIC ORGANIC CHEMICALS

Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885

SYNTHETIC ORGANIC COMPOUNDS

Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438

SYNTHETIC RESINS

Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420

T LYMPHOCYTES

Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

TECHNOLOGY ASSESSMENT

Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

TECHNOLOGY UTILIZATION

Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296

Treatment Technology Background Document.
PB91-160556

TEMPERATURE

Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881

TERATOGENS

5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838

Toxicological Mechanisms of Implantation Failure.
PB91-149765

Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

TERBUFOS
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

TERPENE COMPOUNDS
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622

TERPENE HYDROCARBONS
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549

TERRESTRIAL ECOSYSTEM EXPOSURE ASSESSMENT MODEL
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711

TERRESTRIAL ECOSYSTEMS
UV-B Effects on Terrestrial Plants.
PB91-146399
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711

TERRESTRIAL VASCULAR PLANTS
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733

TESTIS
Histological and Histopathological Evaluation of the Testis.
PB91-164293

TETRACHLORODIBENZODIOXINS
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

TETRACHLOROETHANE
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671

TETRACHLOROETHYLENE
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067
Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

TETRAHYMENA THERMOPHILA
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824

TEXAS GULF
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899

TEXAS GULF COAST
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899

THALASSIA TESTUDINUM
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790

THALASSIA TESTUDIUM
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

TIME OF WETNESS
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034

TOLUENE
Drinking Water Criteria Document for Toluene.
PB91-143487
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

TOTAL ORGANIC CARBON
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205

TOXAPHENE
Drinking Water Criteria Document for Toxaphene.
PB91-143404
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588

TOXIC SUBSTANCES
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528
Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945
Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720
Urban Air Toxics Monitoring Program, 1989.
PB91-148262
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
PB91-159632
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398
Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406
Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661
Ongoing Research and Regulatory Development Projects.
PB91-161752
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964

TOXIC SUBSTANCES CONTROL ACT
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665

TOXICITY
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838
Evaluation of Exposure Markers.
PB91-144675
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733

Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808

Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998

Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037

1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060

Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324

Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332

Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407

Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423

Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431

Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353

Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361

Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567

Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591

Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724

Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799

Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617

White Phosphorus Health Advisory.
PB91-161026

In vitro Assessment of Gamete Integrity.
PB91-162610

Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550

Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

Seven-Day Tests and Chronic Tests.
PB91-163592

Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667

Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675

Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435

National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443

TOXICITY TESTS

Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575

TOXICOLOGY

Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

Immunotoxicology of Captive and Wild Birds.
PB91-137117

Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376

Drinking Water Criteria Document for Atrazine.
PB91-142794

Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802

Drinking Water Criteria Document for Aldicarb.
PB91-142810

Drinking Water Criteria Document on Selenium.
PB91-142828

Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836

Drinking Water Criteria Document on Chromium.
PB91-142844

Drinking Water Criteria Document for Lindane.
PB91-142851

Drinking Water Criteria Document on Barium.
PB91-142869

Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877

Drinking Water Criteria Document for Styrene.
PB91-143370

Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388

Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396

Drinking Water Criteria Document for Toxaphene.
PB91-143404

Drinking Water Criteria Document on Carbofuran.
PB91-143412

Quantification of Toxicological Effects for Alachlor.
PB91-143420

Drinking Water Criteria Document for Methoxychlor.
PB91-143461

Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479

Drinking Water Criteria Document for Toluene.
PB91-143487

Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316

Neurotoxic Effects of Colchicine.
PB91-149658

Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732

Toxicological Mechanisms of Implantation Failure.
PB91-149765

Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

Health Advisory for Hexachloroethane.
PB91-159657

Chloromethane: Health Advisory.
PB91-160564

Bromochloromethane: Health Advisory.
PB91-160572

Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580

o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598

1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606

Bromomethane: Drinking Water Health Advisory.
PB91-160614

BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622

1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630

Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648

1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655

Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663

1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671

Naphthalene: Drinking Water Health Advisory.
PB91-160689

1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697

p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705

Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529

Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560

Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602

Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543

Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

TPA (TEMPORAL PROFILE ANALYSIS)

Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357

TRACER STUDIES

Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

TRAINING MODULES

NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672

TRANSFECTION

Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

TREES

User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549

TREES (PLANTS)

Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

TRIBENURON METHYL

Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681

TRIBUTYLTIN

Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

TRIBUTYLTIN OXIDE

Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

TRICHLOROBENZENES

1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606

1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655

TRICHLOROETHANES

1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630

TRICHLOROETHYLENE

Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067

TRICHLOROFLUOROMETHANE

Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648

TRICHLOROPROPANE

1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697

TRICHODERMA HARZIANUM RIFAI STRAIN KRL-AG2

Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536

TROUT

Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782

Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720

TSCREEN MODEL

User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820

ULTRASONICS

Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404

ULTRAVIOLET B

Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381

UV-B Effects on Terrestrial Plants.
PB91-146399

ULTRAVIOLET DIVERGENCES

UV-B Effects on Terrestrial Plants.
PB91-146399

KEYWORD INDEX

ULTRAVIOLET RADIATION
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

ULTROX SYSTEM
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

ULTROX TECHNOLOGY
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

UNDERGROUND STORAGE
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

UNITED STATES
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706
Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783

UNLEADED GASOLINE
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

URBAN AIRSHED MODEL
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268
Urban Airshed Model.
PB91-505578

URBAN AREAS
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026
Urban Air Toxics Monitoring Program, 1989.
PB91-148262
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288

US EPA
Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
PB91-145847
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727

USER MANUALS (COMPUTER PROGRAMS)
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820

VALLEYS
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

VALPROATE
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838

VAPORS
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317

VARIABILITY
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590

VEGETATION
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460

VEHICULAR TRAFFIC
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

VELOCITY
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732

VERTEBRAL ABNORMALITIES
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

VERTEBRATES
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

VIBRIO
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907

VOLATILE ORGANIC COMPOUNDS
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396
Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687
Soil Bioventing Demonstration Project.
PB91-162628
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

WASTE DISPOSAL
State Authorization Manual. Volume 1.
PB91-130211
State Authorization Manual. Volume 2. Appendices.
PB91-130229
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524
Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633
Treatment Technology Background Document.
PB91-160556
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552
Geosynthetic Leachate Collection Systems.
PB91-162834
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758
Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205

WASTE MANAGEMENT
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133
Small Cost Recovery Referrals.
PB91-139006
Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014
Municipal Settlements.
PB91-139311
Interim CERCLA Settlement Policy.
PB91-139329
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337
Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345
Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352
Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360
Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436
Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477
RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840
Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857
Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865
Policy for Managing Leachate at PCB Landfills.
PB91-139907
Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915
Catalog of Superfund Program Publications, FY-91.
PB91-144683
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st). Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412
Succeeding at Waste Minimisation.
PB91-162446
Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719
Geosynthetic Leachate Collection Systems.
PB91-162834
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964
Hazardous Waste Data Management System Extract Tape.
PB91-592000

WASTE MINIMIZATION
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556
Succeeding at Waste Minimisation.
PB91-162446

Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701

Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

WASTE MINIMIZATION ASSESSMENTS

Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133

WASTE REDUCTION EVALUATIONS AT FEDERAL SITES PROGRAM

Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701

WASTE REDUCTION INNOVATIVE TECHNOLOGY EVALUATION PROGRAM

Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412

WASTE TREATMENT

Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133

SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PB91-145433

Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524

Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649

Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664

Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270

Treatment Technology Background Document.
PB91-160556

Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479

Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784

Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758

WASTE WATER

Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

Bilateral Wastewater Land Treatment Research.
PB91-162636

WASTE WATER DISPOSAL

CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

WASTEWATER TREATMENT

Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

WATER

Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790

WATER ANALYSIS

Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395

WATER CHEMISTRY

Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514

WATER DISTRIBUTION (APPLIED)

Standardized Costs for Water Supply Distribution Systems.
PB91-162461

WATER FLOW

Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704

WATER METERS

Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404

WATER MICROBIOLOGY

Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307

Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315

Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923

Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832

Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907

WATER PIPELINES

Cross-Connection Control Manual.
PB91-145490

Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625

WATER POLLUTION

CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

Organic Chemical Transport to Groundwater.
PB91-137059

Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265

Update of the Regulation and Policy Matrices Dated September 1988.
PB91-143081

Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758

Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998

ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482

Cross-Connection Control Manual.
PB91-145490

Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516

Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912

Review of Sources of Ground-Water Contamination from Light Industry.
PB91-145938

Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027

Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514

Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724

White Phosphorus Health Advisory.
PB91-161026

Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679

Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703

Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438

Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669

Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527

Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin.
PB91-904200

WATER POLLUTION ABATEMENT

NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680

NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854

NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961

Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792

WATER POLLUTION CONTROL

Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885

Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453

Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774

Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857

Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873

SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672

NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680

Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722

National Water Quality Inventory. 1988 Report to Congress.
PB91-145730

NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854

NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

Regional Framework for Establishing Recovery Criteria.
PB91-146480

Workshop on Innovative Technologies for Treatment of Contaminated Sediments, Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296

Great Lakes Demonstration Program, Section 108a.
PB91-148437

Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567

Elliot Bay Action Program: 1988 Action Plan.
PB91-149583

Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616

Treatment Technology Background Document.
PB91-160556

Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420

Soil Bioventing Demonstration Project.
PB91-162628

Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800

Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

WATER POLLUTION DETECTION

Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205

WATER POLLUTION EFFECTS

Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576

WATER POLLUTION EFFECTS (ANIMALS)

Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845

DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741

Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782

Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

WATER POLLUTION EFFECTS (HUMANS)

Health Advisory for 1,3-Dinitrobenzene.
PB91-159640
Health Advisory for Hexachloroethane.
PB91-159657
Chloromethane: Health Advisory
PB91-160564
Bromochloromethane: Health Advisory.
PB91-160572
Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580
o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598
1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606
Bromomethane: Drinking Water Health Advisory.
PB91-160614
BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622
1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630
Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648
1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655
Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671
Naphthalene: Drinking Water Health Advisory.
PB91-160689
1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697
p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398
Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406
Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661

WATER POLLUTION EFFECTS (PLANTS)

Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

WATER POLLUTION SAMPLING

Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712
Concept of Presence Absence Testing.
PB91-162818

WATER POLLUTION STANDARDS

Drinking Water Criteria Document for Atrazine.
PB91-142794
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802
Drinking Water Criteria Document for Aldicarb.
PB91-142810
Drinking Water Criteria Document on Selenium.
PB91-142828
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836
Drinking Water Criteria Document on Chromium.
PB91-142844
Drinking Water Criteria Document for Lindane.
PB91-142851
Drinking Water Criteria Document on Barium.
PB91-142869
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Drinking Water Criteria Document for Styrene.
PB91-143370
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396
Drinking Water Criteria Document for Toxaphene.
PB91-143404
Drinking Water Criteria Document on Carbofuran.
PB91-143412
Quantification of Toxicological Effects for Alachlor.
PB91-143420
Drinking Water Criteria Document for Methoxychlor.
PB91-143461
Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479
Drinking Water Criteria Document for Toluene.
PB91-143487
Concept of Presence Absence Testing.
PB91-162818

WATER PROJECTS

Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516

WATER PURIFICATION

Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792

WATER QUALITY

Flexibility in Bacteriological Monitoring.
PB91-137166
Drinking Water Criteria Document for Atrazine.
PB91-142794
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802
Drinking Water Criteria Document for Aldicarb.
PB91-142810
Drinking Water Criteria Document on Selenium.
PB91-142828
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836
Drinking Water Criteria Document on Chromium.
PB91-142844
Drinking Water Criteria Document for Lindane.
PB91-142851
Drinking Water Criteria Document on Barium.
PB91-142869
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Drinking Water Criteria Document for Styrene.
PB91-143370
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396
Drinking Water Criteria Document for Toxaphene.
PB91-143404
Drinking Water Criteria Document on Carbofuran.
PB91-143412
Quantification of Toxicological Effects for Alachlor.
PB91-143420
Drinking Water Criteria Document for Methoxychlor.
PB91-143461
Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479
Drinking Water Criteria Document for Toluene.
PB91-143487
Regional Framework for Establishing Recovery Criteria.
PB91-146480
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

Health Advisory for Hexachloroethane.
PB91-159657
Chloromethane: Health Advisory.
PB91-160564
Bromochloromethane: Health Advisory.
PB91-160572
Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580
o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598
1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606
Bromomethane: Drinking Water Health Advisory.
PB91-160614
BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622
1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630
Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648
1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655
Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671
Naphthalene: Drinking Water Health Advisory.
PB91-160689
1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697
p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398
Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406
Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661
Standardized Costs for Water Supply Distribution Systems.
PB91-162461

WATER QUALITY MANAGEMENT

Water Quality Modeling in Distribution Systems.
PB91-130153
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474
National Water Quality Inventory. 1988 Report to Congress.
PB91-145730
Optical Heterogeneity in Green Bay.
PB91-163501

WATER RESOURCES

Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118
Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912

WATER SUPPLY

Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438
Cross-Connection Control Manual.
PB91-145490
Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755
Economies of Scale and Scope in Water Supply.
PB91-163519

WATER TREATMENT

CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759
Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446
Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441
Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420
Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792
Concept of Presence Absence Testing.
PB91-162818

WATER TREATMENT PLANTS

Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453

WATER UTILITIES

Economies of Scale and Scope in Water Supply.
PB91-163519

WATERSHED MANIPULATION PROJECT

Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616

WATERSHEDS

Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403

WELLHEAD PROTECTION PROGRAM

Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755

WETLANDS

Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

WETTING

Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

WHITE PHOSPHORUS

White Phosphorus Health Advisory.
PB91-161026

WILDLIFE

Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677

WIND EFFECTS

Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

WOOD

Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

WOOD BURNING APPLIANCES

Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662

WORMS

Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591

XENOBIOTICS

Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903
In vitro Assessment of Gamete Integrity.
PB91-162610

XYLENOLS

Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497

ZOOPLANKTON

Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

SPONSORING EPA OFFICE INDEX

Publications are sorted alphabetically by title under the sponsoring EPA office. The EPA office is listed with the major EPA headquarters office. Laboratories and Divisions are listed alphabetically within the appropriate office.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

Sponsoring EPA Office	**Environmental Research Lab, Athens, GA Plants (Botany)**
EPA Report Number	EPA/600/D-85/036
Title	PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations
NTIS Order Number/Media Code Price Code	PB85-169597/REB PC A02/MF A01

SPONSORING EPA OFFICE INDEX

OFFICE OF EXTERNAL AFFAIRS

Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516

EPA/400/7-90/005
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896

Public-Private Partnership Case Studies: Profiles of Success in Providing Environmental Services.
PB91-145904

Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714

OFFICE OF AIR AND RADIATION

SOLID WASTE MANAGEMENT

Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378

EPA/530/SW-91/016
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195

EPA/530/SW-91/017
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203

Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857

Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865

Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360

Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345

Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014

Hazardous Waste Data Management System Extract Tape.
PB91-592000

EPA/DF/MT-91/080A
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737

Interim CERCLA Settlement Policy.
PB91-139329

Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337

Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436

Municipal Settlements.
PB91-139311

Policy for Managing Leachate at PCB Landfills.
PB91-139907

EPA/530/SW-91/030
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st). Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549

EPA/530/SW-90/036
RCRA Orientation Manual 1990 Edition.
PB91-145888

RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840

EPA/DF/MT-91/080B
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745

Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352

Small Cost Recovery Referrals.
PB91-139006

EPA/530/SW-91/018A
State Authorization Manual. Volume 1.
PB91-130211

EPA/530/SW-91/018B
State Authorization Manual. Volume 2. Appendices.
PB91-130229

Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915

Treatment Technology Background Document.
PB91-160556

RADIATION

EPA/520/1-91/002
National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300

EPA/520/1-91/002-SUPPL
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222

AIR QUALITY PLANNING AND STANDARDS

EPA/450/3-91/007
Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270

EPA/450/3-90/009
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737

EPA/450/1-90/004A
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624

EPA/450/1-90/004B
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
PB91-159632

EPA/600/D-90/201
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034

EPA/450/4-91/003
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

EPA/450/3-90/014A
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443

EPA/450/3-90/014
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435

EPA/450/3-90/013
Ongoing Research and Regulatory Development Projects.
PB91-161752

EPA/450/4-89/022
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
PB91-148411

EPA/450/3-83/019B
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304

EPA/450/3-90/019
Polymer Manufacturing Industry - Enabling Document.
PB91-161745

EPA/450/4-91/006
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288

EPA/450/4-91/001
Urban Air Toxics Monitoring Program, 1989.
PB91-148262

EPA/SW/MT-91/002
Urban Airshed Model.
PB91-505578

EPA/450/4-90/007A
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227

EPA/450/4-90/007B
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235

EPA/450/4-90/007C
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243

EPA/450/4-90/007D
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250

EPA/450/4-90/013
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820

OFFICE OF ENFORCEMENT

WATER ENFORCEMENT

NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854

NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680

NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672

OFFICE OF PLANNING AND MANAGEMENT

OFFICE OF POLICY AND EVALUATION

EPA/230/12-90/084
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775

EPA/230/11-90/083
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783

EPA/230/9-90/081
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987

Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739

Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

OFFICE OF TOXIC SUBSTANCES

Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953

EPA/DF/DK-91/078
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964

Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
PB91-145920

EPA/560/5-90/012
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

EPA/560/1-90/001
Program Recommendations for State Section 313 Program Coordinators.
PB91-145698

EPA/DF/MT-91/077
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816

EPA/560/7-90/003
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665

EPA/560/7-90/003
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458

PESTICIDE PROGRAMS

Compact Label File - 1991 (Fiche 1 - 4833).
PB91-911699

EPA/540/09-91/123
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617

EPA/540/09-91/122
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394

EPA/540/FS-91/118
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528

EPA/540/FS-91/124
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
PB91-159673

EPA/540/FS-91/119
Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536

EPA/540/FS-91/123
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

OFFICE OF EMERGENCY AND REMEDIAL RESPONSE

EPA/540/2-90/009
Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649

EPA/540/8-90/015
Catalog of Superfund Program Publications, FY-91.
PB91-144683

EPA/540/G-90/005
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477

EPA/540/P-91/001
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205

EPA/9285.7-05/FS
Guidance for Data Useability in Risk Assessment.
PB91-921312

EPA/540/G-90/008
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208

EPA/540/G-90/007
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466

EPA/540/G-90/007
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206

EPA/540/8-90/017
Progress Toward Implementing Superfund: Fiscal Year 1989.
PB91-921204
EPA/9012.10-B
Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834
EPA/9012.10-A
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818
EPA/9012.10-A-I
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826

OFFICE OF RESEARCH AND DEVELOPMENT

EPA/600/9-90/042
ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281

ENVIRONMENTAL RESEARCH LAB - Athens, GA

EPA/600/9-91/001
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679
EPA/600/3-91/004
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361
EPA/600/4-91/004
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703
EPA/600/3-91/019
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711
EPA/600/J-90/172
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980

ENVIRONMENTAL RESEARCH LAB - Corvallis, OR

EPA/600/J-87/541
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324
EPA/600/J-90/263
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832
EPA/600/D-90/193
Air Quality and Deposition (Chapter 3).
PB91-136606
EPA/600/J-87/540
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316
EPA/600/3-91/009
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542
EPA/600/J-87/542
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332
EPA/600/J-90/295
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514
EPA/600/J-90/294
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506
EPA/600/D-90/190
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109
EPA/600/J-88/556
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733
EPA/600/D-91/003
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677
EPA/600/3-91/001
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460
EPA/600/J-90/267
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808
EPA/600/J-90/340
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543
EPA/600/J-90/296
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449
EPA/600/J-90/262
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840
EPA/600/J-87/539
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308
EPA/600/J-89/499
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381
EPA/600/3-91/010
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526
EPA/600/D-90/192
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598
EPA/600/D-90/195
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622
EPA/600/D-90/194
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614
EPA/600/D-90/191
Immunotoxicology of Captive and Wild Birds.
PB91-137117
EPA/600/D-91/004
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685
EPA/600/J-90/265
Most Dilute Lake in the World.
PB91-144816
EPA/600/8-90/055
National Stream Survey Database Guide.
PB91-141804
EPA/600/J-90/266
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709
EPA/600/J-90/291
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472
EPA/600/3-90/096
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572
EPA/600/J-86/533
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807
Regional Framework for Establishing Recovery Criteria.
PB91-146480
EPA/600/J-90/293
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498
EPA/600/J-90/297
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456
EPA/600/3-90/095
Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118
EPA/600/J-90/341
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550
EPA/600/3-91/012
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590
EPA/600/J-89/500
UV-B Effects on Terrestrial Plants.
PB91-146399
EPA/600/J-90/264
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824
EPA/600/3-91/007
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403
EPA/600/3-91/008
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395
EPA/600/3-91/006
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616

ENVIRONMENTAL RESEARCH LAB - Duluth, MN

EPA/600/J-90/317
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712
EPA/600/J-90/251
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949
EPA/600/D-90/206
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083
EPA/600/J-90/254
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998
EPA/600/J-89/504
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431
EPA/600/J-90/250
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956
EPA/600/J-90/210
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972
EPA/600/J-89/503
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423
EPA/600/J-87/543
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493
EPA/600/D-90/238
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529
EPA/600/D-90/205
Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075
EPA/600/J-89/501
Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407
EPA/600/J-90/252
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931
EPA/600/J-90/253
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923
EPA/600/J-89/505
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527
EPA/600/J-89/488
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782
EPA/600/J-87/544
Optical Heterogeneity in Green Bay.
PB91-163501
EPA/600/J-90/344
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584
EPA/600/J-90/343
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576
EPA/600/J-89/502
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415
EPA/600/J-89/506
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535
EPA/600/J-90/316
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704
EPA/600/J-90/345
Seven-Day Tests and Chronic Tests.
PB91-163592
EPA/600/J-90/318
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720
EPA/600/J-90/256
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907
EPA/600/D-90/237
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511

EPA/600/J-90/342
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

EPA/600/J-90/249
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

EPA/600/J-90/255
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915

ENVIRONMENTAL RESEARCH LAB - Gulf Breeze, FL

EPA/600/J-90/381
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

EPA/600/J-90/386
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998

EPA/600/J-90/387
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

EPA/600/J-90/373
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865

EPA/600/J-90/365
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790

EPA/600/J-90/372
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857

EPA/600/J-90/369
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832

EPA/600/J-90/367
Dynamics of Plasmid Transfer on Surfaces.
PB91-163816

EPA/600/J-90/374
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873

EPA/600/J-90/368
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824

EPA/600/J-90/375
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881

EPA/600/J-90/371
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840

EPA/600/J-90/383
General Microbiology of RecA: Environmental and Evolutionary Significance.
PB91-163964

EPA/600/J-90/364
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

EPA/600/J-90/384
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

EPA/600/J-90/385
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

EPA/600/J-90/379
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

EPA/600/J-90/377
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907

EPA/600/J-90/366
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808

EPA/600/J-90/388
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

EPA/600/J-90/376
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

EPA/600/J-90/378
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

EPA/600/J-90/380
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

EPA/600/J-90/382
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

ENVIRONMENTAL RESEARCH LAB - Narragansett, RI

EPA/600/J-89/493
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758

EPA/600/D-90/221
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986

EPA/600/J-88/555
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741

EPA/600/J-90/332
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

EPA/600/D-90/185
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845

EPA/600/J-90/269
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

EPA/600/J-90/248
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964

EPA/600/J-90/268
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790

EPA/600/J-90/333
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799

ENVIRONMENTAL MONITORING & SUPPORT LAB - Cinn, OH

EPA/600/4-90/031
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353

EPA/600/4-90/020
Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027

ENVIRONMENTAL MONITORING SYSTEMS LAB - Las Vegas, NV

EPA/600/J-90/300
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

EPA/600/8-90/086
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376

EPA/600/J-90/299
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530

EPA/600/4-90/017
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812

EPA/600/4-90/032
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

EPA/600/4-90/034
Evaluation of Exposure Markers.
PB91-144675

EPA/600/J-90/298
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

EPA/600/J-89/495
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340

EPA/600/J-90/359
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733

EPA/600/J-90/301
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

ENVIRONMENTAL SCIENCES RESEARCH LAB - RTP, NC

EPA/600/D-91/005
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

EPA/600/D-90/200
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026

EPA/600/4-90/004
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211

EPA/600/3-91/002
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667

EPA/600/J-90/302
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563

EPA/600/J-90/362
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766

EPA/600/J-90/308
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621

EPA/600/D-90/234
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495

EPA/600/D-90/199
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911

EPA/600/J-90/305
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

EPA/600/3-90/093
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742

EPA/600/3-90/060
Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796

EPA/600/D-90/235
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503

EPA/600/J-90/363
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

EPA/600/J-89/496
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357

EPA/600/J-90/138
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717

EPA/600/3-90/097
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317

EPA/600/J-90/306
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605

EPA/600/J-90/307
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613

EPA/600/3-91/020
Modal Aerosol Dynamics Modeling.
PB91-161729

EPA/600/D-90/175
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

EPA/600/D-90/202
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042

EPA/600/D-90/174
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

EPA/600/J-89/498
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373

EPA/600/J-90/303
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

EPA/600/3-91/013
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

EPA/600/J-89/497
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

SPONSORING EPA OFFICE INDEX

EPA/450/4-90/007E
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268

EPA/600/8-90/087
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564

EPA/600/8-90/084
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549

EPA/600/J-90/304
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

HEALTH EFFECTS RESEARCH LAB - Cinn, OH

EPA/600/J-90/283
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

EPA/600/1-91/001
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838

EPA/600/D-90/243
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578

EPA/600/J-90/327
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732

EPA/600/J-90/328
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

EPA/600/D-90/245
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594

EPA/600/D-90/242
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560

EPA/600/D-90/162
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

EPA/600/J-90/352
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667

EPA/600/J-90/287
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011

EPA/600/D-90/197
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

EPA/600/D-90/168
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993

EPA/600/J-90/348
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

EPA/600/J-90/286
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

EPA/600/J-90/346
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

EPA/600/J-90/329
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

EPA/600/J-90/349
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634

EPA/600/J-90/351
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

EPA/600/J-90/353
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675

EPA/600/D-90/246
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602

EPA/600/D-90/171
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944

EPA/600/J-90/331
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

EPA/600/J-90/355
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

EPA/600/J-90/282
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052

EPA/600/J-90/358
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725

EPA/600/D-90/247
In vitro Assessment of Gamete Integrity.
PB91-162610

EPA/600/J-90/354
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683

EPA/600/J-90/347
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618

EPA/600/J-90/279
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

EPA/600/1-90/005A
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307

EPA/600/J-90/350
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642

EPA/600/D-90/196
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

EPA/600/J-90/284
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

EPA/600/J-90/325
Neurotoxic Effects of Colchicine.
PB91-149658

EPA/600/J-90/356
Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709

EPA/600/J-90/326
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724

EPA/600/D-90/167
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

EPA/600/J-90/285
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037

EPA/600/D-90/198
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903

EPA/600/J-90/330
Toxicological Mechanisms of Implantation Failure.
PB91-149765

EPA/600/D-90/169
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

EPA/600/J-90/357
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

EPA/600/1-90/005B
Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315

INDUSTRIAL ENVIRONMENTAL RESEARCH LAB - RTP, NC

EPA/600/D-90/240
Acid Rain Control Options.
PB91-162545

EPA/DF/MT-91/032
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867

EPA/DF/MT-91/031
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859

EPA/600/7-91/002
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534

EPA/600/D-90/241
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552

EPA/600/J-90/310
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639

EPA/600/D-90/239
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537

EPA/600/J-90/309
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647

EPA/600/J-90/312
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662

EPA/600/8-91/002
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687

EPA/600/7-91/003
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

EPA/600/J-90/314
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688

EPA/600/J-90/313
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

EPA/600/J-90/315
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696

EPA/SW/DK-91/075
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477

EPA/SW/DK-91/074
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469

EPA/600/7-90/022A
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512

EPA/600/7-90/022B
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520

EPA/600/7-90/022C
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538

EPA/600/D-90/220
Material Selection.
PB91-136978

EPA/DF/MT-91/033
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875

EPA/DF/MT-91/034
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883

EPA/DF/MT-91/036
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909

EPA/DF/MT-91/005
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594

EPA/DF/MT-91/070
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246

EPA/DF/MT-91/071
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253

EPA/DF/MT-91/069
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238

EPA/DF/MT-91/064
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188

EPA/DF/MT-91/065
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196

EPA/DF/MT-91/030
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842

EPA/DF/MT-91/067
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212

EPA/DF/MT-91/068
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220

EPA/DF/MT-91/066
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204

EPA/DF/MT-91/028
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826

EPA/DF/MT-91/029
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834

EPA/DF/MT-91/027
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818

EPA/DF/MT-91/006
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602

EPA/DF/MT-91/014
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685

EPA/DF/MT-91/019
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735

EPA/DF/MT-91/023
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776

EPA/DF/MT-91/061
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154

EPA/DF/MT-91/041
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958

EPA/DF/MT-91/045
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990

EPA/DF/MT-91/037
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917

EPA/DF/MT-91/053
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071

EPA/DF/MT-91/057
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113

EPA/DF/MT-91/049
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030

EPA/DF/MT-91/010
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644

EPA/DF/MT-91/011
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651

EPA/DF/MT-91/020
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743

EPA/DF/MT-91/024
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784

EPA/DF/MT-91/038
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925

EPA/DF/MT-91/007
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610

EPA/DF/MT-91/062
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162

EPA/DF/MT-91/042
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966

EPA/DF/MT-91/046
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006

EPA/DF/MT-91/054
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089

EPA/DF/MT-91/058
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121

EPA/DF/MT-91/050
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048

EPA/DF/MT-91/015
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693

EPA/DF/MT-91/051
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055

EPA/DF/MT-91/021
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750

EPA/DF/MT-91/025
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792

EPA/DF/MT-91/063
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170

EPA/DF/MT-91/043
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974

EPA/DF/MT-91/047
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014

EPA/DF/MT-91/039
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933

EPA/DF/MT-91/055
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097

EPA/DF/MT-91/059
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139

EPA/DF/MT-91/012
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669

EPA/DF/MT-91/016
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701

EPA/DF/MT-91/008
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628

EPA/DF/MT-91/048
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022

EPA/DF/MT-91/056
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105

EPA/DF/MT-91/052
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063

EPA/DF/MT-91/022
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768

EPA/DF/MT-91/026
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800

EPA/DF/MT-91/018
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727

EPA/DF/MT-91/040
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941

EPA/DF/MT-91/060
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147

EPA/DF/MT-91/013
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677

EPA/DF/MT-91/017
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719

EPA/DF/MT-91/009
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636

EPA/DF/MT-91/035
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891

EPA/DF/MT-91/004
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586

EPA/600/D-90/217
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952

EPA/DF/DK-91/073
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295

EPA/600/7-90/021A
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322

EPA/600/7-90/021B
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330

EPA/600/7-90/021C
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348

EPA/600/7-90/021D
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355

EPA/600/7-90/021E
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363

EPA/600/7-91/001
Self-Consistent Deutschian ESP Model.
PB91-149518

EPA/600/J-90/311
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654

MUNICIPAL ENVIRONMENTAL RESEARCH LAB - Cinn, OH

EPA/600/J-90/324
Air Emissions from the Incineration of Hazardous Waste.
PB91-149641

EPA/600/J-90/273
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136

EPA/600/2-91/004
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695

EPA/600/D-91/013
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

SPONSORING EPA OFFICE INDEX

EPA/600/2-91/003
Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338

EPA/600/J-90/322
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625

EPA/600/J-90/280
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060

EPA/600/2-91/002
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846

EPA/600/D-91/017
Concept of Presence Absence Testing.
PB91-162818

EPA/600/J-90/361
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758

EPA/600/D-90/227
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420

EPA/600/D-90/230
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453

EPA/600/D-90/012
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768

EPA/600/J-89/490
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

EPA/600/D-91/011
Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750

EPA/600/D-90/226
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412

EPA/600/J-90/323
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633

EPA/600/J-88/557
Economies of Scale and Scope in Water Supply.
PB91-163519

EPA/600/D-90/207
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091

EPA/600/J-90/278
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

EPA/600/2-91/007A
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480

EPA/600/2-91/007B
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498

EPA/600/2-91/007C
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506

EPA/600/2-91/007D
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514

EPA/600/2-91/007E
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522

EPA/600/2-91/007F
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530

EPA/600/2-91/007G
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548

EPA/600/2-91/007H
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555

EPA/600/9-90/039
Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
PB91-148387

EPA/625/5-90/025
Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961

EPA/600/D-91/016
Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800

EPA/600/J-90/270
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

EPA/600/D-90/210
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133

EPA/600/D-91/010
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743

EPA/600/D-91/014
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784

EPA/600/J-90/360
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

EPA/600/D-90/213
Flexibility in Bacteriological Monitoring.
PB91-137166

EPA/600/D-91/008
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727

EPA/600/D-91/019
Geosynthetic Leachate Collection Systems.
PB91-162834

EPA/600/D-90/211
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141

EPA/600/J-90/272
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144

EPA/600/J-90/274
Incineration Research Facility.
PB91-145128

EPA/600/2-91/001
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

EPA/600/D-91/015
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792

EPA/600/D-90/212
New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158

EPA/600/D-90/233
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487

EPA/600/D-90/228
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438

EPA/600/8-91/003
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312

EPA/600/D-91/006
Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701

EPA/600/2-90/208
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018

EPA/600/9-90/006
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524

EPA/600/9-90/037
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379

EPA/600/J-90/277
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094

EPA/600/D-90/232
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479

EPA/600/J-90/271
Seaming of Geosynthetics.
PB91-145151

EPA/600/D-91/018
Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826

EPA/600/J-90/275
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

EPA/540/A5-89/005
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

EPA/600/D-90/231
Standardized Costs for Water Supply Distribution Systems.
PB91-162461

EPA/600/2-90/061
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

EPA/600/D-90/229
Succeeding at Waste Minimisation.
PB91-162446

EPA/625/2-77/012
Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264

EPA/600/D-91/007
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

EPA/600/D-90/225
Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404

EPA/540/A5-89/012
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

Up and Running: New EPA Case History Database and Library System.
PB91-149617

EPA/600/J-90/276
Update on Building and Structure Decontamination.
PB91-145102

EPA/600/2-90/062
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556

EPA/600/D-90/184
Water Quality Modeling in Distribution Systems.
PB91-130153

EPA/600/2-90/054
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296

EPA/600/D-90/209
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125

ROBERT S. KERR ENVIRONMENTAL RESEARCH LAB - Ada, OK

EPA/600/J-90/258
Adsorption of Organic Cations to Natural Materials.
PB91-144881

EPA/600/D-90/204
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067

EPA/600/D-90/249
Bilateral Wastewater Land Treatment Research.
PB91-162636

EPA/600/J-90/260
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865

EPA/600/J-90/261
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857

EPA/600/D-91/002
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669

EPA/600/J-90/257
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899

EPA/600/2-90/060
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346

EPA/625/9-89/007
Injection Well Mechanical Integrity.
PB91-145631

EPA/600/J-89/489
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774

EPA/600/D-90/250
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644

EPA/600/2-91/010
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

EPA/600/2-91/009
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285
EPA/600/D-90/203
Organic Chemical Transport to Groundwater.
PB91-137059
EPA/600/J-90/259
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873
EPA/600/D-91/001
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651
EPA/600/D-90/248
Soil Bioventing Demonstration Project.
PB91-162628
EPA/600/D-90/159
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205

OFFICE OF HEALTH AND ENVIRONMENTAL ASSESSMENT (OHEA)
EPA/600/J-89/494
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815
EPA/600/8-91/012
Histological and Histopathological Evaluation of the Testis.
PB91-164293

ENVIRONMENTAL CRITERIA AND ASSESSMENT OFFICE - RTP/Cinn (ECAO)
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422
Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414
Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570
EPA/600/6-90/008
Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265
Drinking Water Criteria Document for Aldicarb.
PB91-142810
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Drinking Water Criteria Document for Lindane.
PB91-142851
Drinking Water Criteria Document for Methoxychlor.
PB91-143461
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802
Drinking Water Criteria Document for Styrene.
PB91-143370
Drinking Water Criteria Document for Toluene.
PB91-143487
Drinking Water Criteria Document for Toxaphene.
PB91-143404
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388
EPA/600/D-90/216
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945

OFFICE OF WATER AND HAZARDOUS MATERIALS
Drinking Water Criteria Document for Atrazine.
PB91-142794
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396
Drinking Water Criteria Document on Barium.
PB91-142869
Drinking Water Criteria Document on Carbofuran.
PB91-143412
Drinking Water Criteria Document on Chromium.
PB91-142844
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836
Drinking Water Criteria Document on Selenium.
PB91-142828
EPA/440/6-90/003
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640
Quantification of Toxicological Effects for Alachlor.
PB91-143420
Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479
EPA/440/6-90/005
Review of Sources of Ground-Water Contamination from Light Industry.
PB91-145938
Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438

WATER PROGRAM OPERATIONS
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671
1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630
1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697
1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655
1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606
Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441
BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622
Bromochloromethane: Health Advisory.
PB91-160572
Bromomethane: Drinking Water Health Advisory.
PB91-160614
Chloromethane: Health Advisory.
PB91-160564
EPA/570/9-89/007
Cross-Connection Control Manual.
PB91-145490
Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580
EPA/505/8-90/001
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508
Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663
Naphthalene: Drinking Water Health Advisory.
PB91-160689
EPA/440/4-90/003
National Water Quality Inventory. 1988 Report to Congress.
PB91-145730
o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598
p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705
EPA/440/4-90/005
Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912
EPA/503/8-89/001
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474
Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648
Update of the Regulation and Policy Matrices Dated September 1988.
PB91-143081

OFFICE OF DRINKING WATER
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885
Health Advisory for Hexachloroethane.
PB91-159657
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446
EPA/625/4-89/024
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722
White Phosphorus Health Advisory.
PB91-161026

REGION V - CHICAGO, ILL.
EPA/905/8-88/005
Great Lakes Demonstration Program, Section 108a.
PB91-148437
EPA/905/4-88/008
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429

REGION X - SEATTLE, WA
EPA/910/9-90/009
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575
EPA/910/9-88/240
Elliot Bay Action Program: 1988 Action Plan.
PB91-149583
EPA/910/9-89/006
Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567
EPA/910/9-90/010
Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591
EPA/910/9-90/018
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

CORPORATE AUTHOR INDEX

Entries are sequenced by corporate author name, report number, and NTIS order number. The monitor agency number is given following the report title.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

Corporate/Performing Organization	**Clemson Univ., SC, Dept. of Environmental Systems Engineering**
Report or Series Number Title	EPA/600/D-85/036 PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations
(Sponsor's Report or Series Number)	EPA/600/D-85/036
NTIS Order Number/Media Code Price Code	PB85-169597/REB PC A02/MF A01

CORPORATE AUTHOR INDEX

ACUREX CORP., RESEARCH TRIANGLE PARK, NC.
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
(EPA/600/J-90/309)
PB91-146647

AGRICULTURAL RESEARCH SERVICE, BELTSVILLE, MD. CLIMATE STRESS LAB.
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
(EPA/600/J-90/262)
PB91-144840

AMERICAN WATER WORKS ASSOCIATION RESEARCH FOUNDATION, DENVER, CO.
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
(EPA/600/D-91/013)
PB91-162776

ASCI CORP., MCLEAN, VA.
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281

ATMOSPHERIC ENVIRONMENT SERVICE, DOWNSVIEW (ONTARIO).
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
(EPA/600/J-90/308)
PB91-146621

BAYLOR COLL. OF MEDICINE, HOUSTON, TX.
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
(EPA/600/D-90/197)
PB91-136895

CALIFORNIA UNIV., DAVIS. DEPT. OF LAND, AIR AND WATER RESOURCES.
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
(EPA/600/J-87/541)
PB91-146324
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
(EPA/600/J-87/542)
PB91-146332

CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OH.
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
(EPA/560/7-90/003)
PB91-159665

CHEMICAL INDUSTRY INST. OF TOXICOLOGY, RESEARCH TRIANGLE PARK, NC.
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
(EPA/600/J-90/351)
PB91-163659

CINCINNATI UNIV., OH.
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
(EPA/600/D-90/233)
PB91-162487

CINCINNATI UNIV., OH. DEPT. OF CIVIL AND ENVIRONMENTAL ENGINEERING.
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
(EPA/600/D-90/207)
PB91-137091
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
(EPA/600/D-90/211)
PB91-137141

COMPUTER SCIENCES CORP., RESEARCH TRIANGLE PARK, NC.
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
(EPA/450/4-90/007E, EPA/SW/MT-91/002E)
PB91-131268
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
(EPA/600/8-90/087)
PB91-136564
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
(EPA/600/3-91/013)
PB91-159707
Modal Aerosol Dynamics Modeling.
(EPA/600/3-91/020)
PB91-161729
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
(EPA/600/D-90/234)
PB91-162495

CORNELL UNIV. AGRICULTURAL EXPERIMENT STATION, ITHACA, NY. DEPT. OF AGRONOMY.
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
(EPA/600/J-90/368)
PB91-163824

CORNELL UNIV., ITHACA, NY.
Movement of Bacteria through Soil and Aquifer Sand.
(EPA/600/2-91/010)
PB91-164277

CORNELL UNIV., ITHACA, NY. ECOSYSTEMS RESEARCH CENTER.
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
(EPA/600/J-90/378)
PB91-163915

CORPS OF ENGINEERS NORTH ATLANTIC, BALTIMORE, MD. CONSTRUCTION DIV.
CENAB-CO/HTW/90-1/EPA(S)-VOL-1
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3

CORVALLIS ENVIRONMENTAL RESEARCH LAB., OR.
EPA/600/3-91/001
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460
EPA/600/3-91/006
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616
EPA/600/3-91/010
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526
EPA/600/8-90/055
National Stream Survey Database Guide.
PB91-141804
EPA/600/D-90/191
Immunotoxicology of Captive and Wild Birds.
PB91-137117
EPA/600/D-90/193
Air Quality and Deposition (Chapter 3).
PB91-136606
EPA/600/D-90/195
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622
EPA/600/D-91/003
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677
EPA/600/D-91/004
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685
EPA/600/J-88/556
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733
EPA/600/J-90/267
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808
EPA/600/J-90/291
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472
EPA/600/J-90/295
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514
EPA/600/J-90/297
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456
EPA/600/J-90/340
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543
EPA/600/J-90/341
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550

DELAWARE UNIV., NEWARK. COLL. OF MARINE STUDIES.
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
(EPA/600/J-87/539)
PB91-146308

DENVER UNIV., CO. DEPT. OF CHEMISTRY.
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
(EPA/600/4-90/032)
PB91-148320

DUKE UNIV. MEDICAL CENTER, DURHAM, NC. CENTER FOR EXTRAPOLATION MODELLING.
Does Chronic Ozone Exposure Lead to Lung Disease.
(EPA/600/D-90/168)
PB91-132993

DYNAMAC CORP., ROCKVILLE, MD.
ISBN-0-9627422-0-1
Histological and Histopathological Evaluation of the Testis.
(EPA/600/8-91/012, OHEA-R-382)
PB91-164293
Drinking Water Criteria Document for Atrazine.
PB91-142794

E AND S ENVIRONMENTAL CHEMISTRY, INC., CORVALLIS, OR.
Most Dilute Lake in the World.
(EPA/600/J-90/265)
PB91-144816

EASTERN RESEARCH GROUP, INC., ARLINGTON, MA.
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
(EPA/625/6-89/025A)
PB91-145706

EIDGENOESSISCHE TECHNISCHE HOCHSCHULE, ZURICH (SWITZERLAND).
BBW-PROC-(89)3
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
(EPA-217.102)
DE91724862
ETDE-mf-1724862
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
(EPA-217.102)
DE91724862

ENGINEERING SCIENCE, CARY, NC.
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
(EPA/450/4-89/022)
PB91-148411

ENVIRONMENTAL MONITORING AND SERVICES, INC., CHAPEL HILL, NC.
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
(EPA/600/D-90/171)
PB91-132944

ENVIRONMENTAL MONITORING SYSTEMS LAB., CINCINNATI, OH.
EPA/600/4-90/020
Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027
EPA/600/4-90/031
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353

ENVIRONMENTAL MONITORING SYSTEMS LAB., LAS VEGAS, NV.
DOE/DP/00539-062
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910
EPA-600/4-90/016
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910

ENVIRONMENTAL PROTECTION AGENCY, CHICAGO, IL. REGION V.
EPA/905/4-88/008
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429

ENVIRONMENTAL PROTECTION AGENCY, CINCINNATI, OH. CENTER FOR ENVIRONMENTAL RESEARCH INFORMATION.
CERI-90-04
Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664
EPA/625/5-90/025
Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961
EPA/625/6-89/023
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

ENVIRONMENTAL PROTECTION AGENCY, CINCINNATI, OH. DRINKING WATER RESEARCH DIV.
EPA/600/D-90/184
Water Quality Modeling in Distribution Systems.
PB91-130153
EPA/600/D-90/209
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125
EPA/600/D-91/015
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792
EPA/600/D-91/016
Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800
EPA/600/D-91/017
Concept of Presence Absence Testing.
PB91-162818

ENVIRONMENTAL PROTECTION AGENCY, CINCINNATI, OH. ENVIRONMENTAL CRITERIA AND ASSESSMENT OFFICE.
ECAO-CIN-402
Drinking Water Criteria Document for Lindane.
PB91-142851
ECAO-CIN-420
Drinking Water Criteria Document for Aldicarb.
PB91-142810
ECAO-CIN-426
Drinking Water Criteria Document for Toxaphene.
PB91-143404
ECAO-CIN-613
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513
ECAO-CIN-614
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612
ECAO-CIN-615
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398
ECAO-CIN-616
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521
ECAO-CIN-617
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539
ECAO-CIN-621
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604
ECAO-CIN-624
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554
ECAO-CIN-625
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547
ECAO-CIN-628
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620
ECAO-CIN-629
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380
ECAO-CIN-630
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661
ECAO-CIN-631
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562
ECAO-CIN-632
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570
ECAO-CIN-636
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471
ECAO-CIN-640
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596
ECAO-CIN-642
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497
ECAO-CIN-644
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448
ECAO-CIN-646
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505
ECAO-CIN-647
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489
ECAO-CIN-648
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430
ECAO-CIN-649
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646
ECAO-CIN-651
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463
ECAO-CIN-652
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455
ECAO-CIN-654
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422
ECAO-CIN-661
Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414
ECAO-CIN-662
Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406
ECAO-CIN-664
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638
ECAO-CIN-665
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653
ECAO-CIN-674
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588
EPA/600/6-90/008
Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265
EPA/600/D-90/216
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945
ENVIRONMENTAL PROTECTION AGENCY, CINCINNATI, OH. RISK REDUCTION ENGINEERING LAB.
EPA/540/A5-89/005
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817
EPA/600/2-90/208
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018
EPA/600/8-91/003
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312
EPA/600/9-90/006
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524
EPA/600/D-90/012
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768
EPA/600/D-90/210
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133
EPA/600/D-90/212
New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158
EPA/600/D-90/213
Flexibility in Bacteriological Monitoring.
PB91-137166
EPA/600/D-90/225
Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404
EPA/600/D-90/226
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412
EPA/600/D-90/227
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420
EPA/600/D-90/228
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438
EPA/600/D-90/229
Succeeding at Waste Minimisation.
PB91-162446
EPA/600/D-90/230
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453
EPA/600/D-90/231
Standardized Costs for Water Supply Distribution Systems.
PB91-162461
EPA/600/D-90/232
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479
EPA/600/D-91/006
Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701
EPA/600/D-91/008
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727
EPA/600/D-91/010
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743
EPA/600/D-91/011
Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750
EPA/600/D-91/014
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784
EPA/600/D-91/018
Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826
EPA/600/D-91/019
Geosynthetic Leachate Collection Systems.
(GR-0028)
PB91-162834
EPA/600/J-89/490
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766
EPA/600/J-90/271
Seaming of Geosynthetics.
PB91-145151
EPA/600/J-90/272
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144
EPA/600/J-90/273
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136
EPA/600/J-90/274
Incineration Research Facility.
PB91-145128
EPA/600/J-90/275
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110
EPA/600/J-90/276
Update on Building and Structure Decontamination.
PB91-145102
EPA/600/J-90/277
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094
EPA/600/J-90/278
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086
EPA/600/J-90/322
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625
EPA/600/J-90/323
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633
EPA/600/J-90/324
Air Emissions from the Incineration of Hazardous Waste.
PB91-149641
EPA/600/J-90/360
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741
EPA/600/J-90/361
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758
Up and Running: New EPA Case History Database and Library System.
PB91-149617
ENVIRONMENTAL PROTECTION AGENCY, CINCINNATI, OH. WATER ENGINEERING RESEARCH LAB.
EPA/600/J-88/557
Economies of Scale and Scope in Water Supply.
PB91-163519
ENVIRONMENTAL PROTECTION AGENCY, RESEARCH TRIANGLE PARK, NC.
Urban Airshed Model.
(EPA/SW/MT-91/002)
PB91-505578
ENVIRONMENTAL PROTECTION AGENCY, RESEARCH TRIANGLE PARK, NC. AIR AND ENERGY ENGINEERING RESEARCH LAB.
EPA/600/D-90/220
Material Selection.
PB91-136978
EPA/600/D-90/239
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537
EPA/600/D-90/240
Acid Rain Control Options.
PB91-162545
EPA/600/D-90/241
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552
EPA/600/J-90/310
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639
EPA/600/J-90/315
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696

NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
(EPA/DF/MT-91/004)
PB91-505586

NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
(EPA/DF/MT-91/005)
PB91-505594

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
(EPA/DF/MT-91/006)
PB91-505602

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
(EPA/DF/MT-91/007)
PB91-505610

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
(EPA/DF/MT-91/008)
PB91-505628

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
(EPA/DF/MT-91/009)
PB91-505636

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
(EPA/DF/MT-91/010)
PB91-505644

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
(EPA/DF/MT-91/011)
PB91-505651

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
(EPA/DF/MT-91/012)
PB91-505669

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
(EPA/DF/MT-91/013)
PB91-505677

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
(EPA/DF/MT-91/014)
PB91-505685

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
(EPA/DF/MT-91/015)
PB91-505693

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
(EPA/DF/MT-91/016)
PB91-505701

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
(EPA/DF/MT-91/017)
PB91-505719

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
(EPA/DF/MT-91/018)
PB91-505727

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
(EPA/DF/MT-91/019)
PB91-505735

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
(EPA/DF/MT-91/020)
PB91-505743

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
(EPA/DF/MT-91/021)
PB91-505750

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
(EPA/DF/MT-91/022)
PB91-505768

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
(EPA/DF/MT-91/023)
PB91-505776

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
(EPA/DF/MT-91/024)
PB91-505784

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
(EPA/DF/MT-91/025)
PB91-505792

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
(EPA/DF/MT-91/026)
PB91-505800

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
(EPA/DF/MT-91/027)
PB91-505818

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
(EPA/DF/MT-91/028)
PB91-505826

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
(EPA/DF/MT-91/029)
PB91-505834

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
(EPA/DF/MT-91/030)
PB91-505842

Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
(EPA/DF/MT-91/031)
PB91-505859

Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
(EPA/DF/MT-91/032)
PB91-505867

NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
(EPA/DF/MT-91/033)
PB91-505875

NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
(EPA/DF/MT-91/034)
PB91-505883

NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
(EPA/DF/MT-91/035)
PB91-505891

NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
(EPA/DF/MT-91/036)
PB91-505909

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
(EPA/DF/MT-91/037)
PB91-505917

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
(EPA/DF/MT-91/038)
PB91-505925

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
(EPA/DF/MT-91/039)
PB91-505933

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
(EPA/DF/MT-91/040)
PB91-505941

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
(EPA/DF/MT-91/041)
PB91-505958

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
(EPA/DF/MT-91/042)
PB91-505966

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
(EPA/DF/MT-91/043)
PB91-505974

NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
(EPA/DF/MT-91/044)
PB91-505982

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
(EPA/DF/MT-91/045)
PB91-505990

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
(EPA/DF/MT-91/046)
PB91-506006

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
(EPA/DF/MT-91/047)
PB91-506014

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
(EPA/DF/MT-91/048)
PB91-506022

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
(EPA/DF/MT-91/049)
PB91-506030

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
(EPA/DF/MT-91/050)
PB91-506048

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
(EPA/DF/MT-91/051)
PB91-506055

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
(EPA/DF/MT-91/052)
PB91-506063

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
(EPA/DF/MT-91/053)
PB91-506071

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
(EPA/DF/MT-91/054)
PB91-506089

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
(EPA/DF/MT-91/055)
PB91-506097

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
(EPA/DF/MT-91/056)
PB91-506105

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
(EPA/DF/MT-91/057)
PB91-506113

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
(EPA/DF/MT-91/058)
PB91-506121

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
(EPA/DF/MT-91/059)
PB91-506139

NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
(EPA/DF/MT-91/060)
PB91-506147

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
(EPA/DF/MT-91/061)
PB91-506154

NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
(EPA/DF/MT-91/062)
PB91-506162

NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
(EPA/DF/MT-91/063)
PB91-506170

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
(EPA/DF/MT-91/064)
PB91-506188

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
(EPA/DF/MT-91/065)
PB91-506196

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
(EPA/DF/MT-91/066)
PB91-506204

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
(EPA/DF/MT-91/067)
PB91-506212

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
(EPA/DF/MT-91/068)
PB91-506220

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
(EPA/DF/MT-91/069)
PB91-506238

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
(EPA/DF/MT-91/070)
PB91-506246

NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
(EPA/DF/MT-91/071)
PB91-506253

Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
(EPA/DF/DK-91/073)
PB91-506295

Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
(EPA/SW/DK-91/074)
PB91-506469

Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
(EPA/SW/DK-91/075)
PB91-506477

ENVIRONMENTAL PROTECTION AGENCY, RESEARCH TRIANGLE PARK, NC. ATMOSPHERIC RESEARCH AND EXPOSURE ASSESSMENT LAB.

EPA/600/3-91/002
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667

EPA/600/8-90/084
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549

EPA/600/D-90/174
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

EPA/600/D-90/199
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911

EPA/600/D-90/200
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026

EPA/600/D-90/202
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042

EPA/600/D-90/235
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503

EPA/600/D-91/005
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

EPA/600/J-89/496
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357

EPA/600/J-89/497
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

EPA/600/J-89/498
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373

EPA/600/J-90/138
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717

EPA/600/J-90/302
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563

EPA/600/J-90/303
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

EPA/600/J-90/305
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

EPA/600/J-90/306
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605

EPA/600/J-90/362
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766

ENVIRONMENTAL PROTECTION AGENCY, RESEARCH TRIANGLE PARK, NC. ENVIRONMENTAL CRITERIA AND ASSESSMENT OFFICE.

ECAO-R-0117
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

ECAO-R-0297
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420

ECAO-R-0440
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273

EPA/600/8-87/048F
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

EPA/600/8-89/049F
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420

EPA/600/8-90/041
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273

ENVIRONMENTAL PROTECTION AGENCY, RESEARCH TRIANGLE PARK, NC. OFFICE OF AIR QUALITY PLANNING AND STANDARDS.

EPA/450/3-83/019B
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304

EPA/450/3-90/009
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737

EPA/450/3-90/019
Polymer Manufacturing Industry - Enabling Document.
PB91-161745

EPA/450/3-91/007
Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270

EPA/450/4-91/003
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

ENVIRONMENTAL PROTECTION AGENCY, SEATTLE, WA. REGION X.

EPA/910/9-90/018
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC.

EPA/400/7-90/005
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896

Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991
PB91-145516

Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714

Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
PB91-145847

Public-Private Partnership Case Studies: Profiles of Success in Providing Environmental Services.
PB91-145904

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. CRITERIA AND STANDARDS DIV.

Quantification of Toxicological Effects for Alachlor.
PB91-143420

Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438

Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479

Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF ADMINISTRATION.

EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin.
PB91-904200

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF DRINKING WATER.

EPA/625/4-89/024
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722

Health Advisory for Hexachloroethane.
PB91-159657

White Phosphorus Health Advisory.
PB91-161026

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF EMERGENCY AND REMEDIAL RESPONSE.

EPA/540/2-90/009
Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649

EPA/540/8-90/015
Catalog of Superfund Program Publications, FY-91.
PB91-144683

EPA/540/8-90/017
Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204

EPA/540/G-90/005
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531

EPA/540/G-90/007
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466

EPA/540/G-90/007
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206

EPA/540/G-90/008
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208

EPA/540/P-91/001
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205

EPA/9012.10-A
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818

EPA/9012.10-A-I
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826

EPA/9012.10-B
Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834

EPA/9285.7-05/FS
Guidance for Data Useability in Risk Assessment.
PB91-921312

OSWER DIRECTIVE-9355.3-11
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205

OSWER DIRECTIVE-9355.4-01
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206

OSWER DIRECTIVE-9835.13
Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF GROUND-WATER PROTECTION.

EPA/440/6-90/003
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755

EPA/440/6-90/005
Review of Sources of Ground-Water Contamination from Light Industry.
PB91-145938

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF HEALTH AND ENVIRONMENTAL ASSESSMENT.

EPA/600/J-89/494
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815

OHEA-C-339
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF MUNICIPAL POLLUTION CONTROL.

Update of the Regulation and Policy Matrices Dated September 1988.
PB91-143081

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF PESTICIDE PROGRAMS.

EPA/540/9-88/001
Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656

EPA/540/09-91/122
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394

EPA/540/09-91/123
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617

EPA/540/FS-91/118
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528

EPA/540/FS-91/119
Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536

EPA/540/FS-91/123
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681

EPA/540/FS-91/124
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
PB91-159673

Pesticide Compact Label File - 1990 Updates.
PB91-911600

Compact Label File - 1991 (Fiche 1 - 4833).
PB91-911699

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF PESTICIDES AND TOXIC SUBSTANCES.
EPA/560/7-90/003
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458
Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
PB91-145920
Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF POLICY, PLANNING AND EVALUATION.
EPA/230/11-90/083
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783
EPA/230/12-90/084
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF RESEARCH AND DEVELOPMENT.
EPA/600/9-90/042
ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF SOLID WASTE.
EPA/530/SW-90/036
RCRA Orientation Manual 1990 Edition.
PB91-145888
EPA/530/SW-91/016
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195
EPA/530/SW-91/017
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203
EPA/530/SW-91/018A
State Authorization Manual. Volume 1.
PB91-130211
EPA/530/SW-91/018B
State Authorization Manual. Volume 2. Appendices.
PB91-130229
EPA/530/SW-91/030
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st). Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549
OSWER DIRECTIVE-9540.00-9A
State Authorization Manual. Volume 1.
PB91-130211
OSWER DIRECTIVE-9540.00-9A-1
State Authorization Manual. Volume 2. Appendices.
PB91-130229
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
(EPA/DF/MT-91/080A)
PB91-156737
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
(EPA/DF/MT-91/080B)
PB91-156745
Treatment Technology Background Document.
PB91-160556
Hazardous Waste Data Management System Extract Tape.
PB91-592000

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE.
OSWER DIRECTIVE-9832.6
Small Cost Recovery Referrals.
PB91-139006
OSWER DIRECTIVE-9832.7
Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014
OSWER DIRECTIVE-9834.13
Municipal Settlements.
PB91-139311
OSWER DIRECTIVE-9835.0
Interim CERCLA Settlement Policy.
PB91-139329
OSWER DIRECTIVE-9835.1A
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337
OSWER DIRECTIVE-9835.2
Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345
OSWER DIRECTIVE-9835.2A
Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352
OSWER DIRECTIVE-9835.2B
Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360
OSWER DIRECTIVE-9835.3-1A
Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378
OSWER DIRECTIVE-9835.8
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436
OSWER DIRECTIVE-9901.1
RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840
OSWER DIRECTIVE-9901.1A
Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857
OSWER DIRECTIVE-9901.3
Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865
OSWER DIRECTIVE-9903.1
Policy for Managing Leachate at PCB Landfills.
PB91-139907
OSWER DIRECTIVE-9905.0
Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF THE ASSISTANT ADMINISTRATOR FOR WATER.
EPA/440/4-90/003
National Water Quality Inventory. 1988 Report to Congress.
PB91-145730
EPA/440/4-90/005
Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912
EPA/503/8-89/001
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474
EPA/505/8-90/001
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508
EPA/570/9-89/007
Cross-Connection Control Manual.
PB91-145490
Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441
Chloromethane: Health Advisory.
PB91-160564
Bromochloromethane: Health Advisory.
PB91-160572
Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580
o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598
1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606
Bromomethane: Drinking Water Health Advisory.
PB91-160614
BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622
1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630
Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648
1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655
Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671
Naphthalene: Drinking Water Health Advisory.
PB91-160689
1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697
p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF TOXIC SUBSTANCES.
EPA/560/1-90/001
Program Recommendations for State Section 313 Program Coordinators.
PB91-145698
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
(EPA/DF/MT-91/077)
PB91-506816
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
(EPA/DF/DK-91/078)
PB91-506964

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF UNDERGROUND STORAGE TANKS.
EPA/530/UST-88/008
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531

ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC. OFFICE OF WATER ENFORCEMENT AND PERMITS.
NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672
NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854
NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870

ENVIRONMENTAL RESEARCH CENTER, RESEARCH TRIANGLE PARK, NC.
EPA/600/D-90/201
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034

ENVIRONMENTAL RESEARCH LAB., ATHENS, GA.
EPA/600/3-91/004
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361
EPA/600/4-91/004
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703
EPA/600/9-91/001
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679

ENVIRONMENTAL RESEARCH LAB., ATHENS, GA. OFFICE OF RESEARCH AND DEVELOPMENT.
EPA/600/3-91/019
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711
EPA/600/J-90/172
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980

ENVIRONMENTAL RESEARCH LAB.-DULUTH, MN.
CONTRIB-64
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584
EPA/600/D-90/205
Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075
EPA/600/D-90/206
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083
EPA/600/D-90/238
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529
EPA/600/J-89/503
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-145423
EPA/600/J-89/504
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431
EPA/600/J-89/505
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527
EPA/600/J-90/210
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972
EPA/600/J-90/250
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956
EPA/600/J-90/253
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923
EPA/600/J-90/254
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998
EPA/600/J-90/255
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915

EPA/600/J-90/256
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907
EPA/600/J-90/316
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704
EPA/600/J-90/317
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712
EPA/600/J-90/318
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720
EPA/600/J-90/342
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568
EPA/600/J-90/343
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576
EPA/600/J-90/344
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584
EPA/600/J-90/345
Seven-Day Tests and Chronic Tests.
PB91-163592

ENVIRONMENTAL RESEARCH LAB.-DULUTH, MONTICELLO, MN. MONTICELLO ECOLOGICAL RESEARCH STATION.

EPA/600/D-90/237
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511
EPA/600/J-90/249
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

ENVIRONMENTAL RESEARCH LAB., GULF BREEZE, FL.

CONTRIB-667
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881
CONTRIB-680
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899
CONTRIB-689
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782
CONTRIB-693
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840
CONTRIB-695
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956
EPA/600/J-90/364
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782
EPA/600/J-90/365
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790
EPA/600/J-90/366
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808
EPA/600/J-90/371
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840
EPA/600/J-90/373
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865
EPA/600/J-90/375
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881
EPA/600/J-90/376
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899
EPA/600/J-90/377
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907
EPA/600/J-90/380
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931
EPA/600/J-90/381
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949
EPA/600/J-90/382
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956
EPA/600/J-90/384
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972
EPA/600/J-90/385
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980
EPA/600/J-90/386
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998
EPA/600/J-90/387
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

ENVIRONMENTAL RESEARCH LAB.-NARRAGANSETT, NEWPORT, OR.

EPA/600/J-89/493
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758
ERLN-1120
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758

ENVIRONMENTAL RESEARCH LAB.-NARRAGANSETT, NEWPORT, OR. MARK O. HATFIELD MARINE SCIENCE CENTER.

EPA/600/J-88/555
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741
EPA/600/J-90/248
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964
EPA/600/J-90/332
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781
ERLN-N040
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741
ERLN-N070
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

ENVIRONMENTAL RESEARCH LAB., NARRAGANSETT, RI.

CONTRIB-P08
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845
EPA/600/D-90/185
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845
EPA/600/D-90/221
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986
EPA/600/J-90/268
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790
EPA/600/J-90/333
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799
ERLN-NX05
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790
ERLN-1022
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799
ERLN-1050
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
(EPA/600/D-90/222, ERNL-X177)
PB91-136994

FOREST SERVICE, WASHINGTON, DC.

EPA/600/D-90/190
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109

FOSTER WHEELER BOILER CORP., LIVINGSTON, NJ.

Swirl Device for Regulating and Treating Combined Sewer Overflows.
(EPA/625/2-77/012)
PB91-133264

GEOLOGICAL SURVEY, DENVER, CO.

Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
(EPA/600/J-89/495)
PB91-146340

GEOLOGICAL SURVEY, SACRAMENTO, CA. WATER RESOURCES DIV.

USGS/WRI-90-4018
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331

HEALTH EFFECTS RESEARCH LAB., CINCINNATI, OH.

EPA/600/J-90/329
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757
EPA/600/J-90/330
Toxicological Mechanisms of Implantation Failure.
PB91-149765

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, NC.

EPA/600/1-90/005A
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307
EPA/600/1-90/005B
Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315
EPA/600/D-90/162
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025
EPA/600/D-90/196
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630
EPA/600/D-90/242
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560
EPA/600/D-90/245
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594
EPA/600/J-90/280
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060
EPA/600/J-90/282
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052
EPA/600/J-90/283
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045
EPA/600/J-90/325
Neurotoxic Effects of Colchicine.
PB91-149658
EPA/600/J-90/326
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724
EPA/600/J-90/346
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600
EPA/600/J-90/355
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, NC. DEVELOPMENTAL TOXICOLOGY DIV.

EPA/600/J-90/352
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667
EPA/600/J-90/353
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675
EPA/600/J-90/354
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, NC. ENVIRONMENTAL TOXICOLOGY DIV.

EPA/600/J-90/328
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

EPA/600/J-90/331
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, NC. GENETIC TOXICOLOGY DIV.
EPA/600/D-90/246
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, NC. INHALATION TOXICOLOGY DIV.
EPA/600/J-90/356
Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709
EPA/600/J-90/357
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, NC. NEUROTOXICOLOGY DIV.
EPA/600/J-90/285
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037
EPA/600/J-90/349
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634
EPA/600/J-90/350
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, NC. REPRODUCTIVE TOXICOLOGY BRANCH.
EPA/600/D-90/247
In vitro Assessment of Gamete Integrity.
PB91-162610
EPA/600/J-90/287
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011
EPA/600/J-90/348
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626
EPA/600/J-90/358
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725

HEBREW UNIV. OF JERUSALEM (ISRAEL). INST. OF EARTH SCIENCES.
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
(EPA/600/J-90/307)
PB91-146613

ICF, INC., FAIRFAX, VA.
National Radon Contractor Proficiency Program. Proficiency Report.
(EPA/520/1-91/002)
PB91-131300
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
(EPA/520/1-91/002-SUPPL)
PB91-157222

ILLINOIS STATE WATER SURVEY DIV., CHAMPAIGN. AQUATIC CHEMISTRY SECTION.
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
(EPA/600/J-90/260)
PB91-144865

ILLINOIS UNIV. AT URBANA-CHAMPAIGN. DEPT. OF VETERINARY PATHOBIOLOGY.
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
(EPA/600/J-90/372)
PB91-163857

INDIANA UNIV. AT BLOOMINGTON.
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
(EPA/600/J-90/266)
PB91-144709

INTEGRATED LAB. SYSTEMS, RESEARCH TRIANGLE PARK, NC.
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
(EPA/600/8-90/086)
PB91-140376
Evaluation of Exposure Markers.
(EPA/600/4-90/034)
PB91-144675

ISTITUTO DI RICERCA SULLE ACQUE, ROME (ITALY).
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
(EPA/600/D-91/007)
PB91-162719

JOHN B. PIERCE FOUNDATION LAB., NEW HAVEN, CT.
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
(EPA/600/J-90/311)
PB91-146654

KARLSRUHE UNIV. (GERMANY, F.R.). BOTANISCHES INST. UND BOTANISCHER GARTEN.
UV-B Effects on Terrestrial Plants.
(EPA/600/J-89/500)
PB91-146399

KENTUCKY UNIV., LEXINGTON. GRADUATE CENTER FOR TOXICOLOGY.
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
(EPA/600/D-90/243)
PB91-162578

LAWRENCE LIVERMORE NATIONAL LAB., CA.
EPA-520/1-90-012
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995
UCRL-ID-105266
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995

LAWRENCE LIVERMORE NATIONAL LAB., CA. BIOMEDICAL SCIENCES DIV.
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
(EPA/600/J-90/286)
PB91-145029

LIFE SYSTEMS, INC., CLEVELAND, OH.
TR-1242-59
Drinking Water Criteria Document on Carbofuran.
PB91-143412
TR-1242-60B
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836
TR-1242-62A
Drinking Water Criteria Document on Barium.
PB91-142869
TR-1242-64A
Drinking Water Criteria Document on Chromium.
PB91-142844
TR-1242-65
Drinking Water Criteria Document on Selenium.
PB91-142828
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396

LITTLE (ARTHUR D.), INC., CAMBRIDGE, MA.
ADL-54995-35
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
(EPA/600/2-91/001)
PB91-148452

LOCKHEED ENGINEERING AND SCIENCES CO., INC., LAS VEGAS, NV.
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
(EPA/600/4-90/017)
PB91-141812
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
(EPA/600/J-90/300)
PB91-146548
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
(EPA/600/J-90/301)
PB91-146555

LOYOLA UNIV. MEDICAL CENTER, MAYWOOD, IL.
General Microbiology of RecA: Environmental and Evolutionary Significance.
(EPA/600/J-90/383)
PB91-163964

MANTECH ENVIRONMENTAL TECHNOLOGY, INC., RESEARCH TRIANGLE PARK, NC.
5-Methylhexanoic Acid Developmental Toxicity Testing.
(EPA/600/1-91/001)
PB91-141838

MARYLAND UNIV., COLLEGE PARK. DEPT. OF BOTANY.
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
(EPA/600/J-89/499)
PB91-146381

MASSACHUSETTS INST. OF TECH., CAMBRIDGE. RALPH M. PARSONS LAB.
EPA/600/J-90/269
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177
ERLN-NX06
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

MASSACHUSETTS UNIV., AMHERST. DEPT. OF ZOOLOGY.
Dynamics of Plasmid Transfer on Surfaces.
(EPA/600/J-90/367)
PB91-163816

MICHIGAN STATE UNIV., EAST LANSING.
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
(EPA/600/J-87/540)
PB91-146316
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
(EPA/600/J-86/533)
PB91-149807

MICHIGAN TECHNOLOGICAL UNIV., HOUGHTON.
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
(EPA/600/J-87/543)
PB91-163493

MICHIGAN TECHNOLOGICAL UNIV., HOUGHTON. DEPT. OF CIVIL ENGINEERING.
Optical Heterogeneity in Green Bay.
(EPA/600/J-87/544)
PB91-163501

MICHIGAN UNIV., ANN ARBOR. MEDICAL SCHOOL.
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas picketti' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
(EPA/600/J-90/379)
PB91-163923

MIDWEST RESEARCH INST., KANSAS CITY, MO.
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
(EPA/560/5-90/012)
PB91-159699

MILLER (WADE) ASSOCIATES, INC., ARLINGTON, VA.
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453

MINNESOTA UNIV.-DULUTH.
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
(EPA/600/J-90/251)
PB91-144949

MINNESOTA UNIV.-DULUTH. DEPT. OF CHEMISTRY.
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
(EPA/600/J-90/252)
PB91-144931

MINNESOTA UNIV.-DULUTH. NATURAL RESOURCES RESEARCH INST.
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
(EPA/600/J-89/488)
PB91-144782
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
(EPA/600/J-89/502)
PB91-146415

MINNESOTA UNIV., MINNEAPOLIS. DEPT. OF ECOLOGY AND BEHAVIORAL BIOLOGY.
Functional Bioassays Utilizing Zooplankton: A Comparison.
(EPA/600/J-89/501)
PB91-146407

NATIONAL INST. OF ENVIRONMENTAL HEALTH SCIENCES, RESEARCH TRIANGLE PARK, NC. CELLULAR AND GENETIC TOXICOLOGY BRANCH.
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
(EPA/600/D-90/169)
PB91-132951

NEVADA UNIV. SYSTEM, RENO. DESERT RESEARCH INST.
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
(EPA/600/J-90/298)
PB91-146522
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
(EPA/600/J-90/299)
PB91-146530

NEW JERSEY INST. OF TECH., NEWARK.
Soil Bioventing Demonstration Project.
(EPA/600/D-90/248)
PB91-162628

NORTH CAROLINA STATE UNIV. AT RALEIGH.
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
(EPA/600/J-90/263)
PB91-144832

NORTHROP SERVICES, INC./ENVIRONMENTAL SCIENCES, RESEARCH TRIANGLE PARK, NC.
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
(EPA/600/J-90/347)
PB91-163618

NORTHROP SERVICES, INC., RESEARCH TRIANGLE PARK, NC.
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
(EPA/600/3-90/097)
PB91-136317

NSI, INC., RESEARCH TRIANGLE PARK, NC.
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
(EPA/600/J-90/284)
PB91-144691

NSI TECHNOLOGY SERVICES CORP., ADA, OK.
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
(EPA/600/D-90/159)
PB91-129205

NSI TECHNOLOGY SERVICES CORP., CORVALLIS, OR.
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
(EPA/600/3-90/096)
PB91-136572

Exposure Indices Consideration for Rural Ozone Relationships in the United States.
(EPA/600/D-90/192)
PB91-136598

IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
(EPA/600/D-90/194)
PB91-136614

Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
(EPA/600/J-90/264)
PB91-144824

Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
(EPA/600/J-90/296)
PB91-146449

Regional Framework for Establishing Recovery Criteria.
PB91-146480

Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
(EPA/600/J-90/293)
PB91-146498

Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
(EPA/600/J-90/294)
PB91-146506

Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
(EPA/600/3-91/008)
PB91-148395

Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
(EPA/600/3-91/007)
PB91-148403

Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
(EPA/600/3-91/012)
PB91-159590

NSI TECHNOLOGY SERVICES CORP., RESEARCH TRIANGLE PARK, NC.
Mutagenic Activity of Particulate Matter from Wood Smoke.
(EPA/600/D-90/175)
PB91-129155

Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
(EPA/600/J-90/279)
PB91-145078

Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
(EPA/600/J-90/327)
PB91-149732

OAK RIDGE NATIONAL LAB., TN. ENVIRONMENTAL SCIENCES DIV.
Environmental Monitoring and Assessment Program: Ecological Indicators.
(EPA/600/3-90/060)
PB91-141796

OMNI ENVIRONMENTAL SERVICES, INC., BEAVERTON, OR.
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
(EPA/600/J-90/312)
PB91-146662

OREGON STATE UNIV., CORVALLIS. DEPT. OF CHEMISTRY.
Adsorption of Organic Cations to Natural Materials.
(EPA/600/J-90/258)
PB91-144881

OREGON STATE UNIV., CORVALLIS. DEPT. OF STATISTICS.
TR-130
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
(EPA/600/3-91/009)
PB91-149542

Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
(EPA/600/3-90/095)
PB91-132118

PACIFIC ENVIRONMENTAL SERVICES, INC., DURHAM, NC.
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
(EPA/450/4-90/013)
PB91-141820

Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
(EPA/450/1-90/004A)
PB91-159624

Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
(EPA/450/1-90/004B)
PB91-159632

PEER CONSULTANTS, INC., DAYTON, OH.
Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
(CERI-90-16)
PB91-145433

PEI ASSOCIATES, INC., ARLINGTON, VA.
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
(EPA/600/2-90/061)
PB91-149609

PEI ASSOCIATES, INC., CINCINNATI, OH.
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
(EPA/600/J-90/270)
PB91-145169

Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
(EPA/600/2-90/054)
PB91-148296

Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
(EPA/600/2-91/003)
PB91-148338

Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
(EPA/600/9-90/037)
PB91-148379

Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
(EPA/600/2-91/004)
PB91-161695

PRC ENVIRONMENTAL MANAGEMENT, INC., CHICAGO, IL.
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
(EPA/540/A5-89/012)
PB91-129759

PTI ENVIRONMENTAL SERVICES, BELLEVUE, WA.
Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
(EPA/910/9-89/006)
PB91-149567

Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
(EPA/910/9-90/009)
PB91-149575

Elliot Bay Action Program: 1988 Action Plan.
(EPA/910/9-88/240)
PB91-149583

Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
(EPA/910/9-90/010)
PB91-149591

RADIAN CORP., RESEARCH TRIANGLE PARK, NC.
DCN-90-203-099-26-09
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
(EPA/450/3-90/014)
PB91-168435

DCN-90-203-099-26-10
Ongoing Research and Regulatory Development Projects.
(EPA/450/3-90/013)
PB91-161752

DCN-90-203-099-26-11
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
(EPA/450/3-90/014A)
PB91-168443

DCN-90-239-005-48-09
Approach for Estimating Global Landfill Methane Emissions.
(EPA/600/7-91/002)
PB91-149534

DCN-90-262-045-09
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
(EPA/450/4-91/006)
PB91-148288

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants.
PB91-133314

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
(EPA/600/7-90/021A)
PB91-133322

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
(EPA/600/7-90/021B)
PB91-133330

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
(EPA/600/7-90/021C)
PB91-133348

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
(EPA/600/7-90/021D)
PB91-133355

Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants: Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
(EPA/600/7-90/021E)
PB91-133363

Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
(EPA/600/7-90/022A, EPA/SW/DK-91/074A)
PB91-133512

Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
(EPA/600/7-90/022B, EPA/SW/DK-91/074B)
PB91-133520

Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
(EPA/600/7-90/022C, EPA/SW/DK-91/074C)
PB91-133538

Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
(EPA/600/D-90/217)
PB91-136952

Urban Air Toxics Monitoring Program, 1989.
(EPA/450/4-91/001)
PB91-148262

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators.
PB91-151472

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
(EPA/600/2-91/007A)
PB91-151480

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
(EPA/600/2-91/007B)
PB91-151498

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
(EPA/600/2-91/007C)
PB91-151506

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
(EPA/600/2-91/007D)
PB91-151514

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
(EPA/600/2-91/007E)
PB91-151522

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
(EPA/600/2-91/007F)
PB91-151530

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
(EPA/600/2-91/007G)
PB91-151548

Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
(EPA/600/2-91/007H)
PB91-151555

Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
(EPA/600/7-91/003)
PB91-159608

Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
(EPA/600/8-91/002)
PB91-161687

RESEARCH TRIANGLE INST., RESEARCH TRIANGLE PARK, NC.
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
(EPA/230/9-90/081)
PB91-131987

Wind Tunnel Evaluation of PM10 Samplers.
(EPA/600/J-90/304)
PB91-146589

Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
(EPA/600/4-90/004)
PB91-154211

Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
(EPA/600/J-90/363)
PB91-163774

RMT, INC., GREENVILLE, SC.
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
(EPA/600/J-89/489)
PB91-144774

ROBERT S. KERR ENVIRONMENTAL RESEARCH LAB., ADA, OK.
EPA/600/2-91/009
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285
EPA/600/D-90/203
Organic Chemical Transport to Groundwater.
PB91-137059
EPA/600/D-90/204
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067
EPA/600/D-90/249
Bilateral Wastewater Land Treatment Research.
PB91-162636
EPA/600/D-90/250
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644
EPA/600/D-91/001
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651
EPA/600/D-91/002
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669
EPA/600/J-90/259
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873
EPA/625/9-89/007
Injection Well Mechanical Integrity.
PB91-145631

SCIENCE APPLICATIONS INTERNATIONAL CORP., MCLEAN, VA.
NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680
Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
(EPA/600/9-90/039)
PB91-148387
Great Lakes Demonstration Program, Section 108a.
(EPA/905/8-88/005, GLNPO-1)
PB91-148437

SCIENCE APPLICATIONS INTERNATIONAL CORP., PARAMUS, NJ.
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
(EPA/600/2-90/062)
PB91-136556

SMITH KLINE BEECHAM CORP., KING OF PRUSSIA, PA. DEPT. OF TOXICOLOGY.
Toxic Effects of Xenobiotics on the Pituitary Gland.
(EPA/600/D-90/198)
PB91-136903

SOUTHERN RESEARCH INST., BIRMINGHAM, AL.
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
(EPA/600/3-90/093)
PB91-129742
Self-Consistent Deutschian ESP Model.
(EPA/600/7-91/001)
PB91-149518

STANFORD UNIV., CA. DEPT. OF APPLIED EARTH SCIENCES.
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
(EPA/600/J-90/359)
PB91-163733

STANFORD UNIV., CA. DEPT. OF CIVIL ENGINEERING.
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
(EPA/600/J-90/261)
PB91-144857
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
(EPA/600/2-90/060)
PB91-148346

SYRACUSE RESEARCH CORP., NY.
Drinking Water Criteria Document for Pentachlorophenol.
(ECAO-CIN-407)
PB91-142802
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
(ECAO-CIN-406)
PB91-142877
Drinking Water Criteria Document for Styrene.
(ECAO-CIN-409)
PB91-143370
Drinking Water Criteria Document for 1,2-Dichloropropane.
(ECAO-CIN-404)
PB91-143388
Drinking Water Criteria Document for Methoxychlor.
(ECAO-CIN-425)
PB91-143461
Drinking Water Criteria Document for Toluene.
(ECAO-CIN-408)
PB91-143487

SYSTEMS APPLICATIONS, INC., SAN RAFAEL, CA.
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
(EPA/450/4-90/007A, EPA/SW/MT-91/002A)
PB91-131227
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
(EPA/450/4-90/007B, EPA/SW/MT-91/002B)
PB91-131235
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
(EPA/450/4-90/007C, EPA/SW/MT-91/002C)
PB91-131243
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
(EPA/450/4-90/007D, EPA/SW/MT-91/002D)
PB91-131250

TECHNICAL RESOURCES, INC., GULF BREEZE, FL.
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
(EPA/600/J-90/374)
PB91-163873
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
(EPA/600/J-90/388)
PB91-164012

TENNESSEE UNIV., KNOXVILLE. CENTER FOR ENVIRONMENTAL BIOTECHNOLOGY.
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
(EPA/600/J-90/369)
PB91-163832

TEXAS UNIV. AT AUSTIN. BUREAU OF ECONOMIC GEOLOGY.
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
(EPA/600/J-90/257)
PB91-144899

TEXAS UNIV. AT AUSTIN. DEPT. OF CIVIL ENGINEERING.
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
(EPA/600/2-91/002)
PB91-141846

UTAH UNIV., SALT LAKE CITY. DEPT. OF CHEMICAL ENGINEERING.
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
(EPA/600/J-90/313)
PB91-146670
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
(EPA/600/J-90/314)
PB91-146688

WELLCOME RESEARCH LABS., RESEARCH TRIANGLE PARK, NC.
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
(EPA/600/D-90/167)
PB91-132969

WISCONSIN UNIV.-MADISON. CENTER FOR LIMNOLOGY.
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
(EPA/600/J-89/506)
PB91-163535

PERSONAL AUTHOR INDEX

This index is arranged by personal author's last name, report title, and NTIS order number. As many as five authors may be included for each report; all are listed in this index.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

Author Name	**COATES J., ELZERMAN A. W., and GARRISON A. W.**
Title	PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations
NTIS Order Number/Media Code Price Code	PB85-169597/REB PC A02/MF A01

PERSONAL AUTHOR INDEX

ABDELRHMAN, M. A.
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758

ADAMS, J. R.
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

ADMAS, J. Q.
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420

AISSA, M.
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

AKHTER, M. S.
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899

ALBRIGHT, R.
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

ALEXANDER, M.
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

ALLEN, J.
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618

ALLEN, J. W.
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

ALLEN, K. N.
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511

ALLEN, M. J.
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

ALLES, A. J.
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667

ALLISON, S. D.
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

AMATO, J. R.
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972

AMBEKAR, S. H.
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

ANDERSON, E. B.
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083

ANDERSON, J. R.
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388

ANDERSON, S. L.
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995

ANDERSON, W. L.
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340

ANKLEY, G. T.
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

ANLAUF, K. G.
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621

APEL, M. L.
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

ARMSTRONG, J.
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

ARORA, H.
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

AUER, M. T.
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493
Optical Heterogeneity in Green Bay.
PB91-163501

AUER, N. A.
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493

AVERETT, W. J.
Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404

AVERY, A.
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572

BACKER, L. C.
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

BAHNICK, D.
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431

BAILEY, J. D.
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685

BAKER, J. P.
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526

BAKER, L. A.
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514

BAKSI, S. M.
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845

BARKAY, T.
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

BARKER, J. R.
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460

BARKLEY, N. P.
Update on Building and Structure Decontamination.
PB91-145102

BARNETT, K. W.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548

BARRICK, E.
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

BASAK, S. C.
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

BASU, D. K.
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388

BATTERMAN, A. R.
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782

BAUMGARTNER, D. J.
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

BAVEYE, P. C.
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

BEACH, L. O.
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647

BECKER, D. S.
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575

BECKER, J. M.
Drinking Water Criteria Document for Toluene.
PB91-143487

BECKER, S.
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

BELILES, R. P.
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815

BENANE, S. G.
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052

BENEFIELD, B. G.
Injection Well Mechanical Integrity.
PB91-145631

BENNETT, J. K.
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543

BENNETT, R. S.
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677

BERGMAN, F.
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

BERMAN, E.
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011

BERRY, M. A.
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273

BIERMANN, H. W.
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621

BIESINGER, K. E.
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

BIGBEE, W. L.
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

BINFORD, M. W.
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709

BINKOWSKI, F. S.
Modal Aerosol Dynamics Modeling.
PB91-161729

BIRD, S. L.
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711

BISHOP, G. A.
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

BLACK, F. M.
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

BLACKARD, A. L.
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520

Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538

BLACKMAN, C. F.
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052

BLEDSOE, B. E.
Bilateral Wastewater Land Treatment Research.
PB91-162636

BOHM, M.
Air Quality and Deposition (Chapter 3).
PB91-136606

BOOMER, B.
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

BOONE, P. M.
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654

BOONE, S.
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820

BOONE, S. E.
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

BORST, M.
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

BOULDING, J. R.
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706

BOWLES, E.
Urban Air Toxics Monitoring Program, 1989.
PB91-148262

BRADBURY, S. P.
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529

Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075

BRASHERS, L. K.
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

BRAZNER, J. C.
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956

BREEN, J. J.
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

BRENNER, D. J.
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

BREZONIK, P. L.
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514

BRIDGES, J. S.
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133

Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701

Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

BRIGGS, G. A.
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

BRNA, T. G.
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639

Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537

Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696

BROMBERG, S. M.
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605

BROWER, M. E.
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

BROWN, D. S.
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711

BROWN, M. S.
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

BROWNAWELL, B. J.
Adsorption of Organic Cations to Natural Materials.
PB91-144881

BRUCE, K. R.
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647

BRUGLER-JONES, S.
State Authorization Manual. Volume 1.
PB91-130211

State Authorization Manual. Volume 2. Appendices.
PB91-130229

BRUINS, R. J. F.
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945

BURNET, P. G.
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662

BURNS, D. J.
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503

User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564

BUSHNELL, P. J.
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642

BUSNELL, P. J.
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618

BUTTEL, L. A.
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

BUTTERWORTH, B. C.
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431

Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782

CABREZA, J.
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

CAIN, W. C.
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

CAMPBELL, D. L.
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

CAMPBELL, S.
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768

Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750

CARLIN, A.
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775

CARLIN, J.
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580

CARLSON, R. M.
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949

Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931

CARLSON, R. W.
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529

Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075

Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915

CARPENTER, D. E.
Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796

CARPENTER, S. R.
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

CARR, E. L.
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235

User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243

CAUSLEY, M. C.
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235

User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250

CHACON, L.
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011

CHADWICK, R. W.
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

CHANG, J.
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

CHAPMAN, P. J.
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873

CHARBENEAU, R. J.
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669

CHARLES, D. F.
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709

PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472

CHEN, F. L.
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

CHEN, H.
Adsorption of Organic Cations to Natural Materials.
PB91-144881

CHEPLICK, J. M.
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711

CHESSON, J.
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

CHILDERS, J. W.
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317

CHO, J. S.
Soil Bioventing Demonstration Project.
PB91-162628

CHRISTMAN, R. F.
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703

CIFUENTES, L. A.
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

CIMORELLI, A. J.
Advanced Screening Model for Complex Terrain Applications.
PB91-162693

User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564

CLARK, J. R.
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865

Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

CLARK, R. M.
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420
Economies of Scale and Scope in Water Supply.
PB91-163519
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094
Water Quality Modeling in Distribution Systems.
PB91-130153

CLAXTON, L.
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560

CLAXTON, L. D.
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594

CLAY, D. R.
RCRA Orientation Manual 1990 Edition.
PB91-145888

CLEGG, E. D.
Histological and Histopathological Evaluation of the Testis.
PB91-164293

COCHRAN, J. W.
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774

COFFIN, R. B.
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

COLEMAN, J. T.
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388

COLLETTE, T. W.
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703

COLLIER, J. M.
Adsorption of Organic Cations to Natural Materials.
PB91-144881

COOK, P. M.
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415

COOPER, L. Y.
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435

COOPER, R. L.
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903

COPELAND, C. B.
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

COSTA, D. L.
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993

COSTAS, P. P.
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

COUCH, J. A.
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808

COURTNEY, L. A.
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

CRAMER, P. H.
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

CRAPO, J. D.
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993

CRAUN, G. F.
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307
Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315

CRESPI, C.
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

CRITTENDEN, J. C.
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

CROFTON, K. M.
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

CUMMINGS, A. M.
Toxicological Mechanisms of Implantation Failure.
PB91-149765

CUPITT, L. T.
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

CURRAN, M. A.
New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158
Proceedings Hazardous Materials Management Conference/Central (3rd), O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701
Succeeding at Waste Minimisation.
PB91-162446

CURRAN, T.
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

CUSIMANO, R. F.
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590

DANIEL, D. E.
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846

DANIEL, F. B.
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724

DANIELS, M. J.
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

DASSLE, K. A.
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832

DAVIES, R.
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

DAVIS, J. M.
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420

DAVIS, W. P.
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

DAYTON, D. P.
Urban Air Toxics Monitoring Program, 1989.
PB91-148262

DE PERCIN, P. R.
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479

DEAN, K. F.
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634

DEANGELO, A. B.
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

DEARFIELD, K. L.
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394

DECKER, J.
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727

DEFOE, D. L.
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

DELLARCO, M.
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281

DEMPSEY, C. R.
Incineration Research Facility.
PB91-145128

DESVOUSGES, W. H.
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987

DETENBECK, N.
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576

DEVEREUX, R.
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

DEVLIN, R. B.
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

DEVORE, P.
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576

DEWITT, T. H.
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741

DIGIULIO, D. C.
Soil Bioventing Demonstration Project.
PB91-162628

DITSWORTH, G. R.
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741

DIXON, R. K.
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685

DOMINGUEZ, S. E.
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543

DONNELLY, A. C. A.
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899

DONNELLY, J. R.
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

DOUGLAS, S. G.
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243

DOURSON, M. L.
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

DOWNS, W. C.
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

DOYLE, C. L.
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857

DREWES, L. A.
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

PERSONAL AUTHOR INDEX

DRISCOLL, K.
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

DROESSLER, T.
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572

DUBARD, J. L.
Self-Consistent Deutschian ESP Model.
PB91-149518

DUFFY, M. C.
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

DUNN, W. J.
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

DURKIN, P.
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877

DURKIN, P. R.
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802

DUX, T.
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

EASTERLING, R. E.
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675

EDBERG, S. C.
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776

EFFLER, S. W.
Optical Heterogeneity in Green Bay.
PB91-163501

EHRLICH, J. P.
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

EILERS, J. M.
Most Dilute Lake in the World.
PB91-144816

EILERS, R. G.
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453
Standardized Costs for Water Supply Distribution Systems.
PB91-162461

ELDER, J. F.
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

ELLESTAD, T. G.
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

ELLINGTON, J. J.
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361

ELLIOTT, D. J.
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052

ELSTEIN, K. H.
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683

EMMEL, B. B.
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534

EMMEL, T.
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363

EMMEL, T. E.
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952

ENDO, O.
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

ENFIELD, C. G.
Organic Chemical Transport to Groundwater.
PB91-137059

EPPERSON, D. L.
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288

ERICKSON, H. E.
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395

ERICKSON, R. J.
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720

ESTORNELL, P. M.
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846

ETTLIN, R. A.
Histological and Histopathological Evaluation of the Testis.
PB91-164293

EVANS, G. M.
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758

EVERSON, R. B.
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

FAIRBROTHER, A.
Immunotoxicology of Captive and Wild Birds.
PB91-137117
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550

FAORO, R.
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

FARES, R.
Great Lakes Demonstration Program, Section 108a.
PB91-148437

FARTHING, W. E.
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742

FAULKNER, M. G.
Self-Consistent Deutschian ESP Model.
PB91-149518

FIEBER, J. L.
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250

FIELD, R.
Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264

FINKELDEY, J.
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768
Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750

FISHER, D. J.
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865

FITZ-SIMONS, T.
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

FLEMER, D. A.
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986

FLETCHER, J.
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808

FLETCHER, J. S.
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733

FOLINSBEE, L. J.
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944

FORD, E. D.
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572

FORD, J.
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109

FOREHAND, L. R.
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

FORREST, A.
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987

FOSS, S. S.
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

FOSTER, R.
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

FOURNIE, J. W.
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

FOWLES, J.
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550

FRANCIS, B. M.
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667

FRANK, N.
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

FRANKEL, S. L.
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

FREAS, W.
National Air Quality and Emissions Trends Report, 1989.
PB91-172247

FREBIS, C. P.
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136

FREEMAN, H. M.
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412
Succeeding at Waste Minimisation.
PB91-162446

FREYBERG, R. W.
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

FROST, T. M.
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

FUNG, L. C.
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438

FURLONG, E. T.
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709

GABELE, P. A.
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563

GAGE, L.
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

GAIROLA, C. G.
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578

GANNON, J. T.
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

GARDNER, L.
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250

GARG, A.
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

GARG, S.
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195

Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203

GARTNER, J. W.
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331

GAY, C.
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572

GELDREICH, E. E.
Flexibility in Bacteriological Monitoring.
PB91-137166

GENTHNER, B. R. S.
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873

GERRY, S. C.
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268

GERSHEY, E. L.
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683

GIBSON, S. A.
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067

GIESY, J. P.
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

GILFORD, P.
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

GILLMAN, M.
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

GINN, T. C.
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575

Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591

GLASS, G. E.
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712

GLEN, W. G.
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373

UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

GODOWITCH, J.
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026

GOLDSTEIN, R. A.
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472

GOMEX-HERNANDEZ, J. J.
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733

GORDON, C. J.
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037

GORDON, L.
Health Advisory for Hexachloroethane.
PB91-159657

White Phosphorus Health Advisory.
PB91-161026

GOTO, S.
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

GOVIND, R.
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018

GRAHAM, D. E.
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060

GRANGE, A. H.
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

GRANT, L. D.
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420

GRAY, D. A.
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802

Drinking Water Criteria Document for Styrene.
PB91-143370

GREATHOUSE, D.
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727

GREATHOUSE, D. G.
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743

GREENWOOD, B. E.
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083

GRIFFIS, W. L.
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543

GROSE, E. C.
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618

GRUBE, W. E.
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817

GUENGERICH, F. P.
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396

GULLETT, B. K.
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647

GUPTA, R. C.
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578

DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

GURIJALA, K. R.
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824

HAINES, J. R.
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018

HAJJAR, N. P.
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

HAMMERMEISTER, D. E.
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

HAMMOND, S. K.
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654

HAND, D. W.
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

HANSEN, B. C.
Drinking Water Criteria Document for Styrene.
PB91-143370

HARLESS, R. L.
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667

HARRISON, F. L.
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995

HARTLEY, W. R.
Health Advisory for Hexachloroethane.
PB91-159657

Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

White Phosphorus Health Advisory.
PB91-161026

HARVEY, B. W.
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211

HASLER, P.
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862

HATCH, G. E.
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993

HAYNIE, F. H.
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034

HAYWORTH, J.
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

HAZARD, J. W.
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498

HE, S. H.
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857

HEDTKE, S. F.
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511

HEE, S. Q.
Drinking Water Criteria Document for Toxaphene.
PB91-143404

HEGGESTAD, H. E.
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840

HEISEY, D.
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

HEMMER, M. J.
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881

Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

HENDRIX, D. J.
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

HENRY, T. R.
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529

Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075

HENSON, J. M.
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774

HERLIHY, A. T.
National Stream Survey Database Guide.
PB91-141804

Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590

HERMANUTZ, R.
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

HERMANUTZ, R. O.
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511

HESS, J.
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

HILLGER, R. W.
Up and Running: New EPA Case History Database and Library System.
PB91-149617

HINMAN, K.
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

HITES, R. A.
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709

HOCHSTEIN, J. R.
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149607

HODSON, L. L.
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

HOGSETT, W. E.
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598

HOHENSTEIN, W. G.
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

HOKE, R. A.
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

HOLCOMBE, G. W.
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907

HOLDER, D. J.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522

HOLLAND, A. F.
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136966

HOLM, T. R.
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865

HOOTON, D.
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979

HOOVER, W. J. D.
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487

HOPKINS, G. D.
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346

HORNING, W. H.
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353

HOUSE, D.
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011

HOUSE, D. E.
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052

HOUSE, R. V.
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

HUBER, J. K.
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712

HUDGENS, E. E.
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

HUGGETT, R. J.
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

HUGHES, L.
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395

HUGHES, R. M.
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614
Regional Framework for Establishing Recovery Criteria.
PB91-146480

HUNSAKER, C. T.
Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796

HURLEY, K. C.
Most Dilute Lake in the World.
PB91-144816

HUSO, M. M. P.
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456

HUTCHINS, S. R.
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

IRWIN, J. S.
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

JAFVERT, C. T.
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980

JANSSEN, D. B.
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346

JARABEK, A. M.
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

JEFFREY, W. H.
Natural Transformation of a Marine 'Vibrio' Species by Ptasmid DNA.
PB91-163907

JENKINS, D.
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396

JENSEN, D. A.
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998

JENSEN, R. H.
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

JENSON, J. J.
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972

JIMENEZ, M.
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250

JOHNS, D. M.
Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591

JOHNSON, C. B.
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

JOHNSON, F. L.
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733

JOHNSON, R. L.
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

JONES, A. C.
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706

JONES, J. W.
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952

JONGLEUX, R. F.
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288

JOYCE, M.
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

KAMPBELL, D. H.
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651
Soil Bioventing Demonstration Project.
PB91-162628

KAUFMANN, P. R.
National Stream Survey Database Guide.
PB91-141804

KELLY, J. R.
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

KERN, J.
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395

KESSLER, R. C.
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243

KIESTER, A. R.
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572

KILGROE, J. D.
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696

KIM, H. Y.
Economies of Scale and Scope in Water Supply.
PB91-163519

KIRCHGESSNER, D. A.
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

KLAASSEN, C.
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396

KLAMM, S.
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203

KLEINDIENST, T. E.
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

KLEMM, D. J.
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353

KLINE, E. R.
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956

KLINEFELTER, G. R.
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

KNAPP, K. K.
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

KNAPP, K. T.
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

KNIGHT, A. W.
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332

KNISLEY, D. R.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548

KOCH, B. A.
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011

KOCH, W. E.
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011

KOKJOHN, T. A.
General Microbiology of RecA: Environmental and Evolutionary Significance.
PB91-163964

KOLLIG, H. P.
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361

KOMINSKY, J. R.
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

KONONEN, D. W.
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807

KOREN, H. S.
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630

KORICH, D. G.
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

KOSALWAT, P.
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332

KOWAL, N. E.
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945

KOYANO, M.
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

KRATZ, T. K.
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535

KRCA, S.
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

KREITLER, C. W.
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899

KRONER, S.
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431

KRUGER, C. L.
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

KUEHL, D. W.
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431

KUGLER, D. L.
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

KUKOR, J. J.
Molecular Cloning, Characterization, and Regulation of a 'Pseudomonas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

KURELEC, B.
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895

LAMB, L. M.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498

LANDERS, D. H.
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

LANDRETH, R. E.
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633
Geosynthetic Leachate Collection Systems.
PB91-162834
Seaming of Geosynthetics.
PB91-145151
Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826

LANG, M.
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346

LANGENBACH, R.
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

LANGLOIS, R. G.
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

LANSARI, A.
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

LANTZ, J.
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396

LARSEN, D. P.
Regional Framework for Establishing Recovery Criteria.
PB91-146480

LASKEY, J. W.
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

LAUER, L. D.
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

LAUGHLIN, T. F.
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

LEACH, L. E.
Bilateral Wastewater Land Treatment Research.
PB91-162636

LEADERER, B. P.
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654

LEE, E. H.
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598

LEE, S. D.
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

LEIBOWITZ, N. C.
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526

LEININGER, A. E.
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534

LESSER, V. M.
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840

LEVINE, S. N.
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

LEWIS, N.
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741

LEWTAS, J.
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602

LIEBERT, C.
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782

LIMA, A.
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576

LINDAHL, R.
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

LINDER, R. L.
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

LOBRING, L. B.
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353

LODGE, K. B.
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415

LOFROTH, G.
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560

LOGSDON, G. S.
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625

LONG, J. E.
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600

LONG, R. E.
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

LOTHENBACH, D. B.
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782

LUEBKE, R. W.
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

LUKASEWYCZ, M. T.
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998

LYKINS, B. W.
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766

LYNCH, S. K.
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534

MACAULEY, J. M.
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

MACKAY, D. M.
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857

MADORE, M. S.
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

MAIBODI, M.
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363

MALCOLM, J.
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395

MARCH, D.
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203

MASON, P. J.
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625

MASSARO, E. J.
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683

MATSUSHITA, H.
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

MATTHEWS, E.
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

MAUSKOPF, J. A.
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987

MAZZA, J. J.
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

MCALLISTER, R. A.
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288
Urban Air Toxics Monitoring Program, 1989.
PB91-148262

MCBRIDE, A.
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431

MCCLENNY, W. A.
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357

MCCRILLIS, R. C.
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662

MCFARLANE, C.
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808

MCFARLANE, J. C.
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733

MCGUIRE, J. M.
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703

MCKENNEY, C. L.
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949

MCKIM, J. M.
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720

MCMURRY, P. H.
Modal Aerosol Dynamics Modeling.
PB91-161729

MCNAUGHT, D. C.
Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407

MCPHERSON, J.
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

MEAD, J. R.
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

MEARDON, K.
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624

MEIER, J. R.
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724

MEINERS, A.
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195

MELZER, M.
Drinking Water Criteria Document for Lindane.
PB91-142851

MENACHE, M. G.
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

MEYERS, S. M.
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449

MIDDAUGH, D. P.
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956

MILLER, D. B.
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

MILLER, F. J.
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

MILLER, J. M.
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

MILLER, R. V.
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832
General Microbiology of RecA: Environmental and Evolutionary Significance.
PB91-163964

MILLS, T. S.
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

MILNE, C. R.
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

MINGELGRIN, U.
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

MITCH, M. E.
National Stream Survey Database Guide.
PB91-141804

MITCHELL, M. J.
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709

MOGREN, E. M.
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141

MOHLER, F. S.
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037

MOLZ, F.
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

MOODY, T. K.
Ongoing Research and Regulatory Development Projects.
PB91-161752

MOORE, J. C.
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881

MOORE, W. H.
Urban Air Toxics Monitoring Program, 1989.
PB91-148262

MOREL, F. M. M.
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790

MORGAN, D. P.
Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656

MORRIS, R. E.
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235

MORRISON, M.
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395

MORTON, R. D.
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

MOSER, T. J.
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460

MOSES, M. J.
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

MRAZ, P. J.
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609

MUMFORD, J.
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560

MUNDY, W. R.
Neurotoxic Effects of Colchicine.
PB91-149658

MUNSLOW, W. D.
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555

MURDOCH, L. C.
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487

MURRAY, M. J.
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

MUSHAK, P.
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

MYERS, T. C.
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235

NARAHARA, A. M.
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403

NAROTSKY, M. G.
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838

NAUGLE, D. F.
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273

NEAL, M. W.
Drinking Water Criteria Document for Methoxychlor.
PB91-143461
Drinking Water Criteria Document for Toluene.
PB91-143487

NELSON, W. G.
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799

NEWELL, A. D.
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514

NEWMAN, K. A.
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790

NEWSOME, J. S.
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268

NEWSTED, J. L.
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568

NICHOLS, J. W.
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964

NIEMI, G. J.
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704

NISAMANEEPONG, W.
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018

NODVIN, S. C.
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403

NORBERG-KING, T. J.
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423
Seven-Day Tests and Chronic Tests.
PB91-163592

NORRIS, C. E.
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435
Ongoing Research and Regulatory Development Projects.
PB91-161752

NUNN, N. J.
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

O'CALLAGHAN, J. P.
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

OGUNSEITAN, O. A.
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832

OLDHAM, C. E.
Ongoing Research and Regulatory Development Projects.
PB91-161752

OLIVER, K. D.
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042

OLSEN, R. H.
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923

OLTMANN, R. N.
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331

ONSTOT, J.
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203

OPPELT, E. T.
Air Emissions from the Incineration of Hazardous Waste.
PB91-149641

ORKLAND, S.
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857

OSTENDORF, D. W.
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651

OTT, W.
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281

OVERTON, J. H.
Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717

OVERTON, W. S.
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542
National Stream Survey Database Guide.
PB91-141804
Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590

OWEN, C. A.
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435

PAGE, R. J.
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538

PAHREN, H. R.
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487

PALAZZOLO, M. A.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555

PAPP, M. L.
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812

PARKER, J. C.
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815

PARRISH, C. R.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555

PAUL, J. F.
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986

PAUL, J. H.
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907

PAUMIER, J. O.
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503

PAUR, R. J.
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

PEELE, D. B.
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078

PEER, R. L.
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608

PEGGS, I. D.
Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826

PELLOM, A. C.
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376

PERKINS, R. L.
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211

PERREAULT-DARNEY, S.
In vitro Assessment of Gamete Integrity.
PB91-162610

PERREAULT, S. D.
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725

PERRY, E.
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

PERRY, S. G.
Advanced Screening Model for Complex Terrain Applications.
PB91-162693
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564

PERSHING, D. W.
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

PETERSEN, W. B.
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

PETERSON, C. E.
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498

PETERSON, G. S.
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972

PETERSON, M. R.
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273

PFLEEGER, T.
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808

PICCOT, S. D.
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687

PIERCE, T.
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549

PILLI, A.
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083

PISCATOR, M.
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

PITCHFORD, M. L.
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

PITTS, A. R.
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931

PLEIL, J. D.
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042

POORMAN-ALLEN, P.
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

POWELL, R. M.
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205

POWERS, T. J.
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169

PRADHAN, S.
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018

PRICE, W. A.
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

PRINCIOTTA, F. T.
Acid Rain Control Options.
PB91-162545

PROBERT, J. A.
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687

PURDUE, L. J.
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

RADICKE, M.
Drinking Water Criteria Document for Toxaphene.
PB91-143404

RANADE, M. B.
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

RAO, S. T.
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026

RAPP, G. R.
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712

RAWLINGS, J. O.
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832

RAY, W. D.
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

REAMS, G.
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456

REASONER, D. J.
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625
Concept of Presence Absence Testing.
PB91-162818
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438

REHME, K. A.
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

REHNBERG, G. L.
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

REINHARD, J. F.
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045

REMINGTON, M. B.
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877

RICE, E. W.
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438

RICE, J.
Urban Air Toxics Monitoring Program, 1989.
PB91-148262

RICHMOND, R. E.
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691

RIDDLE, M. M.
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

RINGER, R. K.
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807

RISHER, J. F.
Drinking Water Criteria Document for Aldicarb.
PB91-142810

RISLER, P.
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

ROBERTS, N. R.
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

ROBERTS, P. V.
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346

ROBERTS, W. C.
Health Advisory for Hexachloroethane.
PB91-159657
White Phosphorus Health Advisory.
PB91-161026

ROGERS, B. J.
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725

ROGERS, J. E.
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679

ROGERS, J. M.
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667

ROGERS, R. R.
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

ROHM, C. M.
Regional Framework for Establishing Recovery Criteria.
PB91-146480

ROMEU, A.
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203

ROSE, R.
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685

ROSENGRANT, L.
Treatment Technology Background Document.
PB91-160556

RUDNICK, D. T.
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915

RUDO, K.
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

RUFFOLO, J.
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

RUSSELL, H. H.
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873

RUSSELL, L. D.
Histological and Histopathological Evaluation of the Testis.
PB91-164293

RUSSOM, C. L.
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083

RUSTAD, L. E.
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403

SALE, M. J.
National Stream Survey Database Guide.
PB91-141804

SAMANTA, A. K.
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931

SANDERS, B.
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994

SANTODONATO, J.
Drinking Water Criteria Document for Styrene.
PB91-143370

SARKER, M.
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

SAYLER, G. S.
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832

SCARPINO, P. V.
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141

SCHEIL, G.
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195

SCHERE, K.
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026

SCHMIDT, K. W.
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712

SCHOCK, M. R.
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125

SCHULTZ, R.
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003

SCHWARTZ, D.
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739

SCHWOPE, A. D.
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452

SCOTT, D. R.
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365

SCOTT, K. J.
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986

SELGRADE, M. J. K.
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618

SELGRADE, M. K.
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740

SELISKAR, D. M.
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308

SEMPRINI, L.
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346

SETTE, W. F.
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617

SEWELL, G. W.
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067

SHANKAR, U.
Modal Aerosol Dynamics Modeling.
PB91-161729

SHAO-TANG, W.
Bilateral Wastewater Land Treatment Research.
PB91-162636

SHARON, D.
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613

SHEETS, L. P.
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634

SICKLES, J. E.
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774

SILCOX, G. D.
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670

SIMES, G. F.
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312

SIMMONS, J. E.
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618

SIMON, T. L.
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

SIMONSEN, L.
Dynamics of Plasmid Transfer on Surfaces.
PB91-163816

SIMS, J. L.
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873

SINCLAIR, N. A.
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

SINHA HIKIM, A. P.
Histological and Histopathological Evaluation of the Testis.
PB91-164293

SISTLA, G.
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026

SLOTT, V.
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

SLOTT, V. L.
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732

SMALL, M. J.
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

SMIALOWICZ, R. J.
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773

SMITH, A. M.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498

SMITH, D. F.
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155

SMITH, G. B.
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285

SMITH, M. K.
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

SMITH, P.
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951

SMOTHERS, K. W.
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125

SNARSKI, V. M.
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923

SNEDAKER, S. C.
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

SNYDER, W. H.
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717

SOFFER, E.
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

SOMERVILLE, M. C.
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832

SONICH-MULLIN, C.
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945

SOOTKOOS, B.
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

SORENSEN, J. A.
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712

SORG, T. J.
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792

SOVOCOOL, G. W.
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548

SPETH, T.
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091

SPETH, T. F.
Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800

SPROCKEL, O. L.
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487

SQUIRES, L.
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526

SRIVASTAVA, R. M.
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733

STAHL, D. A.
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857

STALEY, L.
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

STALEY, L. J.
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784

STANLEY, J. S.
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

STARNER, K. K.
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211

STECKEL, A.
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747

STEDMAN, D. H.
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320

STEHMAN, S. V.
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542
Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118

STERLING, C. R.
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086

STEWART, G. J.
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907

STILES, D. C.
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034

STOGNER, R. E.
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707

STOLENBACH, K. D.
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177

STOLZENBACH, K. D.
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790

STRADER, L. F.
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626

STROUPE, K.
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820

STUMP, F. D.
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571

SUAREZ, J. D.
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691

SUFLITA, J. M.
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873

SUKOL, R. B.
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296

SULIK, K. K.
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667

SULLIVAN, J. H.
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381

SULLIVAN, T. J.
Most Dilute Lake in the World.
PB91-144816
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824

SUMMERS, R. S.
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141

SWARTZ, R. C.
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741

SZABO, M. F.
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719

TANABE, K.
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025

TANG, R. T.
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268

TAYLOR, D.
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576

TAYLOR, D. S.
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840

TAYLOR, K.
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

TEJADA, S. B.
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672

TERAMURA, A. H.
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381
UV-B Effects on Terrestrial Plants.
PB91-146399

TEVINI, M.
UV-B Effects on Terrestrial Plants.
PB91-146399

THAMES, C.
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820

THOMAS, P. T.
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659

THOMPSON, R. S.
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597

THOMPSON, W.
Drinking Water Criteria Document for Lindane.
PB91-142851

THORNBURG, K. R.
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699

THORNHILL, J. T.
Injection Well Mechanical Integrity.
PB91-145631

THORNTON, K. W.
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616

THURNAU, R. C.
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144
Incineration Research Facility.
PB91-145128

TICE, R. R.
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376
Evaluation of Exposure Markers.
PB91-144675

TILSON, H. A.
Neurotoxic Effects of Colchicine.
PB91-149658

TINGEY, D. T.
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622

TOPUDURTI, K.
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

TOTH, G. P.
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757

TOWNSEND, G. T.
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873

TRUSTY, C.
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703

TUAZON, E. C.
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621

TUCKER, W. G.
Material Selection.
PB91-136978

TULLIS, D. L.
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802

TURCK, P. A.
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640

TURNER, B. J.
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972

TURNER, D. P.
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622

UDEY, L.
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

UNDEEN, A. H.
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899

VALENTINETTI, R.
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110

VAN METER, A. R.
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268

VAN REMORTEL, R. D.
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812

VAN VELD, P. A.
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

VANCIL, M. A.
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555

VEITH, G. D.
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584

VELINSKY, D. J.
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012

VENOSA, A. D.
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018

VESPER, S. J.
Novel Delivering of Nutrients and Oxygen to Aid in situ Bioreclamation.
PB91-162487

VICTERY, W.
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523

VOGELBEIN, W. K.
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980

WAGENET, R. J.
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277

WALKER, R. F.
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903

WALSH, G. E.
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

WARD, T. E.
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742

WATRAS, C. J.
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527

WATSON, J. J.
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687

WAYLAND, R. A.
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268

WEAVER, J. W.
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669

WEBER, D. E.
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004

WEBER, E. J.
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361

WEBER, J. A.
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622

WEBER, L. J.
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964

WEBSTER, K. E.
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514

WEINBERG, S.
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

WELSHANS, G.
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759

WESTALL, J. C.
Adsorption of Organic Cations to Natural Materials.
PB91-144881

WESTBROOK-COLLINS, B.
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969

WESTBROOK, S. H.
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211

WHEATCRAFT, S.
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522

WHITBY, E. R.
Modal Aerosol Dynamics Modeling.
PB91-161729

WHITEHEAD, D. R.
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472

WHITTIER, T. R.
Regional Framework for Establishing Recovery Criteria.
PB91-146480

WICKBOLDT, W. C.
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3

WIEBE, H. A.
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621

WIGINGTON, P. J.
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616

WILBUR, S. B.
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877
Drinking Water Criteria Document for Methoxychlor.
PB91-143461

WILMOTH, R. C.
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136

WILSON, J. T.
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651
Soil Bioventing Demonstration Project.
PB91-162628

WINER, A. M.
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621

WOLFE, N. L.
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361

WOODS, M. C.
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589

WYROBEK, A. J.
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029

XUE, W.
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931

YATES, M. V.
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774

YATES, S. R.
Organic Chemical Transport to Groundwater.
PB91-137059

YOUNG, D. R.
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781

YOUNT, J. D.
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704

ZHEN-BO, D.
Bilateral Wastewater Land Treatment Research.
PB91-162636

ZUCKER, R. M.
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683

CONTRACT/GRANT NUMBER INDEX

Entries in this index list reports produced as a result of research done under specific contract or grant numbers. Entries are sequenced by contract or grant number, corporate author, and NTIS order number.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

Contract or Grant Number	**EPA-68-01-2281**
Performing Organization	Clemson Univ., SC, Dept. of Environmental Systems Engineering
NTIS Order Number/Media Code Price Code	PB85-169597 PC A02/MF A01

CONTRACT/GRANT NUMBER INDEX

AI08-76DP00539
Environmental Monitoring Systems Lab., Las Vegas, NV.
DE91005910

AI08-86NV10522
Environmental Monitoring Systems Lab., Las Vegas, NV.
DE91005910

DACW-45-88-C-0213
Corps of Engineers North Atlantic, Baltimore, MD. Construction Div.
AD-A230 429/3

EPA-DW12931230
Forest Service, Washington, DC.
PB91-137109

EPA-R-814-017-01-0
Maryland Univ., College Park. Dept. of Botany.
PB91-146381

EPA-R81499
Stanford Univ., CA. Dept. of Applied Earth Sciences.
PB91-163733

EPA-R-808642-01
Lawrence Livermore National Lab., CA. Biomedical Sciences Div.
PB91-145029

EPA-R-810775
Minnesota Univ., Minneapolis. Dept. of Ecology and Behavioral Biology.
PB91-146407

EPA-R-811001
Utah Univ., Salt Lake City. Dept. of Chemical Engineering.
PB91-146670
PB91-146688

EPA-R-811819-02-0
Lawrence Livermore National Lab., CA. Biomedical Sciences Div.
PB91-145029

EPA-R-812220
RMT, Inc., Greenville, SC.
PB91-144774

EPA-R812496
Illinois Univ. at Urbana-Champaign. Dept. of Veterinary Pathobiology.
PB91-163857

EPA-R-812713
Nevada Univ. System, Reno. Desert Research Inst.
PB91-146522
PB91-146530

EPA-R-812736
Wellcome Research Labs., Research Triangle Park, NC.
PB91-132969

EPA-R-812786
Texas Univ. at Austin. Bureau of Economic Geology.
PB91-144899

EPA-R-813113
Duke Univ. Medical Center, Durham, NC. Center for Extrapolation Modelling.
PB91-132993

EPA-R813144-02
Minnesota Univ.-Duluth.
PB91-144949
Minnesota Univ.-Duluth. Dept. of Chemistry.
PB91-144931

EPA-R-813594-020
John B. Pierce Foundation Lab., New Haven, CT.
PB91-146654

EPA-R813840
Baylor Coll. of Medicine, Houston, TX.
PB91-136895

EPA-R813943
Minnesota Univ.-Duluth.
PB91-144949
Minnesota Univ.-Duluth. Dept. of Chemistry.
PB91-144931

EPA-R-814487
Cornell Univ., Ithaca, NY.
PB91-164277

EPA-R-814501
Oregon State Univ., Corvallis. Dept. of Chemistry.
PB91-144881

EPA-R-815778-01-0
Denver Univ., CO. Dept. of Chemistry.
PB91-148320

EPA-R8115234
Tennessee Univ., Knoxville. Center for Environmental Biotechnology.
PB91-163832

EPA-R806013010
Delaware Univ., Newark. Coll. of Marine Studies.
PB91-146308

EPA-R809521010
Michigan Technological Univ., Houghton. Dept. of Civil Engineering.
PB91-163501

EPA-R810076010
Michigan Technological Univ., Houghton. Dept. of Civil Engineering.
PB91-163501

EPA-68-01-7050
Science Applications International Corp., McLean, VA.
PB91-145680

EPA-68-01-7266
Dynamac Corp., Rockville, MD.
PB91-164293

EPA-68-01-7365
Computer Sciences Corp., Research Triangle Park, NC.
PB91-131268
PB91-159707
PB91-161729

EPA-68-02-3659
Life Systems, Inc., Cleveland, OH.
PB91-143396

EPA-68-02-3994
Radian Corp., Research Triangle Park, NC.
PB91-136952

EPA-68-02-4125
Research Triangle Inst., Research Triangle Park, NC.
PB91-154211

EPA-68-02-4252
Midwest Research Inst., Kansas City, MO.
PB91-159699

EPA-68-02-4274
Radian Corp., Research Triangle Park, NC.
PB91-161687

EPA-68-02-4277
OMNI Environmental Services, Inc., Beaverton, OR.
PB91-146662

EPA-68-02-4286
Radian Corp., Research Triangle Park, NC.
PB91-133322
PB91-133330
PB91-133348
PB91-133355
PB91-133363
PB91-133512
PB91-133520
PB91-133538
PB91-151555
PB91-159608

EPA-68-02-4288
Radian Corp., Research Triangle Park, NC.
PB91-149534
PB91-151480
PB91-151506
PB91-151530
PB91-151548
PB91-161687

EPA-68-02-4341
PTI Environmental Services, Bellevue, WA.
PB91-149583

EPA-68-02-4352
Systems Applications, Inc., San Rafael, CA.
PB91-131227
PB91-131243
PB91-131250

EPA-68-02-4393
Pacific Environmental Services, Inc., Durham, NC.
PB91-159624
PB91-159632

EPA-68-02-4398
Engineering Science, Cary, NC.
PB91-148411

EPA-68-02-4442
Southern Research Inst., Birmingham, AL.
PB91-129742

EPA-68-02-4443
NSI Technology Services Corp., Research Triangle Park, NC.
PB91-129155

EPA-68-02-4444
Northrop Services, Inc., Research Triangle Park, NC.
PB91-136317
Oak Ridge National Lab., TN. Environmental Sciences Div.
PB91-141796

EPA-68-02-4450
Chemical Industry Inst. of Toxicology, Research Triangle Park, NC.
PB91-163659
ManTech Environmental Technology, Inc., Research Triangle Park, NC.
PB91-141838
Northrop Services, Inc./Environmental Sciences, Research Triangle Park, NC.
PB91-163618
NSI, Inc., Research Triangle Park, NC.
PB91-144691
NSI Technology Services Corp., Research Triangle Park, NC.
PB91-145078
PB91-149732

EPA-68-02-4456
National Inst. of Environmental Health Sciences, Research Triangle Park, NC. Cellular and Genetic Toxicology Branch.
PB91-132951
Wellcome Research Labs., Research Triangle Park, NC.
PB91-132969

EPA-68-02-4464
Pacific Environmental Services, Inc., Durham, NC.
PB91-141820

EPA-68-02-4544
Research Triangle Inst., Research Triangle Park, NC.
PB91-163774

EPA-68-02-4550
Research Triangle Inst., Research Triangle Park, NC.
PB91-146589
PB91-154211

EPA-68-02-4701
Acurex Corp., Research Triangle Park, NC.
PB91-146647

EPA-68-02-6999
Radian Corp., Research Triangle Park, NC.
PB91-151498
PB91-151514
PB91-151522

EPA-68-02-7365
Computer Sciences Corp., Research Triangle Park, NC.
PB91-136564

EPA-68-03-3112
Syracuse Research Corp., NY.
PB91-142802
PB91-142877
PB91-143370
PB91-143388
PB91-143461
PB91-143487

EPA-68-03-3246
Lockheed Engineering and Sciences Co., Inc., Las Vegas, NV.
PB91-141812

EPA-68-03-3249
Lockheed Engineering and Sciences Co., Inc., Las Vegas, NV.
PB91-141812
PB91-146548
PB91-146555
NSI Technology Services Corp., Corvallis, OR.
PB91-159590

EPA-68-03-3293
Little (Arthur D.), Inc., Cambridge, MA.
PB91-148452

EPA-68-03-3389
Istituto di Ricerca sulle Acque, Rome (Italy).
PB91-162719

EPA-68-03-3409
PEI Associates, Inc., Arlington, VA.
PB91-149609

EPA-68-03-3413
PEI Associates, Inc., Cincinnati, OH.
PB91-148296
PB91-148379

EPA-68-03-3479
Technical Resources, Inc., Gulf Breeze, FL.
PB91-163873

EPA-68-03-3484
PRC Environmental Management, Inc., Chicago, IL.
PB91-129759

EPA-68-03-4006
PEI Associates, Inc., Cincinnati, OH.
PB91-148338
PB91-161695

EPA-68-03-4038
Cincinnati Univ., OH. Dept. of Civil and Environmental Engineering.
PB91-137091
PB91-137141

EPA-68-04-5041
Science Applications International Corp., McLean, VA.
PB91-148437

EPA-68-C8-0006
NSI Technology Services Corp., Corvallis, OR.
PB91-136598
PB91-136614
PB91-144824
PB91-146480
PB91-146506
PB91-159590

EPA-68-C8-0025
NSI Technology Services Corp., Ada, OK.
PB91-129205

EPA-68-C8-0033
Life Systems, Inc., Cleveland, OH.
PB91-142828
PB91-142836
PB91-142844
PB91-142869
PB91-143412

EPA-68-C8-0061
Science Applications International Corp., Paramus, NJ.
PB91-136556

EPA-68-C8-0062
Science Applications International Corp., McLean, VA.
PB91-148387

EPA-68-C8-0066
Science Applications International Corp., McLean, VA.
PB91-145680

EPA-68-C8-0068
Integrated Lab. Systems, Research Triangle Park, NC.
PB91-140376

EPA-68-C8-0069
Integrated Lab. Systems, Research Triangle Park, NC.
PB91-144675

CONTRACT/GRANT NUMBER INDEX

EPA-68-C9-0031
Cincinnati Univ., OH.
PB91-162487

EPA-68-C9-0033
Foster Wheeler Boiler Corp., Livingston, NJ.
PB91-133264

EPA-68C8000G
NSI Technology Services Corp., Corvallis, OR.
PB91-146449

EPA-68-D8-0065
Radian Corp., Research Triangle Park, NC.
PB91-161752
PB91-168435
PB91-168443

EPA-68-D8-0085
PTI Environmental Services, Bellevue, WA.
PB91-149567
PB91-149575
PB91-149591

EPA-68-D9-0094
AScI Corp., McLean, VA.
PB91-137281

EPA-68D80014
Radian Corp., Research Triangle Park, NC.
PB91-148262
PB91-148288

EPA-68D90066
Systems Applications, Inc., San Rafael, CA.
PB91-131227
PB91-131243
PB91-131250

EPA-68-D90170
ICF, Inc., Fairfax, VA.
PB91-131300
PB91-157222

EPA-69-03-3246
E and S Environmental Chemistry, Inc., Corvallis, OR.
PB91-144816

NIH-GM33782
Massachusetts Univ., Amherst. Dept. of Zoology.
PB91-163816

NSF-BSR83-08918
Wisconsin Univ.-Madison. Center for Limnology.
PB91-163535

NSF-BSR-8506417
Environmental Research Lab., Gulf Breeze, FL.
PB91-163840

NSF-DEB80-12313
Wisconsin Univ.-Madison. Center for Limnology.
PB91-163535

NSF-PCM-8351355
Illinois Univ. at Urbana-Champaign. Dept. of Veterinary Pathobiology.
PB91-163857

W-7405-ENG-48
Lawrence Livermore National Lab., CA.
DE91002995

NTIS ORDER/REPORT NUMBER INDEX

Entries in this index list the NTIS order number and the monitor agency numbers, each in its alphanumeric position. Please use the NTIS order number to order items available from NTIS to ensure faster service.

THE THREE LETTERS AT THE END OF THE NTIS ORDER NUMBERS HAVE BEEN PLACED THERE TO HELP NTIS DETERMINE THE MOST EFFECTIVE MEDIA IN BRINGING VARIOUS TYPES OF INFORMATION TO READERS' ATTENTION.

PLEASE *DO* USE THE MEDIA CODES AT THE ENDS OF THE ORDER NUMBERS WHEN ORDERING. THE INFORMATION THEY PROVIDE IS VERY HELPFUL TO NTIS.

SAMPLE ENTRY

Performing Organization Report number(s)	**EPA/600/D-85/036**
Title	PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations.
NTIS Order Number/Media Code Price Codes	PB85-169597/REB PC A02/MF A01
NTIS Order Number	**PB85-169597/REB**
Title	PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations.
NTIS Order Number/Media Code Price Codes	PB85-169597/REB PC A02/MF A01
Sponsoring Organization Report Number(s)	EPA, Environmental Research Lab Athens, GA **EPA/600/D-85/036**
Title	PAH (Polycyclic Aromatic Hydrocarbons) Uptake by Plants: Methodology and Initial Investigations.
NTIS Order Number/Media Code Price Codes	PB85-169597/REB PC A02/MF A01

NTIS ORDER/REPORT NUMBER INDEX

AD-A230 429/3
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3 PC **A13**/MF **A02**

ADL-54995-35
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452 PC **A03**/MF **A01**

BBW-PROC-(89)3
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862 PC **A05**/MF **A01**

CENAB-CO/HTW/90-1/EPA(S)-VOL-1
Post Remedial Action Report, Lansdowne Radioactive Residence Complex, Dismantlement/Removal Project. Volume 1. Government Operations.
AD-A230 429/3 PC **A13**/MF **A02**

CERI-90-04
Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664 PC **A04**/MF **A01**

CERI-90-16
Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PB91-145433 PC **A11**/MF **A02**

CONTRIB-P08
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845 PC **A02**/MF **A01**

CONTRIB-64
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584 PC **A03**/MF **A01**

CONTRIB-667
Effects of Temperature and Salinity on 'Menidia beryllina' *Embryos Exposed to Terbufos.*
PB91-163881 PC **A03**/MF **A01**

CONTRIB-680
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899 PC **A02**/MF **A01**

CONTRIB-689
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782 PC **A02**/MF **A01**

CONTRIB-693
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (*Teleostei: Cyprinodontiformes: Rivulidae*).
PB91-163840 PC **A03**/MF **A01**

CONTRIB-695
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956 PC **A02**/MF **A01**

DCN-90-203-099-26-09
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435 PC **A09**/MF **A01**

DCN-90-203-099-26-10
Ongoing Research and Regulatory Development Projects.
PB91-161752 PC **A10**/MF **A02**

DCN-90-203-099-26-11
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to *Air Toxics. Index*, 1990.
PB91-168443 PC **A21**/MF **A03**

DCN-90-239-005-48-09
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534 PC **A04**/MF **A01**

DCN-90-262-045-09
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288 PC **A07**/MF **A01**

DE91002995
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995 PC **A04**/MF **A01**

DE91005910
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910 PC **A08**/MF **A01**

DE91724862
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862 PC **A05**/MF **A01**

DOE/DP/00539-062
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910 PC **A08**/MF **A01**

ECAO-CIN-402
Drinking Water Criteria Document for Lindane.
PB91-142851 PC **A09**/MF **A02**

ECAO-CIN-404
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388 PC **A05**/MF **A01**

ECAO-CIN-406
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877 PC **A14**/MF **A02**

ECAO-CIN-407
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802 PC **A07**/MF **A01**

ECAO-CIN-408
Drinking Water Criteria Document for Toluene.
PB91-143487 PC **A09**/MF **A01**

ECAO-CIN-409
Drinking Water Criteria Document for Styrene.
PB91-143370 PC **A12**/MF **A02**

ECAO-CIN-420
Drinking Water Criteria Document for Aldicarb.
PB91-142810 PC **A09**/MF **A01**

ECAO-CIN-425
Drinking Water Criteria Document for Methoxychlor.
PB91-143461 PC **A08**/MF **A01**

ECAO-CIN-426
Drinking Water Criteria Document for Toxaphene.
PB91-143404 PC **A10**/MF **A02**

ECAO-CIN-613
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513 PC **A03**/MF **A01**

ECAO-CIN-614
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612 PC **A03**/MF **A01**

ECAO-CIN-615
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398 PC **A03**/MF **A01**

ECAO-CIN-616
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521 PC **A03**/MF **A01**

ECAO-CIN-617
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539 PC **A03**/MF **A01**

ECAO-CIN-621
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604 PC **A03**/MF **A01**

ECAO-CIN-624
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554 PC **A03**/MF **A01**

ECAO-CIN-625
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547 PC **A03**/MF **A01**

ECAO-CIN-628
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620 PC **A03**/MF **A01**

ECAO-CIN-629
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380 PC **A03**/MF **A01**

ECAO-CIN-630
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661 PC **A03**/MF **A01**

ECAO-CIN-631
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562 PC **A03**/MF **A01**

ECAO-CIN-632
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570 PC **A03**/MF **A01**

ECAO-CIN-636
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471 PC **A03**/MF **A01**

ECAO-CIN-640
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596 PC **A03**/MF **A01**

ECAO-CIN-642
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497 PC **A03**/MF **A01**

ECAO-CIN-644
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448 PC **A03**/MF **A01**

ECAO-CIN-646
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505 PC **A03**/MF **A01**

ECAO-CIN-647
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489 PC **A03**/MF **A01**

ECAO-CIN-648
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430 PC **A03**/MF **A01**

ECAO-CIN-649
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646 PC **A03**/MF **A01**

ECAO-CIN-651
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463 PC **A03**/MF **A01**

ECAO-CIN-652
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455 PC **A03**/MF **A01**

ECAO-CIN-654
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422 PC **A03**/MF **A01**

ECAO-CIN-661
Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414 PC **A03**/MF **A01**

ECAO-CIN-662
Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406 PC **A03**/MF **A01**

ECAO-CIN-664
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638 PC **A03**/MF **A01**

ECAO-CIN-665
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653 PC **A03**/MF **A01**

ECAO-CIN-674
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588 PC **A03**/MF **A01**

ECAO-R-0117
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523 PC **A06**/MF **A01**

ECAO-R-0297
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420 PC **A05**/MF **A01**

ECAO-R-0440
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273 PC **A03**/MF **A01**

EPA/DF/DK-91/073
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295 *CP* **D02**

EPA/DF/DK-91/078
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964 CP **D02**

EPA/DF/MT-91/004
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586 CP **T03**

EPA/DF/MT-91/005
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594 CP **T02**

EPA/DF/MT-91/006
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602 CP **T03**

EPA/DF/MT-91/007
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610 CP **T03**

EPA/DF/MT-91/008
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628 CP **T02**

EPA/DF/MT-91/009
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636 CP **T02**

EPA/DF/MT-91/010
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644 CP **T03**

EPA/DF/MT-91/011
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651 CP **T03**

EPA/DF/MT-91/012
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669 CP **T02**

EPA/DF/MT-91/013
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677 CP **T02**

EPA/DF/MT-91/014
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685 CP **T03**

EPA/DF/MT-91/015
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693 CP **T03**

EPA/DF/MT-91/016
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701 CP **T02**

EPA/DF/MT-91/017
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719 CP **T02**

EPA/DF/MT-91/018
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727 CP **T02**

EPA/DF/MT-91/019
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735 CP **T03**

EPA/DF/MT-91/020
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743 CP **T03**

EPA/DF/MT-91/021
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750 CP **T02**

EPA/DF/MT-91/022
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768 CP **T02**

EPA/DF/MT-91/023
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776 CP **T03**

EPA/DF/MT-91/024
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784 CP **T03**

EPA/DF/MT-91/025
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792 CP **T02**

EPA/DF/MT-91/026
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800 CP **T02**

EPA/DF/MT-91/027
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818 CP **T02**

EPA/DF/MT-91/028
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826 CP **T02**

EPA/DF/MT-91/029
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834 CP **T02**

EPA/DF/MT-91/030
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842 CP **T02**

EPA/DF/MT-91/031
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859 CP **T02**

EPA/DF/MT-91/032
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867 CP **T02**

EPA/DF/MT-91/033
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875 CP **T02**

EPA/DF/MT-91/034
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883 CP **T02**

EPA/DF/MT-91/035
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891 CP **T02**

EPA/DF/MT-91/036
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909 CP **T02**

EPA/DF/MT-91/037
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917 CP **T03**

EPA/DF/MT-91/038
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925 CP **T03**

EPA/DF/MT-91/039
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933 CP **T02**

EPA/DF/MT-91/040
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941 CP **T02**

EPA/DF/MT-91/041
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958 CP **T03**

EPA/DF/MT-91/042
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966 CP **T03**

EPA/DF/MT-91/043
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974 CP **T02**

EPA/DF/MT-91/044
NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982 CP **T02**

EPA/DF/MT-91/045
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990 CP **T03**

EPA/DF/MT-91/046
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006 CP **T03**

EPA/DF/MT-91/047
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014 CP **T02**

EPA/DF/MT-91/048
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022 CP **T02**

EPA/DF/MT-91/049
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030 CP **T03**

EPA/DF/MT-91/050
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048 CP **T03**

EPA/DF/MT-91/051
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055 CP **T02**

EPA/DF/MT-91/052
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063 CP **T02**

EPA/DF/MT-91/053
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071 CP **T03**

EPA/DF/MT-91/054
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089 CP **T03**

EPA/DF/MT-91/055
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097 CP **T02**

EPA/DF/MT-91/056
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105 CP **T02**

EPA/DF/MT-91/057
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113 CP **T03**

EPA/DF/MT-91/058
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121 CP **T03**

EPA/DF/MT-91/059
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139 CP **T02**

EPA/DF/MT-91/060
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147 CP **T02**

EPA/DF/MT-91/061
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154 CP **T03**

EPA/DF/MT-91/062
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162 CP **T03**

EPA/DF/MT-91/063
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170 CP **T02**

EPA/DF/MT-91/064
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188 CP **T02**

EPA/DF/MT-91/065
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196 CP **T02**

EPA/DF/MT-91/066
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204 CP **T02**

EPA/DF/MT-91/067
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212 CP **T02**

EPA/DF/MT-91/068
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220 CP **T02**

EPA/DF/MT-91/069
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238 CP **T02**

EPA/DF/MT-91/070
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246 CP **T02**

EPA/DF/MT-91/071
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253 CP **T02**

EPA/DF/MT-91/077
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816 CP **T02**

EPA/DF/MT-91/080A
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737 PC **A20**/MF **A03**

EPA/DF/MT-91/080B
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745 PC **A20**/MF **A03**

EPA/SW/DK-91/074
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469 CP **D02**

EPA/SW/DK-91/074A
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512 PC **A04**/MF **A01**

EPA/SW/DK-91/074B
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520 PC **A10**/MF **A02**

EPA/SW/DK-91/074C
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538 PC **A07**/MF **A01**

EPA/SW/DK-91/075
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477 CP **D03**

EPA/SW/MT-91/002
Urban Airshed Model.
PB91-505578 CP **T18**

EPA/SW/MT-91/002A
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227 PC **A12**/MF **A02**

EPA/SW/MT-91/002B
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235 PC **A22**/MF **A03**

EPA/SW/MT-91/002C
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243 PC **A04**/MF **A01**

EPA/SW/MT-91/002D
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250 PC **A13**/MF **A02**

EPA/SW/MT-91/002E
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268 PC **A11**/MF **A02**

EPA-217.102
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862 PC **A05**/MF **A01**

EPA/230/9-90/081
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131967 PC **A07**/MF **A01**

EPA/230/11-90/083
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783 PC **A22**/MF **A03**

EPA/230/12-90/084
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775 PC **A04**/MF **A01**

EPA/400/7-90/005
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896 PC **A10**/MF **A02**

EPA/440/4-90/003
National Water Quality Inventory. 1988 Report to Congress.
PB91-145730 PC **A12**/MF **A02**

EPA/440/4-90/005
Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912 PC **A03**/MF **A01**

EPA/440/6-90/003
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755 PC **A07**/MF **A01**

EPA/440/6-90/005
Review of Sources of Ground-Water Contamination from Light Industry.
PB91-145938 PC **A04**/MF **A01**

EPA/450/1-90/004A
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624 PC **A08**/MF **A01**

EPA/450/1-90/004B
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
PB91-159632 PC **A11**/MF **A02**

EPA/450/3-83/019B
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304 PC **A10**/MF **A02**

EPA/450/3-90/009
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737 PC **A06**/MF **A01**

EPA/450/3-90/013
Ongoing Research and Regulatory Development Projects.
PB91-161752 PC **A10**/MF **A02**

EPA/450/3-90/014
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435 PC **A09**/MF **A01**

EPA/450/3-90/014A
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443 PC **A21**/MF **A03**

EPA/450/3-90/019
Polymer Manufacturing Industry - Enabling Document.
PB91-161745 PC **A08**/MF **A01**

EPA/450/3-91/007
Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270 PC **A09**/MF **A01**

EPA/450/4-89/022
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
PB91-148411 PC **A04**/MF **A01**

EPA/450/4-90/007A
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227 PC **A12**/MF **A02**

EPA/450/4-90/007B
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235 PC **A22**/MF **A03**

EPA/450/4-90/007C
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243 PC **A04**/MF **A01**

EPA/450/4-90/007D
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250 PC **A13**/MF **A02**

EPA/450/4-90/007E
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268 PC **A11**/MF **A02**

EPA/450/4-90/013
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820 PC **A03**/MF **A01**

EPA/450/4-91/001
Urban Air Toxics Monitoring Program, 1989.
PB91-148262 PC **A13**/MF **A02**

EPA/450/4-91/003
National Air Quality and Emissions Trends Report, 1989.
PB91-172247 PC **A07**/MF **A01**

EPA/450/4-91/006
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288 PC **A07**/MF **A01**

EPA/503/8-89/001
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474 PC **A08**/MF **A01**

EPA/505/8-90/001
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508 PC **A12**/MF **A02**

EPA-520/1-90-012
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995 PC **A04**/MF **A01**

EPA/520/1-91/002
National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300 PC **A10**/MF **A02**

EPA/520/1-91/002-SUPPL
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222 PC **A07**/MF **A01**

EPA/530/SW-90/036
RCRA Orientation Manual 1990 Edition.
PB91-145888 PC **A10**/MF **A02**

EPA/530/SW-91/016
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195 PC **A18**/MF **A03**

EPA/530/SW-91/017
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203 PC **A20**/MF **A03**

EPA/530/SW-91/018A
State Authorization Manual. Volume 1.
PB91-130211 PC **A03**/MF **A01**

EPA/530/SW-91/018B
State Authorization Manual. Volume 2. Appendices.
PB91-130229 PC **A99**/MF **A99**

EPA/530/SW-91/030
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st), Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549 PC**$95.00**/MF **E09**

EPA/530/UST-88/008
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531 PC **A03**/MF **A01**

EPA/540/2-90/009
Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649 PC **A04**/MF **A01**

EPA/540/8-90/015
Catalog of Superfund Program Publications, FY-91.
PB91-144683 PC **A05**/MF **A01**

EPA/540/8-90/017
Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204 PC **A16**/MF **A02**

EPA/540/9-88/001
Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656 PC **A10**/MF **A02**

EPA/540/09-91/122
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394 PC **A03**/MF **A01**

EPA/540/09-91/123
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617 PC **A04**/MF **A01**

EPA/540/A5-89/005
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817 PC **A04**/MF **A01**

EPA/540/A5-89/012
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759 PC **A05**/MF **A01**

EPA/540/FS-91/118
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528 PC **A02**/MF **A01**

EPA/540/FS-91/119
Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536 PC **A02**/MF **A01**

EPA/540/FS-91/123
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681 PC **A03**/MF **A01**

EPA/540/FS-91/124
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
PB91-159673 PC **A02**/MF **A01**

EPA/540/G-90/005
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531 PC **A11**/MF **A02**

EPA/540/G-90/007
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466 PC **A08**/MF **A01**
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206 PC **A07**/MF **A01**

EPA/540/G-90/008
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208 PC **A12**/MF **A02**

EPA/540/P-91/001
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205 PC **A14**/MF **A02**

EPA/560/1-90/001
Program Recommendations for State Section 313 Program Coordinators.
PB91-145698 PC **A05**/MF **A01**

EPA/560/5-90/012
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699 PC **A04**/MF **A01**

EPA/560/7-90/003
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458 PC **A13**/MF **A02**
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665 PC **A13**/MF **A02**

EPA/570/9-89/007
Cross-Connection Control Manual.
PB91-145490 PC **A03**/MF **A01**

EPA/600/1-90/005A
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307 PC **A15**/MF **A02**

EPA/600/1-90/005B
Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315 PC **A06**/MF **A01**

EPA/600/1-91/001
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838 PC **A03**/MF **A01**

EPA/600/2-90/054
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296 PC **A04**/MF **A01**

EPA/600/2-90/060
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346 PC **A06**/MF **A01**

EPA/600/2-90/061
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609 PC **A07**/MF **A01**

EPA/600/2-90/062
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556 PC **A07**/MF **A01**

EPA/600/2-90/208
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018 PC **A03**/MF **A01**

EPA/600/2-91/001
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452 PC **A03**/MF **A01**

EPA/600/2-91/002
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846 PC **A05**/MF **A01**

EPA/600/2-91/003
Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338 PC **A05**/MF **A01**

EPA/600/2-91/004
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695 PC **A04**/MF **A01**

EPA/600/2-91/007A
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480 PC **A03**/MF **A01**

EPA/600/2-91/007B
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498 PC **A13**/MF **A02**

EPA/600/2-91/007C
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506 PC **A12**/MF **A02**

EPA/600/2-91/007D
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514 PC **A02**/MF **A01**

EPA/600/2-91/007E
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522 PC **A08**/MF **A01**

EPA/600/2-91/007F
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530 PC **A13**/MF **A02**

EPA/600/2-91/007G
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548 PC **A09**/MF **A01**

EPA/600/2-91/007H
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555 PC **A06**/MF **A01**

EPA/600/2-91/009
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285 PC **A04**/MF **A01**

EPA/600/2-91/010
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277 PC **A03**/MF **A01**

EPA/600/3-90/060
Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796 PC **A19**/MF **A03**

EPA/600/3-90/093
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742 PC **A03**/MF **A01**

EPA/600/3-90/095
Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118 PC **A03**/MF **A01**

EPA/600/3-90/096
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572 PC **A10**/MF **A02**

EPA/600/3-90/097
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317 PC **A07**/MF **A01**

EPA/600/3-91/001
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460 PC **A08**/MF **A01**

EPA/600/3-91/002
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667 PC **A06**/MF **A01**

EPA/600/3-91/004
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361 PC **A03**/MF **A01**

EPA/600/3-91/006
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616 PC **A04**/MF **A01**

EPA/600/3-91/007
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403 PC **A05**/MF **A01**

EPA/600/3-91/008
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395 PC **A10**/MF **A02**

EPA/600/3-91/009
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542 PC **A05**/MF **A01**

EPA/600/3-91/010
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526 PC **A09**/MF **A01**

EPA/600/3-91/012
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590 PC **A11**/MF **A02**

EPA/600/3-91/013
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707 PC **A03**/MF **A01**

EPA/600/3-91/019
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711 PC **A06**/MF **A01**

EPA/600/3-91/020
Modal Aerosol Dynamics Modeling.
PB91-161729 PC **A13**/MF **A02**

EPA/600/4-90/004
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211 PC **A08**/MF **A01**

EPA-600/4-90/016
Radiation monitoring around United States nuclear test areas, calendar year 1989. Offsite environmental monitoring report.
DE91005910 PC **A08**/MF **A01**

EPA/600/4-90/017
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812 PC **A09**/MF **A02**

EPA/600/4-90/020
Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027 PC **A11**/MF **A02**

EPA/600/4-90/031
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353 PC **A06**/MF **A01**

EPA/600/4-90/032
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320 PC **A05**/MF **A01**

EPA/600/4-90/034
Evaluation of Exposure Markers.
PB91-144675 PC **A06**/MF **A01**

EPA/600/4-91/004
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703 PC **A04**/MF **A01**

EPA/600/6-90/008
Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265 PC **A12**/MF **A02**

EPA/600/7-90/021A
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322 PC **A05**/MF **A01**

EPA/600/7-90/021B
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330 PC **A19**/MF **A03**

EPA/600/7-90/021C
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348 PC **A18**/MF **A03**

EPA/600/7-90/021D
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355 PC **A23**/MF **A03**

EPA/600/7-90/021E
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363 PC **A24**/MF **A03**

EPA/600/7-90/022A
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512 PC **A04**/MF **A01**

EPA/600/7-90/022B
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520 PC **A10**/MF **A02**

EPA/600/7-90/022C
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538 PC **A07**/MF **A01**

EPA/600/7-91/001
Self-Consistent Deutschian ESP Model.
PB91-149518 PC **A05**/MF **A01**

EPA/600/7-91/002
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534 PC **A04**/MF **A01**

EPA/600/7-91/003
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608 PC **A04**/MF **A01**

EPA/600/8-87/048F
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523 PC **A06**/MF **A01**

EPA/600/8-89/049F
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420 PC **A05**/MF **A01**

EPA/600/8-90/041
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273 PC **A03**/MF **A01**

EPA/600/8-90/055
National Stream Survey Database Guide.
PB91-141804 PC **A06**/MF **A01**

EPA/600/8-90/084
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549 PC **A04**/MF **A01**

EPA/600/8-90/086
Chromosomal Aberration Data Analysis and Interpretation System. Version 1.0. User's Guide.
PB91-140376 PC **A08**/MF **A01**

EPA/600/8-90/087
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564 PC **A04**/MF **A01**

EPA/600/8-91/002
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687 PC **A04**/MF **A01**

EPA/600/8-91/003
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312 PC **A04**/MF **A01**

EPA/600/8-91/012
Histological and Histopathological Evaluation of the Testis.
PB91-164293 PC **A13**/MF **A02**

EPA/600/9-90/006
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524 PC **A99**/MF **A04**

EPA/600/9-90/037
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste

Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379 PC **A99**/MF **A04**

EPA/600/9-90/039
Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
PB91-148387 PC **A99**/MF **A04**

EPA/600/9-90/042
ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482 PC **A03**/MF **A01**

EPA/600/9-91/001
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679 PC **A09**/MF **A02**

EPA/600/D-90/012
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768 PC **A02**/MF **A01**

EPA/600/D-90/159
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205 PC **A03**/MF **A01**

EPA/600/D-90/162
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025 PC **A02**/MF **A01**

EPA/600/D-90/167
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969 PC **A03**/MF **A01**

EPA/600/D-90/168
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993 PC **A03**/MF **A01**

EPA/600/D-90/169
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951 PC **A03**/MF **A01**

EPA/600/D-90/171
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944 PC **A03**/MF **A01**

EPA/600/D-90/174
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672 PC **A03**/MF **A01**

EPA/600/D-90/175
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155 PC **A02**/MF **A01**

EPA/600/D-90/184
Water Quality Modeling in Distribution Systems.
PB91-130153 PC **A04**/MF **A01**

EPA/600/D-90/185
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845 PC **A02**/MF **A01**

EPA/600/D-90/190
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109 PC **A03**/MF **A01**

EPA/600/D-90/191
Immunotoxicology of Captive and Wild Birds.
PB91-137117 PC **A03**/MF **A01**

EPA/600/D-90/192
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598 PC **A02**/MF **A01**

EPA/600/D-90/193
Air Quality and Deposition (Chapter 3).
PB91-136606 PC **A04**/MF **A01**

EPA/600/D-90/194
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614 PC **A01**/MF **A01**

EPA/600/D-90/195
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622 PC **A04**/MF **A01**

EPA/600/D-90/196
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630 PC **A03**/MF **A01**

EPA/600/D-90/197
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895 PC **A03**/MF **A01**

EPA/600/D-90/198
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903 PC **A04**/MF **A01**

EPA/600/D-90/199
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911 PC **A03**/MF **A01**

EPA/600/D-90/200
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026 PC **A03**/MF **A01**

EPA/600/D-90/201
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034 PC **A03**/MF **A01**

EPA/600/D-90/202
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042 PC **A03**/MF **A01**

EPA/600/D-90/203
Organic Chemical Transport to Groundwater.
PB91-137059 PC **A03**/MF **A01**

EPA/600/D-90/204
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067 PC **A03**/MF **A01**

EPA/600/D-90/205
Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075 PC **A03**/MF **A01**

EPA/600/D-90/206
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083 PC **A02**/MF **A01**

EPA/600/D-90/207
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091 PC **A03**/MF **A01**

EPA/600/D-90/209
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125 PC **A03**/MF **A01**

EPA/600/D-90/210
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133 PC **A03**/MF **A01**

EPA/600/D-90/211
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141 PC **A03**/MF **A01**

EPA/600/D-90/212
New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158 PC **A02**/MF **A01**

EPA/600/D-90/213
Flexibility in Bacteriological Monitoring.
PB91-137166 PC **A03**/MF **A01**

EPA/600/D-90/216
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945 PC **A03**/MF **A01**

EPA/600/D-90/217
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952 PC **A03**/MF **A01**

EPA/600/D-90/220
Material Selection.
PB91-136978 PC **A02**/MF **A01**

EPA/600/D-90/221
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986 PC **A03**/MF **A01**

EPA/600/D-90/222
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994 PC **A03**/MF **A01**

EPA/600/D-90/225
Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404 PC **A03**/MF **A01**

EPA/600/D-90/226
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412 PC **A02**/MF **A01**

EPA/600/D-90/227
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420 PC **A03**/MF **A01**

EPA/600/D-90/228
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438 PC **A03**/MF **A01**

EPA/600/D-90/229
Succeeding at Waste Minimisation.
PB91-162446 PC **A03**/MF **A01**

EPA/600/D-90/230
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453 PC **A03**/MF **A01**

EPA/600/D-90/231
Standardized Costs for Water Supply Distribution Systems.
PB91-162461 PC **A03**/MF **A01**

EPA/600/D-90/232
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479 PC **A03**/MF **A01**

EPA/600/D-90/233
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487 PC **A03**/MF **A01**

EPA/600/D-90/234
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495 PC **A03**/MF **A01**

EPA/600/D-90/235
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503 PC **A03**/MF **A01**

EPA/600/D-90/237
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511 PC **A03**/MF **A01**

EPA/600/D-90/238
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529 PC **A03**/MF **A01**

EPA/600/D-90/239
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537 PC **A02**/MF **A01**

EPA/600/D-90/240
Acid Rain Control Options.
PB91-162545 PC **A03**/MF **A01**

EPA/600/D-90/241
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552 PC **A02**/MF **A01**

EPA/600/D-90/242
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560 PC **A03**/MF **A01**

EPA/600/D-90/243
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578 PC **A03**/MF **A01**

EPA/600/D-90/245
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594 PC **A02**/MF **A01**

EPA/600/D-90/246
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602 PC **A03**/MF **A01**

EPA/600/D-90/247
In vitro Assessment of Gamete Integrity.
PB91-162610 PC **A03**/MF **A01**

EPA/600/D-90/248
Soil Bioventing Demonstration Project.
PB91-162628 PC **A03**/MF **A01**

EPA/600/D-90/249
Bilateral Wastewater Land Treatment Research.
PB91-162636 PC **A02**/MF **A01**

EPA/600/D-90/250
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644 PC **A03**/MF **A01**

EPA/600/D-91/001
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651 PC **A03**/MF **A01**

EPA/600/D-91/002
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669 PC **A03**/MF **A01**

EPA/600/D-91/003
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677 PC **A03**/MF **A01**

EPA/600/D-91/004
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685 PC **A03**/MF **A01**

EPA/600/D-91/005
Advanced Screening Model for Complex Terrain Applications.
PB91-162693 PC **A03**/MF **A01**

EPA/600/D-91/006
Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701 PC **A03**/MF **A01**

EPA/600/D-91/007
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719 PC **A03**/MF **A01**

EPA/600/D-91/008
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727 PC **A02**/MF **A01**

EPA/600/D-91/010
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743 PC **A02**/MF **A01**

EPA/600/D-91/011
Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750 PC **A03**/MF **A01**

NTIS ORDER/REPORT NUMBER INDEX

EPA/600/D-91/013
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776 PC **A03**/MF **A01**

EPA/600/D-91/014
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784 PC **A03**/MF **A01**

EPA/600/D-91/015
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792 PC **A03**/MF **A01**

EPA/600/D-91/016
Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800 PC **A03**/MF **A01**

EPA/600/D-91/017
Concept of Presence Absence Testing.
PB91-162818 PC **A03**/MF **A01**

EPA/600/D-91/018
Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826 PC **A03**/MF **A01**

EPA/600/D-91/019
Geosynthetic Leachate Collection Systems.
PB91-162834 PC **A03**/MF **A01**

EPA/600/J-86/533
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807 PC **A03**/MF **A01**

EPA/600/J-87/539
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308 PC **A03**/MF **A01**

EPA/600/J-87/540
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316 PC **A02**/MF **A01**

EPA/600/J-87/541
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324 PC **A02**/MF **A01**

EPA/600/J-87/542
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332 PC **A02**/MF **A01**

EPA/600/J-87/543
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493 PC **A03**/MF **A01**

EPA/600/J-87/544
Optical Heterogeneity in Green Bay.
PB91-163501 PC **A02**/MF **A01**

EPA/600/J-88/555
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741 PC **A03**/MF **A01**

EPA/600/J-88/556
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733 PC **A02**/MF **A01**

EPA/600/J-88/557
Economies of Scale and Scope in Water Supply.
PB91-163519 PC **A03**/MF **A01**

EPA/600/J-89/488
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782 PC **A02**/MF **A01**

EPA/600/J-89/489
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774 PC **A02**/MF **A01**

EPA/600/J-89/490
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766 PC **A03**/MF **A01**

EPA/600/J-89/493
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758 PC **A03**/MF **A01**

EPA/600/J-89/494
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815 PC **A03**/MF **A01**

EPA/600/J-89/495
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340 PC **A02**/MF **A01**

EPA/600/J-89/496
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357 PC **A02**/MF **A01**

EPA/600/J-89/497
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365 PC **A03**/MF **A01**

EPA/600/J-89/498
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373 PC **A03**/MF **A01**

EPA/600/J-89/499
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381 PC **A02**/MF **A01**

EPA/600/J-89/500
UV-B Effects on Terrestrial Plants.
PB91-146399 PC **A03**/MF **A01**

EPA/600/J-89/501
Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407 PC **A02**/MF **A01**

EPA/600/J-89/502
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415 PC **A02**/MF **A01**

EPA/600/J-89/503
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423 PC **A03**/MF **A01**

EPA/600/J-89/504
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431 PC **A03**/MF **A01**

EPA/600/J-89/505
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527 PC **A03**/MF **A01**

EPA/600/J-89/506
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535 PC **A03**/MF **A01**

EPA/600/J-90/138
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717 PC **A03**/MF **A01**

EPA/600/J-90/172
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980 PC **A03**/MF **A01**

EPA/600/J-90/210
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972 PC **A02**/MF **A01**

EPA/600/J-90/248
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964 PC **A02**/MF **A01**

EPA/600/J-90/249
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003 PC **A02**/MF **A01**

EPA/600/J-90/250
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956 PC **A03**/MF **A01**

EPA/600/J-90/251
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949 PC **A02**/MF **A01**

EPA/600/J-90/252
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931 PC **A02**/MF **A01**

EPA/600/J-90/253
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923 PC **A02**/MF **A01**

EPA/600/J-90/254
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998 PC **A02**/MF **A01**

EPA/600/J-90/255
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915 PC **A03**/MF **A01**

EPA/600/J-90/256
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907 PC **A03**/MF **A01**

EPA/600/J-90/257
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899 PC **A03**/MF **A01**

EPA/600/J-90/258
Adsorption of Organic Cations to Natural Materials.
PB91-144881 PC **A02**/MF **A01**

EPA/600/J-90/259
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873 PC **A03**/MF **A01**

EPA/600/J-90/260
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865 PC **A03**/MF **A01**

EPA/600/J-90/261
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857 PC **A03**/MF **A01**

EPA/600/J-90/262
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840 PC **A02**/MF **A01**

EPA/600/J-90/263
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832 PC **A03**/MF **A01**

EPA/600/J-90/264
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824 PC **A03**/MF **A01**

EPA/600/J-90/265
Most Dilute Lake in the World.
PB91-144816 PC **A02**/MF **A01**

EPA/600/J-90/266
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709 PC **A03**/MF **A01**

EPA/600/J-90/267
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808 PC **A02**/MF **A01**

EPA/600/J-90/268
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790 PC **A02**/MF **A01**

EPA/600/J-90/269
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177 PC **A02**/MF **A01**

EPA/600/J-90/270
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169 PC **A02**/MF **A01**

EPA/600/J-90/271
Seaming of Geosynthetics.
PB91-145151 PC **A02**/MF **A01**

EPA/600/J-90/272
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144 PC **A03**/MF **A01**

EPA/600/J-90/273
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136 PC **A02**/MF **A01**

EPA/600/J-90/274
Incineration Research Facility.
PB91-145128 PC **A03**/MF **A01**

EPA/600/J-90/275
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110 PC **A02**/MF **A01**

EPA/600/J-90/276
Update on Building and Structure Decontamination.
PB91-145102 PC **A02**/MF **A01**

EPA/600/J-90/277
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094 PC **A01**/MF **A01**

EPA/600/J-90/278
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086 PC **A02**/MF **A01**

EPA/600/J-90/279
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078 PC **A03**/MF **A01**

EPA/600/J-90/280
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060 PC **A02**/MF **A01**

EPA/600/J-90/282
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052 PC **A03**/MF **A01**

EPA/600/J-90/283
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045 PC **A02**/MF **A01**

EPA/600/J-90/284
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691 PC **A03**/MF **A01**

EPA/600/J-90/285
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037 PC **A02**/MF **A01**

EPA/600/J-90/286
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029 PC **A03**/MF **A01**

EPA/600/J-90/287
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011 PC **A03**/MF **A01**

EPA/600/J-90/291
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472 PC **A02**/MF **A01**

EPA/600/J-90/293
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498 PC **A03**/MF **A01**

EPA/600/J-90/294
Confidence Intervals for a Crop Yield Loss Function in Non-linear Regression.
PB91-146506 PC **A03**/MF **A01**

EPA/600/J-90/295
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514 PC **A01**/MF **A01**

EPA/600/J-90/296
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449 PC **A02**/MF **A01**

EPA/600/J-90/297
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456 PC **A02**/MF **A01**

EPA/600/J-90/298
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522 PC **A03**/MF **A01**

EPA/600/J-90/299
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530 PC **A03**/MF **A01**

EPA/600/J-90/300
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548 PC **A02**/MF **A01**

EPA/600/J-90/301
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555 PC **A03**/MF **A01**

EPA/600/J-90/302
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563 PC **A03**/MF **A01**

EPA/600/J-90/303
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571 PC **A03**/MF **A01**

EPA/600/J-90/304
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589 PC **A03**/MF **A01**

EPA/600/J-90/305
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597 PC **A03**/MF **A01**

EPA/600/J-90/306
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605 PC **A01**/MF **A01**

EPA/600/J-90/307
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613 PC **A02**/MF **A01**

EPA/600/J-90/308
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621 PC **A03**/MF **A01**

EPA/600/J-90/309
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647 PC **A03**/MF **A01**

EPA/600/J-90/310
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639 PC **A02**/MF **A01**

EPA/600/J-90/311
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654 PC **A02**/MF **A01**

EPA/600/J-90/312
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662 PC **A03**/MF **A01**

EPA/600/J-90/313
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670 PC **A03**/MF **A01**

EPA/600/J-90/314
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688 PC **A03**/MF **A01**

EPA/600/J-90/315
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696 PC **A02**/MF **A01**

EPA/600/J-90/316
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704 PC **A03**/MF **A01**

EPA/600/J-90/317
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712 PC **A03**/MF **A01**

EPA/600/J-90/318
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720 PC **A02**/MF **A01**

EPA/600/J-90/322
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625 PC **A03**/MF **A01**

EPA/600/J-90/323
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633 PC **A02**/MF **A01**

EPA/600/J-90/324
Air Emissions from the Incineration of Hazardous Waste.
PB91-149641 PC **A03**/MF **A01**

EPA/600/J-90/325
Neurotoxic Effects of Colchicine.
PB91-149658 PC **A03**/MF **A01**

EPA/600/J-90/326
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724 PC **A03**/MF **A01**

EPA/600/J-90/327
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732 PC **A03**/MF **A01**

EPA/600/J-90/328
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740 PC **A03**/MF **A01**

EPA/600/J-90/329
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757 PC **A03**/MF **A01**

EPA/600/J-90/330
Toxicological Mechanisms of Implantation Failure.
PB91-149765 PC **A03**/MF **A01**

EPA/600/J-90/331
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773 PC **A03**/MF **A01**

EPA/600/J-90/332
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781 PC **A03**/MF **A01**

EPA/600/J-90/333
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799 PC **A03**/MF **A01**

EPA/600/J-90/340
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543 PC **A02**/MF **A01**

EPA/600/J-90/341
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550 PC **A03**/MF **A01**

EPA/600/J-90/342
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568 PC **A03**/MF **A01**

EPA/600/J-90/343
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576 PC **A03**/MF **A01**

EPA/600/J-90/344
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584 PC **A03**/MF **A01**

EPA/600/J-90/345
Seven-Day Tests and Chronic Tests.
PB91-163592 PC **A01**/MF **A01**

EPA/600/J-90/346
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600 PC **A03**/MF **A01**

EPA/600/J-90/347
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618 PC **A03**/MF **A01**

EPA/600/J-90/348
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626 PC **A03**/MF **A01**

EPA/600/J-90/349
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634 PC **A02**/MF **A01**

EPA/600/J-90/350
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642 PC **A03**/MF **A01**

EPA/600/J-90/351
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659 PC **A03**/MF **A01**

EPA/600/J-90/352
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667 PC **A03**/MF **A01**

EPA/600/J-90/353
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675 PC **A03**/MF **A01**

EPA/600/J-90/354
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683 PC **A02**/MF **A01**

EPA/600/J-90/355
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691 PC **A02**/MF **A01**

EPA/600/J-90/356
Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709 PC **A03**/MF **A01**

EPA/600/J-90/357
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717 PC **A03**/MF **A01**

EPA/600/J-90/358
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725 PC **A02**/MF **A01**

EPA/600/J-90/359
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733 PC **A03**/MF **A01**

EPA/600/J-90/360
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741 PC **A02**/MF **A01**

EPA/600/J-90/361
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758 PC **A02**/MF **A01**

EPA/600/J-90/362
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766 PC **A03**/MF **A01**

EPA/600/J-90/363
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Deposition.
PB91-163774 PC **A03**/MF **A01**

EPA/600/J-90/364
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782 PC **A02**/MF **A01**

EPA/600/J-90/365
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790 PC **A03**/MF **A01**

EPA/600/J-90/366
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808 PC **A02**/MF **A01**

EPA/600/J-90/367
Dynamics of Plasmid Transfer on Surfaces.
PB91-163816 PC **A02**/MF **A01**

EPA/600/J-90/368
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824 PC **A02**/MF **A01**

EPA/600/J-90/369
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832 PC **A03**/MF **A01**

EPA/600/J-90/371
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840 PC **A03**/MF **A01**

EPA/600/J-90/372
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857 PC **A03**/MF **A01**

NTIS ORDER/REPORT NUMBER INDEX

EPA/600/J-90/373
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865 PC **A03**/MF **A01**

EPA/600/J-90/374
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873 PC **A03**/MF **A01**

EPA/600/J-90/375
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881 PC **A03**/MF **A01**

EPA/600/J-90/376
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899 PC **A02**/MF **A01**

EPA/600/J-90/377
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907 PC **A03**/MF **A01**

EPA/600/J-90/378
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915 PC **A03**/MF **A01**

EPA/600/J-90/379
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923 PC **A02**/MF **A01**

EPA/600/J-90/380
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931 PC **A03**/MF **A01**

EPA/600/J-90/381
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949 PC **A03**/MF **A01**

EPA/600/J-90/382
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956 PC **A02**/MF **A01**

EPA/600/J-90/383
General Microbiology of RecA: Environmental and Evolutionary Significance.
PB91-163964 PC **A03**/MF **A01**

EPA/600/J-90/384
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972 PC **A02**/MF **A01**

EPA/600/J-90/385
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980 PC **A02**/MF **A01**

EPA/600/J-90/386
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998 PC **A03**/MF **A01**

EPA/600/J-90/387
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004 PC **A02**/MF **A01**

EPA/600/J-90/388
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012 PC **A03**/MF **A01**

EPA/625/2-77/012
Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264 PC **A03**/MF **A01**

EPA/625/4-89/024
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722 PC **A05**/MF **A01**

EPA/625/5-90/025
Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961 PC **A05**/MF **A01**

EPA/625/6-89/023
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979 PC **A05**/MF **A01**

EPA/625/6-89/025A
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706 PC **A09**/MF **A02**

EPA/625/9-89/007
Injection Well Mechanical Integrity.
PB91-145631 PC **A06**/MF **A01**

EPA/905/4-88/008
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429 PC **A05**/MF **A01**

EPA/905/8-88/005
Great Lakes Demonstration Program, Section 108a.
PB91-148437 PC **A03**/MF **A01**

EPA/910/9-88/240
Elliot Bay Action Program: 1988 Action Plan.
PB91-149583 PC **A06**/MF **A01**

EPA/910/9-89/006
Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567 PC **A03**/MF **A01**

EPA/910/9-90/009
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575 PC **A03**/MF **A01**

EPA/910/9-90/010
Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591 PC **A03**/MF **A01**

EPA/910/9-90/018
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580 PC **A09**/MF **A01**

EPA/9012.10-A
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818 PC **A02**/MF **A01**

EPA/9012.10-A-I
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826 PC **A01**/MF **A01**

EPA/9012.10-B
Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834 PC **A02**/MF **A01**

EPA/9285.7-05/FS
Guidance for Data Useability in Risk Assessment.
PB91-921312 PC **A02**/MF **A01**

ERLN-N040
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741 PC **A03**/MF **A01**

ERLN-N070
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781 PC **A03**/MF **A01**

ERLN-NX05
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790 PC **A02**/MF **A01**

ERLN-NX06
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177 PC **A02**/MF **A01**

ERLN-1022
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799 PC **A03**/MF **A01**

ERLN-1050
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986 PC **A03**/MF **A01**

ERLN-1120
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758 PC **A03**/MF **A01**

ERNL-X177
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994 PC **A03**/MF **A01**

ETDE-MF-1724862
Palladium und dessen Legierungen als Wasserstoff-Permeationsmembranen. Literaturstudie. (Palladium and its alloys as hydrogen permeation membranes. Literature study).
DE91724862 PC **A05**/MF **A01**

GLNPO-1
Great Lakes Demonstration Program, Section 108a.
PB91-148437 PC **A03**/MF **A01**

GR-0028
Geosynthetic Leachate Collection Systems.
PB91-162834 PC **A03**/MF **A01**

ISBN-0-9627422-0-1
Histological and Histopathological Evaluation of the Testis.
PB91-164293 PC **A13**/MF **A02**

OHEA-C-339
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815 PC **A03**/MF **A01**

OHEA-R-382
Histological and Histopathological Evaluation of the Testis.
PB91-164293 PC **A13**/MF **A02**

OSWER DIRECTIVE-9355.3-11
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205 PC **A14**/MF **A02**

OSWER DIRECTIVE-9355.4-01
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206 PC **A07**/MF **A01**

OSWER DIRECTIVE-9540.00-9A
State Authorization Manual. Volume 1.
PB91-130211 PC **A03**/MF **A01**

OSWER DIRECTIVE-9540.00-9A-1
State Authorization Manual. Volume 2. Appendices.
PB91-130229 PC **A99**/MF **A99**

OSWER DIRECTIVE-9832.6
Small Cost Recovery Referrals.
PB91-139006 PC **A02**/MF **A01**

OSWER DIRECTIVE-9832.7
Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014 PC **A03**/MF **A01**

OSWER DIRECTIVE-9834.13
Municipal Settlements.
PB91-139311 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.0
Interim CERCLA Settlement Policy.
PB91-139329 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.1A
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.2
Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.2A
Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.2B
Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.3-1A
Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.8
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436 PC **A03**/MF **A01**

OSWER DIRECTIVE-9835.13
Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477 PC **A09**/MF **A01**

OSWER DIRECTIVE-9901.1
RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840 PC **A03**/MF **A01**

OSWER DIRECTIVE-9901.1A
Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857 PC **A02**/MF **A01**

OSWER DIRECTIVE-9901.3
Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865 PC **A02**/MF **A01**

OSWER DIRECTIVE-9903.1
Policy for Managing Leachate at PCB Landfills.
PB91-139907 PC **A03**/MF **A01**

OSWER DIRECTIVE-9905.0
Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915 PC **A03**/MF **A01**

PB90-274531
CERCLA Site Discharges to POTWs: Guidance Manual.
PB90-274531 PC **A11**/MF **A02**

PB91-110528
Pesticide Fact Sheet No. 217: 'Gliocladium virens' GL-21.
PB91-110528 PC **A02**/MF **A01**

PB91-110536
Pesticide Fact Sheet Number 218: 'Trichoderma harzianum' Rifai Strain KRL-AG2.
PB91-110536 PC **A02**/MF **A01**

PB91-129155
Mutagenic Activity of Particulate Matter from Wood Smoke.
PB91-129155 PC **A02**/MF **A01**

PB91-129205
Total Organic Carbon Determinations in Natural and Contaminated Aquifer Materials, Relevance and Measurement.
PB91-129205 PC **A03**/MF **A01**

PB91-129742
Development of Sampling Methodology for Dilution Air Sampling of Condensible Emissions from Stationary Sources.
PB91-129742 PC **A03**/MF **A01**

PB91-129759
Ultrox International Ultraviolet Radiation/Oxidation Technology: Applications Analysis Report.
PB91-129759 PC **A05**/MF **A01**

PB91-129817
Soliditech, Inc. Solidification/Stabilization Process: Applications Analysis Report.
PB91-129817 PC **A04**/MF **A01**

PB91-130153
Water Quality Modeling in Distribution Systems.
PB91-130153 PC **A04**/MF **A01**

PB91-130195
Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska.
PB91-130195 PC **A18**/MF **A03**

PB91-130203
Emissions Testing of a Wet Cement Kiln at Hannibal, Missouri. Draft Report.
PB91-130203 PC **A20**/MF **A03**

PB91-130211
State Authorization Manual. Volume 1.
PB91-130211 PC **A03**/MF **A01**

PB91-130229
State Authorization Manual. Volume 2. Appendices.
PB91-130229 PC **A99**/MF **A99**

PB91-131227
User's Guide for the Urban Airshed Model. Volume 1. User's Manual for UAM (CB-IV).
PB91-131227 PC **A12**/MF **A02**

PB91-131235
User's Guide for the Urban Airshed Model. Volume 2. User's Manual for the UAM (CB-IV) Modeling System.
PB91-131235 PC **A22**/MF **A03**

PB91-131243
User's Guide for the Urban Airshed Model. Volume 3. User's Manual for the Diagnostic Wind Model.
PB91-131243 PC **A04**/MF **A01**

PB91-131250
User's Guide for the Urban Airshed Model. Volume 4. User's Manual for the Emissions Preprocessor System.
PB91-131250 PC **A13**/MF **A02**

PB91-131268
User's Guide for the Urban Airshed Model. Volume 5. Description and Operation of the ROM - UAM Interface Program System.
PB91-131268 PC **A11**/MF **A02**

PB91-131300
National Radon Contractor Proficiency Program. Proficiency Report.
PB91-131300 PC **A10**/MF **A02**

PB91-131672
Oxygenated Organic Compound Concentrations Near a Roadway in Lithuania, SSR.
PB91-131672 PC **A03**/MF **A01**

PB91-131987
Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure.
PB91-131987 PC **A07**/MF **A01**

PB91-132118
Statistical Properties of Designs for Sampling Continuous Functions in Two Dimensions Using a Triangular Grid.
PB91-132118 PC **A03**/MF **A01**

PB91-132845
Fish Hepatocyte Model for Investigation of the Effects of Trihalomethanes. (Chapter 27).
PB91-132845 PC **A02**/MF **A01**

PB91-132944
Human Clinical Inhalation Exposures Experimental Design, Methodology, and Physiological Responses.
PB91-132944 PC **A03**/MF **A01**

PB91-132951
Transfection of Cytochrome P450 cDNAs into Mammalian Cells Used in Mutation and Transformation Assays.
PB91-132951 PC **A03**/MF **A01**

PB91-132969
Synaptonemal Complex Analysis of Mutagen Effects on Meiotic Chromosome Structure and Behavior.
PB91-132969 PC **A03**/MF **A01**

PB91-132993
Does Chronic Ozone Exposure Lead to Lung Disease.
PB91-132993 PC **A03**/MF **A01**

PB91-133025
Biological and Chemical Methodologies for Assessing Human Exposure to Airborne Mutagens Indoors.
PB91-133025 PC **A02**/MF **A01**

PB91-133264
Swirl Device for Regulating and Treating Combined Sewer Overflows.
PB91-133264 PC **A03**/MF **A01**

PB91-133314
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants.
PB91-133314 PC **E99**/MF **E99**

PB91-133322
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 1. Introduction and Methodology.
PB91-133322 PC **A05**/MF **A01**

PB91-133330
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 2. Site Specific Studies for Alabama, Delaware, Florida, Georgia, Illinois.
PB91-133330 PC **A19**/MF **A03**

PB91-133348
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 3. Site Specific Studies for Indiana, Kentucky, Massachusetts, Maryland, Michigan, Minnesota.
PB91-133348 PC **A18**/MF **A03**

PB91-133355
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 4. Site Specific Studies for Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio.
PB91-133355 PC **A23**/MF **A03**

PB91-133363
Retrofit Costs for SO2 and NOX Control Options at 200 Coal-Fired Plants. Volume 5. Site Specific Studies for Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, West Virginia.
PB91-133363 PC **A24**/MF **A03**

PB91-133512
Integrated Air Pollution Control System, Version 4.0. Volume 1. User's Guide.
PB91-133512 PC **A04**/MF **A01**

PB91-133520
Integrated Air Pollution Control System, Version 4.0. Volume 2. Technical Documentation Manual.
PB91-133520 PC **A10**/MF **A02**

PB91-133538
Integrated Air Pollution Control System, Version 4.0. Volume 3. Programmer's Maintenance Manual.
PB91-133538 PC **A07**/MF **A01**

PB91-136317
Gas Chromatography/Matrix Isolation-Infrared Spectrometry for Air Sample Analysis.
PB91-136317 PC **A07**/MF **A01**

PB91-136523
Noncarcinogenic Effects of Chromium: Update to Health Assessment Document.
PB91-136523 PC **A06**/MF **A01**

PB91-136531
Musts for USTs: A Summary of the Regulations for Underground Storage Tank Systems.
PB91-136531 PC **A03**/MF **A01**

PB91-136549
User's Guide to the Personal Computer Version of the Biogenic Emissions Inventory System (PC-BEIS).
PB91-136549 PC **A04**/MF **A01**

PB91-136556
Waste Minimization Opportunity Assessment: U.S. Coast Guard Support Center, Governors Island, New York.
PB91-136556 PC **A07**/MF **A01**

PB91-136564
User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS): Volume 2. The Screening Mode (CTSCREEN).
PB91-136564 PC **A04**/MF **A01**

PB91-136572
Projection of Response of Trees and Forests to Acidic Deposition and Associated Pollutants.
PB91-136572 PC **A10**/MF **A02**

PB91-136580
Region 10 Environmental Indicators, FY 89 Summary.
PB91-136580 PC **A09**/MF **A01**

PB91-136598
Exposure Indices Consideration for Rural Ozone Relationships in the United States.
PB91-136598 PC **A02**/MF **A01**

PB91-136606
Air Quality and Deposition (Chapter 3).
PB91-136606 PC **A04**/MF **A01**

PB91-136614
IBI: A Quantitative, Easily Communicated Assessment of the Health and Complexity of Entire Fish Communities.
PB91-136614 PC **A01**/MF **A01**

PB91-136622
Factors Controlling the Emissions of Monoterpenes and Other Volatile Organic Compounds.
PB91-136622 PC **A04**/MF **A01**

PB91-136630
Modulation of Eicosanoid Production by Human Alveolar Macrophages Exposed to Silica 'In vitro'.
PB91-136630 PC **A03**/MF **A01**

PB91-136895
DNA Adducts in Marine Mussel 'Mytilus galloprovincialis' Living in Polluted and Unpolluted Environments. Chapter 12.
PB91-136895 PC **A03**/MF **A01**

PB91-136903
Toxic Effects of Xenobiotics on the Pituitary Gland.
PB91-136903 PC **A04**/MF **A01**

PB91-136911
Control of Motor Vehicle Emissions - The U.S. Experience.
PB91-136911 PC **A03**/MF **A01**

PB91-136945
Overview of Risk Assessment for Toxic and Pathogenic Agents.
PB91-136945 PC **A03**/MF **A01**

PB91-136952
Retrofit Costs for Lime/Limestone FGD and Lime Spray Drying at Coal-Fired Utility Boilers.
PB91-136952 PC **A03**/MF **A01**

PB91-136978
Material Selection.
PB91-136978 PC **A02**/MF **A01**

PB91-136986
Ecological Status and Trends Program: EPA's Approach to Monitoring Condition of the Nation's Ecosystems.
PB91-136986 PC **A03**/MF **A01**

PB91-136994
Stress Proteins: Potential as Multitiered Biomarkers (Chapter 9).
PB91-136994 PC **A03**/MF **A01**

PB91-137018
Protocol for Testing Bioremediation Products against Weathered Alaskan Crude Oil.
PB91-137018 PC **A03**/MF **A01**

PB91-137026
Analysis of Ozone Air Quality Over the New York Metropolitan Area.
PB91-137026 PC **A03**/MF **A01**

PB91-137034
Evaluation of an Atmospheric Corrosion Rate Monitor as a Time-of-Wetness Meter.
PB91-137034 PC **A03**/MF **A01**

PB91-137042
Non-Polar Volatile Organic Compounds in Whole Air Samples from the AutoEx Studies.
PB91-137042 PC **A03**/MF **A01**

PB91-137059
Organic Chemical Transport to Groundwater.
PB91-137059 PC **A03**/MF **A01**

PB91-137067
Anaerobic In-situ Treatment of Chlorinated Ethenes.
PB91-137067 PC **A03**/MF **A01**

PB91-137075
Fish Acute Toxicity Syndromes in the Development of Mechanism-Specific QSARS.
PB91-137075 PC **A03**/MF **A01**

PB91-137083
ASTER: An Integration of the AQUIRE Database and the QSAR System for Use in Ecological Risk Assessments.
PB91-137083 PC **A02**/MF **A01**

PB91-137091
Effect of Background Organic Matter from Surface Waters on the Activated Carbon Adsorption of Specific Organic Compounds.
PB91-137091 PC **A03**/MF **A01**

PB91-137109
Contamination of U.S. Arctic Ecosystems by Long-Range Transport of Atmospheric Contaminants.
PB91-137109 PC **A03**/MF **A01**

PB91-137117
Immunotoxicology of Captive and Wild Birds.
PB91-137117 PC **A03**/MF **A01**

PB91-137125
X-ray, Microscope, and Wet Chemical Techniques: A Complementary Team for Deposit Analysis.
PB91-137125 PC **A03**/MF **A01**

PB91-137133
Experience with the EPA Manual for Waste Minimization Opportunity Assessments.
PB91-137133 PC **A03**/MF **A01**

PB91-137141
Impact of Drinking Water Treatment on Assimilable Organic Carbon.
PB91-137141 PC **A03**/MF **A01**

PB91-137158
New Source Reduction Project: The Potential for Safe Substitutes.
PB91-137158 PC **A02**/MF **A01**

PB91-137166
Flexibility in Bacteriological Monitoring.
PB91-137166 PC **A03**/MF **A01**

PB91-137265
Development of Risk Assessment Methodology for Municipal Sludge Landfilling.
PB91-137265 PC **A12**/MF **A02**

PB91-137273
Indoor Air - Assessment: Methods of Analysis for Environmental Carcinogens.
PB91-137273 PC **A03**/MF **A01**

PB91-137281
Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.
PB91-137281 PC **A07**/MF **A01**

PB91-137307
Methods for the Investigation and Prevention of Waterborne Disease Outbreaks.
PB91-137307 PC **A15**/MF **A02**

PB91-137315
Waterborne Disease Outbreaks: Selected Reprints of Articles on Epidemiology, Surveillance, Investigation, and Laboratory Analysis.
PB91-137315 PC **A06**/MF **A01**

PB91-138420
Air Quality Criteria for Lead: Supplement to the 1986 Addendum.
PB91-138420 PC **A05**/MF **A01**

PB91-138818
Revision of CERCLA Civil Judicial Settlement Authorities under Delegations 14-13-B and 14-14-E.
PB91-138818 PC **A02**/MF **A01**

PB91-138826
Waiver of Concurrence on De Minimis Generator Settlements.
PB91-138826 PC **A01**/MF **A01**

PB91-138834
Redelegation of Civil Judicial Settlement Authorities under Delegation 14-13-B and 14-14-E.
PB91-138834 PC **A02**/MF **A01**

PB91-139006
Small Cost Recovery Referrals.
PB91-139006 PC **A02**/MF **A01**

PB91-139014
Guidance Regarding CERCLA Enforcement against Bankrupt Parties.
PB91-139014 PC **A03**/MF **A01**

PB91-139311
Municipal Settlements.
PB91-139311 PC **A03**/MF **A01**

PB91-139329
Interim CERCLA Settlement Policy.
PB91-139329 PC **A03**/MF **A01**

PB91-139337
Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies.
PB91-139337 PC **A03**/MF **A01**

PB91-139345
Guidance on Drafting Consent Decrees in Hazardous Waste Cases.
PB91-139345 PC **A03**/MF **A01**

PB91-139352
Revisions to the Interim Guidance on PRP Participation in Remedial Investigations and Feasibility Studies.
PB91-139352 PC **A03**/MF **A01**

PB91-139360
Guidance of the Use of Stipulated Penalties in Hazardous Waste Consent Decrees.
PB91-139360 PC **A03**/MF **A01**

PB91-139378
Administrative Order on Consent for Remedial Investigations/Feasibility Study.
PB91-139378 PC **A03**/MF **A01**

PB91-139436
Model Statement of Work for a Remedial Investigation and Feasibility Study Conducted by Potentially Responsible Parties.
PB91-139436 PC **A03**/MF **A01**

PB91-139477
Comparative Analysis of Remedies Selected in the Superfund Program during FY 87, FY 88 and FY 89.
PB91-139477 PC **A09**/MF **A01**

PB91-139840
RCRA Section 3008(h) Interim Status Corrective Action Authority.
PB91-139840 PC **A03**/MF **A01**

PB91-139857
Enforcement of Financial Responsibility Requirements for RCRA Treatment, Storage, and Disposal Facilities That Are Closing.
PB91-139857 PC **A02**/MF **A01**

PB91-139865
Guidance for Public Involvement in RCRA Section 3008(h) Actions.
PB91-139865 PC **A02**/MF **A01**

PB91-139907
Policy for Managing Leachate at PCB Landfills.
PB91-139907 PC **A03**/MF **A01**

PB91-139915
Transmittal of the RCRA Ground-Water Enforcement Strategy.
PB91-139915 PC **A03**/MF **A01**

PB91-140376
Chromosomal Aberration Data Analysis and Interpretation System, Version 1.0. User's Guide.
PB91-140376 PC **A08**/MF **A01**

PB91-141796
Environmental Monitoring and Assessment Program: Ecological Indicators.
PB91-141796 PC **A19**/MF **A03**

PB91-141804
National Stream Survey Database Guide.
PB91-141804 PC **A06**/MF **A01**

PB91-141812
Direct/Delayed Response Project: Laboratory Operations and Quality Assurance Report for Preparation of Soils from the Mid-Appalachian Region of the United States.
PB91-141812 PC **A09**/MF **A02**

PB91-141820
User's Guide to TSCREEN: A Model for Screening Toxic Air Pollutant Concentrations.
PB91-141820 PC **A03**/MF **A01**

PB91-141838
5-Methylhexanoic Acid Developmental Toxicity Testing.
PB91-141838 PC **A03**/MF **A01**

PB91-141846
Compilation of Information on Alternative Barriers for Liner and Cover Systems.
PB91-141846 PC **A05**/MF **A01**

PB91-142794
Drinking Water Criteria Document for Atrazine.
PB91-142794 PC **A07**/MF **A01**

PB91-142802
Drinking Water Criteria Document for Pentachlorophenol.
PB91-142802 PC **A07**/MF **A01**

PB91-142810
Drinking Water Criteria Document for Aldicarb.
PB91-142810 PC **A09**/MF **A01**

PB91-142828
Drinking Water Criteria Document on Selenium.
PB91-142828 PC **A09**/MF **A01**

PB91-142836
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836 PC **A08**/MF **A01**

PB91-142844
Drinking Water Criteria Document on Chromium.
PB91-142844 PC **A09**/MF **A01**

PB91-142851
Drinking Water Criteria Document for Lindane.
PB91-142851 PC **A09**/MF **A02**

PB91-142869
Drinking Water Criteria Document on Barium.
PB91-142869 PC **A08**/MF **A01**

PB91-142877
Drinking Water Criteria Document for Heptachlor, Heptachlor Epoxide and Chlordane.
PB91-142877 PC **A14**/MF **A02**

PB91-142885
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Synthetic Organic Chemicals (April 1989).
PB91-142885 PC **A07**

PB91-143081
Update of the Regulation and Policy Matrices Dated September 1988.
PB91-143081 PC **A03**/MF **A01**

PB91-143370
Drinking Water Criteria Document for Styrene.
PB91-143370 PC **A12**/MF **A02**

PB91-143388
Drinking Water Criteria Document for 1,2-Dichloropropane.
PB91-143388 PC **A05**/MF **A01**

PB91-143396
Drinking Water Criteria Document for Dichloroethylenes (1,1-Dichloroethylene), (cis-1,2-Dichloroethylene), and (trans-1,2-Dichloroethylene).
PB91-143396 PC **A09**/MF **A02**

PB91-143404
Drinking Water Criteria Document for Toxaphene.
PB91-143404 PC **A10**/MF **A02**

PB91-143412
Drinking Water Criteria Document on Carbofuran.
PB91-143412 PC **A06**/MF **A01**

PB91-143420
Quantification of Toxicological Effects for Alachlor.
PB91-143420 PC **A04**/MF **A01**

PB91-143438
Technologies and Costs for the Removal of Synthetic Organic Chemicals from Potable Water Supplies.
PB91-143438 PC **A13**/MF **A02**

PB91-143446
Information Collection Request National Primary Drinking Water Regulations: Phase 2 Synthetic Organic and Inorganic Chemicals Rules.
PB91-143446 PC **A09**/MF **A01**

PB91-143453
Addendum to Draft Regulatory Impact Analysis of National Primary Drinking Water Regulations for Inorganic Chemicals (March 31, 1989).
PB91-143453 PC **A12**/MF **A02**

PB91-143461
Drinking Water Criteria Document for Methoxychlor.
PB91-143461 PC **A08**/MF **A01**

PB91-143479
Quantification of Toxicological Effects of Tetrachloroethylene.
PB91-143479 PC **A03**/MF **A01**

PB91-143487
Drinking Water Criteria Document for Toluene.
PB91-143487 PC **A09**/MF **A01**

PB91-144667
Atmospheric Transport and Deposition of Polychlorinated Dibenzo-'P'-Dioxins and Dibenzofurans.
PB91-144667 PC **A06**/MF **A01**

PB91-144675
Evaluation of Exposure Markers.
PB91-144675 PC **A06**/MF **A01**

PB91-144683
Catalog of Superfund Program Publications, FY-91.
PB91-144683 PC **A05**/MF **A01**

PB91-144691
Multiple Effects of Ethane Dimethanesulfonate on the Epididymis of Adult Rats.
PB91-144691 PC **A03**/MF **A01**

PB91-144709
Paleoecological Investigation of Recent Lake Acidification in the Adirondack Mountains, N. Y.
PB91-144709 PC **A03**/MF **A01**

PB91-144717
Fluid Modeling Applied to Atmospheric Diffusion in Complex Terrain.
PB91-144717 PC **A03**/MF **A01**

PB91-144733
Database Assessment of Phytotoxicity Data Published on Terrestrial Vascular Plants.
PB91-144733 PC **A02**/MF **A01**

PB91-144741
Effects of Natural Sediment Features on Survival of the 'Phoxocephalid amphipod', 'Rhepoxynius abronius'.
PB91-144741 PC **A03**/MF **A01**

PB91-144758
Contaminant Loading from Fox River to Lower Green Bay.
PB91-144758 PC **A03**/MF **A01**

PB91-144766
Designing Fixed-Bed Adsorbers to Remove Mixtures of Organics.
PB91-144766 PC **A03**/MF **A01**

PB91-144774
Metabolism of Chlorinated Methanes, Ethanes, and Ethylenes by a Mixed Bacterial Culture Growing on Methane.
PB91-144774 PC **A02**/MF **A01**

PB91-144782
Methodology Used for a Laboratory Determination of Relative Contributions of Water, Sediment and Food Chain Routes of Uptake for 2,3,7,8-TCDD Bioaccumulation by Lake Trout in Lake Ontario.
PB91-144782 PC **A02**/MF **A01**

PB91-144790
Settling and Coagulation Characteristics of Fluorescent Particles Determined by Flow Cytometry and Fluorometry.
PB91-144790 PC **A02**/MF **A01**

PB91-144808
Effect, Uptake and Disposition of Nitrobenzene in Several Terrestrial Plants.
PB91-144808 PC **A02**/MF **A01**

PB91-144816
Most Dilute Lake in the World.
PB91-144816 PC **A02**/MF **A01**

PB91-144824
Variation in Adirondack, New York, Lakewater Chemistry as Function of Surface Area.
PB91-144824 PC **A03**/MF **A01**

PB91-144832
Adequacy of Interval Estimates of Yield Responses to Ozone Estimated from NCLAN Data.
PB91-144832 PC **A03**/MF **A01**

PB91-144840
Effects of Ozone, Sulfur Dioxide, Soil Water Deficit, and Cultivar on Yields of Soybean.
PB91-144840 PC **A02**/MF **A01**

PB91-144857
Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 1, Methodology and Field Site Characterization.
PB91-144857 PC **A03**/MF **A01**

PB91-144865
Copper Complexation by Natural Organic Matter in Contaminated and Uncontaminated Ground Water.
PB91-144865 PC **A03**/MF **A01**

PB91-144873
Reductive Dehalogenation: A Subsurface Bioremediation Process.
PB91-144873 PC **A03**/MF **A01**

PB91-144881
Adsorption of Organic Cations to Natural Materials.
PB91-144881 PC **A02**/MF **A01**

PB91-144899
Hydrologic-Hydrochemical Characterization of Texas Frio Formation Used for Deep-Well Injection of Chemical Wastes.
PB91-144899 PC **A03**/MF **A01**

PB91-144907
Solubility and Toxicity of Eight Phthalate Esters to Four Aquatic Organisms.
PB91-144907 PC **A03**/MF **A01**

PB91-144915
Ventilatory Patterns of Bluegill ('Lepomis macrochirus') Exposed to Organic Chemicals with Different Mechanisms of Toxic Action (Revised).
PB91-144915 PC **A03**/MF **A01**

PB91-144923
Interactions between 'Bacillus thuringiensis subsp. 'israelensis' and Fathead Minnows, 'Pimephales promelas' Rafinesque, under Laboratory Conditions.
PB91-144923 PC **A02**/MF **A01**

PB91-144931
Identification and Quantitation of Alkylated Nucleobases by High-Performance Liquid Chromatography with UV Photodiode Array Detection.
PB91-144931 PC **A02**/MF **A01**

PB91-144949
Assessment of the Propensity for Covalent Binding of Electrophiles to Biological Substrates.
PB91-144949 PC **A02**/MF **A01**

PB91-144956
Effects of Chlorpyrifos on the Diet and Growth of Larval Fathead Minnows, 'Pimephales promelas', in Littoral Enclosures.
PB91-144956 PC **A03**/MF **A01**

PB91-144964
Lack of Myoglobin Function in the Isolated Perfused Buffalo Sculpin('Enophrys bison') Heart.
PB91-144964 PC **A02**/MF **A01**

PB91-144972
Evaluation of Sucrose as an Alternative to Sodium Chloride in the Microtox (Trade Name) Assay: Comparison to Fish and Cladoceran Tests with Freshwater Effluents.
PB91-144972 PC **A02**/MF **A01**

PB91-144980
Sorption of Organic Acid Compounds to Sediments: Initial Model Development.
PB91-144980 PC **A03**/MF **A01**

PB91-144998
Characteristics of Surfactants in Toxicity Identification Evaluations.
PB91-144998 PC **A02**/MF **A01**

PB91-145003
Transfer of Toxic Concentrations of Selenium from Parent to Progeny in the Fathead Minnow ('Pimephales promelas').
PB91-145003 PC **A02**/MF **A01**

PB91-145011
Development of Chicken Embryos in a Pulsed Magnetic Field.
PB91-145011 PC **A03**/MF **A01**

PB91-145029
Effect of Chemotherapy on the In vivo Frequency of Glycophorin A 'Null' Variant Erythrocytes (Revised).
PB91-145029 PC **A03**/MF **A01**

PB91-145037
Thermoregulation at a High Ambient Temperature Following the Oral Administration of Ethanol in the Rat.
PB91-145037 PC **A02**/MF **A01**

PB91-145045
1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP)-Induced Damage of Striatal Dopaminergic Fibers Attenuates Subsequent Astrocyte Response to MPTP.
PB91-145045 PC **A02**/MF **A01**

PB91-145052
Importance of Alignment between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In vitro and In vivo.
PB91-145052 PC **A03**/MF **A01**

PB91-145060
Biomarkers of Inflammation in Ozone-Exposed Humans: Comparison of the Nasal and Bronchoalveolar Lavage.
PB91-145060 PC **A02**/MF **A01**

PB91-145078
Learning and Memory Deficits in Rats Following Exposure to 3,3'-Iminodipropionitrile.
PB91-145078 PC **A03**/MF **A01**

PB91-145086
Effects of Ozone, Chlorine Dioxide, Chlorine, and Monochloramine on 'Cryptosporidium parvum' Oocyst Viability.
PB91-145086 PC **A02**/MF **A01**

PB91-145094
Research to Support the SDWA: Pushing Back the Envelope.
PB91-145094 PC **A01**/MF **A01**

PB91-145102
Update on Building and Structure Decontamination.
PB91-145102 PC **A02**/MF **A01**

PB91-145110
SITE Demonstration of the CF Systems Organics Extraction System.
PB91-145110 PC **A02**/MF **A01**

PB91-145128
Incineration Research Facility.
PB91-145128 PC **A03**/MF **A01**

PB91-145136
Airborne Asbestos Levels Measured Before, during and After Abatement.
PB91-145136 PC **A02**/MF **A01**

PB91-145144
Incinerability Index: A Measure of Incinerator Performance. (Journal Article).
PB91-145144 PC **A03**/MF **A01**

PB91-145151
Seaming of Geosynthetics.
PB91-145151 PC **A02**/MF **A01**

PB91-145169
Evaluation of Two Cleaning Methods for the Removal of Asbestos Fibers from Carpet. (Journal Article).
PB91-145169 PC **A02**/MF **A01**

PB91-145177
Flow Cytometric Detection and Sizing of Fluorescent Particles Deposited at a Sewage Outfall Site.
PB91-145177 PC **A02**/MF **A01**

PB91-145433
Physical/Chemical Treatment of Hazardous Waste Sites: Speaker Slide Copies and Supporting Information.
PB91-145433 PC **A11**/MF **A02**

PB91-145441
Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual.
PB91-145441 PC **A08**/MF **A01**

PB91-145458
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-145458 PC **A13**/MF **A02**

PB91-145466
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-145466 PC **A08**/MF **A01**

PB91-145474
Saving Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects.
PB91-145474 PC **A08**/MF **A01**

PB91-145482
ORD Ground Water Research Plan: Strategy for 1991 and Beyond.
PB91-145482 PC **A03**/MF **A01**

PB91-145490
Cross-Connection Control Manual.
PB91-145490 PC **A03**/MF **A01**

PB91-145508
Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge.
PB91-145508 PC **A12**/MF **A02**

PB91-145516
Guide to the Office of Water Accountability System and Regional Evaluations: Fiscal Year 1991.
PB91-145516 PC **A09**/MF **A02**

PB91-145524
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual Research Symposium (15th). Held in Cincinnati, Ohio on April 10-12, 1989.
PB91-145524 PC **A99**/MF **A04**

PB91-145631
Injection Well Mechanical Integrity.
PB91-145631 PC **A06**/MF **A01**

PB91-145649
Abstract Proceedings: Forum on Innovative Hazardous Waste Treatment Technologies; Domestic and International (2nd). Held in Philadelphia, Pennsylvania on May 15-17, 1990.
PB91-145649 PC **A04**/MF **A01**

PB91-145656
Recognition and Management of Pesticide Poisonings. Fourth Edition.
PB91-145656 PC **A10**/MF **A02**

PB91-145664
Annual Hazardous Waste Research Symposium (16th): Remedial Action, Treatment and Disposal of Hazardous Waste. Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-145664 PC **A04**/MF **A01**

PB91-145672
NPDES Compliance Monitoring Inspector Training: Overview.
PB91-145672 PC **A05**/MF **A01**

PB91-145680
NPDES Compliance Monitoring Inspector Training Module: Legal Issues.
PB91-145680 PC **A06**/MF **A01**

PB91-145698
Program Recommendations for State Section 313 Program Coordinators.
PB91-145698 PC **A05**/MF **A01**

PB91-145706
Assessing the Geochemical Fate of Deep-Well-Injected Hazardous Waste: A Reference Guide.
PB91-145706 PC **A09**/MF **A02**

PB91-145714
Public Private Partnerships for Environmental Facilities: A Self-Help Guide for Local Governments.
PB91-145714 PC **A03**/MF **A01**

PB91-145722
Seminar Publication: Risk Assessment, Management and Communication of Drinking Water Contamination.
PB91-145722 PC **A05**/MF **A01**

PB91-145730
National Water Quality Inventory. 1988 Report to Congress.
PB91-145730 PC **A12**/MF **A02**

PB91-145755
Guide to Ground-Water Supply Contingency Planning for Local and State Governments. Technical Assistance Document.
PB91-145755 PC **A07**/MF **A01**

PB91-145847
Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000.
PB91-145847 PC **A04**/MF **A01**

PB91-145854
NPDES Compliance Monitoring Inspector Training Module: Biomonitoring.
PB91-145854 PC **A05**/MF **A01**

PB91-145870
NPDES Compliance Monitoring Inspector Training Module: Laboratory Analysis.
PB91-145870 PC **A07**/MF **A01**

PB91-145888
RCRA Orientation Manual 1990 Edition.
PB91-145888 PC **A10**/MF **A02**

PB91-145896
Pilot Study on Indoor Air Quality: Managing Indoor Air Quality Risks. Report on a Meeting Held in St. Michaels, Maryland on October 25-27, 1989.
PB91-145896 PC **A10**/MF **A02**

PB91-145904
Public-Private Partnership Case Studies: Profiles of Success in Providing Environmental Services.
PB91-145904 PC **A06**/MF **A01**

PB91-145912
Quality of Our Nation's Water: A Summary of the 1988 National Water Quality Inventory.
PB91-145912 PC **A03**/MF **A01**

PB91-145920
Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials.
PB91-145920 PC **A03**/MF **A01**

PB91-145938
Review of Sources of Ground-Water Contamination from Light Industry.
PB91-145938 PC **A04**/MF **A01**

PB91-145953
Citizen's Guide to Pesticides (Fourth Edition).
PB91-145953 PC **A03**/MF **A01**

PB91-145961
Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities.
PB91-145961 PC **A05**/MF **A01**

PB91-145979
Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration. Handbook.
PB91-145979 PC **A05**/MF **A01**

PB91-146027
Methods for the Determination of Organic Compounds in Drinking Water. Supplement 1.
PB91-146027 PC **A11**/MF **A02**

PB91-146308
Effects of Soil Moisture on Structural and Biomass Characteristics of Four Salt Marsh Plants.
PB91-146308 PC **A03**/MF **A01**

PB91-146316
Avoidance Behavior of Mallards and Northern Bobwhite Exposed to Carbofuran-Contaminated Food and Water.
PB91-146316 PC **A02**/MF **A01**

PB91-146324
Acute Toxicity of Aqueous and Substrate-Bound Copper to the Midge, 'Chironomus decorus'.
PB91-146324 PC **A02**/MF **A01**

PB91-146332
Chronic Toxicity of Copper to a Partial Life Cycle of the Midge, 'Chironomus decorus'.
PB91-146332 PC **A02**/MF **A01**

PB91-146340
Hybrid Fast Hankel Transform Algorithm for Electromagnetic Modeling.
PB91-146340 PC **A02**/MF **A01**

PB91-146357
Field Strategy for Sorting Volatile Organics into Source-Related Groups.
PB91-146357 PC **A02**/MF **A01**

PB91-146365
UNIPALS: Software for Principal Components Analysis and Partial Least Squares Regression.
PB91-146365 PC **A03**/MF **A01**

PB91-146373
Principal Components Analysis and Partial Least Squares Regression.
PB91-146373 PC **A03**/MF **A01**

PB91-146381
Effects of Ultraviolet-B Radiation on Loblolly Pine. 1. Growth, Photosynthesis and Pigment Production in Greenhouse-Grown Seedlings.
PB91-146381 PC **A02**/MF **A01**

PB91-146399
UV-B Effects on Terrestrial Plants.
PB91-146399 PC **A03**/MF **A01**

PB91-146407
Functional Bioassays Utilizing Zooplankton: A Comparison.
PB91-146407 PC **A02**/MF **A01**

PB91-146415
Partitioning Studies of Dioxin between Sediment and Water: The Measurement of Koc for Lake Ontario Sediment.
PB91-146415 PC **A02**/MF **A01**

PB91-146423
Evaluation of the Fathead Minnow Seven-Day Subchronic Test for Estimating Chronic Toxicity.
PB91-146423 PC **A03**/MF **A01**

PB91-146431
Contamination of Fish by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin: A Survey of Fish from Major Watersheds in the United States.
PB91-146431 PC **A03**/MF **A01**

PB91-146449
Effects of Northern Bobwhite ('Colinus virginianus') Age and Weight on Results of the Avian Dietary Toxicity Test.
PB91-146449 PC **A02**/MF **A01**

PB91-146456
Stand History: An Alternative Explanation of Red Spruce Radial Growth Reduction.
PB91-146456 PC **A02**/MF **A01**

PB91-146472
PIRLA Project (Paleoecological Investigation of Recent Lake Acidification): An Introduction to the Synthesis of the Project.
PB91-146472 PC **A02**/MF **A01**

PB91-146480
Regional Framework for Establishing Recovery Criteria.
PB91-146480 PC **A03**/MF **A01**

PB91-146498
Regional Variation in Growth Response of Coastal Douglas-Fir to Nitrogen Fertilizer in the Pacific Northwest.
PB91-146498 PC **A03**/MF **A01**

PB91-146506
Confidence Intervals for a Crop Yield Loss Function in Nonlinear Regression.
PB91-146506 PC **A03**/MF **A01**

PB91-146514
Climatically Induced Rapid Acidification of a Softwater Seepage Lake.
PB91-146514 PC **A01**/MF **A01**

PB91-146522
Evaluation of Methods for Determining the Vertical Distribution of Hydraulic Conductivity.
PB91-146522 PC **A03**/MF **A01**

PB91-146530
Determination of Hydraulic Conductivity and Porosity Logs in Wells with a Disturbed Annulus.
PB91-146530 PC **A03**/MF **A01**

PB91-146548
Bromo- and Bromochloro-Dibenzo-P-Dioxins and Dibenzofurans in the Environment.
PB91-146548 PC **A02**/MF **A01**

PB91-146555
Purity and Heat of Fusion Data for Environmental Standards as Determined by Differential Scanning Calorimetry.
PB91-146555 PC **A03**/MF **A01**

PB91-146563
Characterization of Emissions from a Variable Gasoline/Methanol Fueled Car.
PB91-146563 PC **A03**/MF **A01**

PB91-146571
Seasonal Impact of Blending Oxygenated Organics with Gasoline on Motor Vehicle Tailpipe and Evaporative Emissions.
PB91-146571 PC **A03**/MF **A01**

PB91-146589
Wind Tunnel Evaluation of PM10 Samplers.
PB91-146589 PC **A03**/MF **A01**

PB91-146597
Dense Gas Removal from a Valley by Crosswinds.
PB91-146597 PC **A03**/MF **A01**

PB91-146605
Identifying Ecological Indicators: An Environmental Monitoring and Assessment Program.
PB91-146605 PC **A01**/MF **A01**

PB91-146613
Meta-Analytic Reappraisal of Statistical Results in the Environmental Sciences: The Case of a Hydrological Effect of Cloud Seeding.
PB91-146613 PC **A02**/MF **A01**

PB91-146621
Comparison of Measurements of Atmospheric Ammonia by Filter Packs, Transition-Flow Reactors, Simple and Annular Denuders and Fourier Transform Infrared Spectroscopy.
PB91-146621 PC **A03**/MF **A01**

PB91-146639
Control of PCDD/PCDF Emissions from Municipal Waste Combustion Systems.
PB91-146639 PC **A02**/MF **A01**

PB91-146647
Effect of Metal Catalysts on the Formation of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Precursors.
PB91-146647 PC **A03**/MF **A01**

PB91-146654
Total Particle, Sulfate, and Acidic Aerosol Emissions from Kerosene Space Heaters.
PB91-146654 PC **A02**/MF **A01**

PB91-146662
Effects of Burnrate, Wood Species, Altitude, and Stove Type on Woodstove Emissions.
PB91-146662 PC **A03**/MF **A01**

PB91-146670
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 2. Experimental Data and Theoretical Model Predictions.
PB91-146670 PC **A03**/MF **A01**

PB91-146688
High-Temperature, Short-Time Sulfation of Calcium-Based Sorbents. 1. Theoretical Sulfation Model.
PB91-146688 PC **A03**/MF **A01**

PB91-146696
Impact of Particulate Emissions Control on the Control of Other MWC Air Emissions.
PB91-146696 PC **A02**/MF **A01**

PB91-146704
Recovery of Lotic Communities and Ecosystems Following Disturbance: Theory and Application.
PB91-146704 PC **A03**/MF **A01**

PB91-146712
Airborne Mercury Deposition and Watershed Characteristics in Relation to Mercury Concentrations in Water, Sediments, Plankton, and Fish of Eighty Northern Minnesota Lakes.
PB91-146712 PC **A03**/MF **A01**

PB91-146720
Simple Flow-Limited Model for Exchange of Organic Chemicals at Fish Gills.
PB91-146720 PC **A02**/MF **A01**

PB91-148262
Urban Air Toxics Monitoring Program, 1989.
PB91-148262 PC **A13**/MF **A02**

PB91-148270
Alternative Control Technology Document: Organic Waste Process Vents.
PB91-148270 PC **A09**/MF **A01**

PB91-148288
Urban Air Toxics Monitoring Program Aldehyde Results, 1989.
PB91-148288 PC **A07**/MF **A01**

PB91-148296
Workshop on Innovative Technologies for Treatment of Contaminated Sediments. Held in Cincinnati, Ohio on June 13-14, 1990. Summary Report.
PB91-148296 PC **A04**/MF **A01**

PB91-148304
Polymer Manufacturing Industry - Background Information for Promulgated Standards.
PB91-148304 PC **A10**/MF **A02**

PB91-148312
Preparation Aids for the Development of Category 1: Quality Assurance Project Plans.
PB91-148312 PC **A04**/MF **A01**

PB91-148320
Evaluation of a Remote Sensor for Mobile Source CO Emissions.
PB91-148320 PC **A05**/MF **A01**

PB91-148338
Assessment of Asbestos Removal Carried Out Using EPA Purple Book Guidance.
PB91-148338 PC **A05**/MF **A01**

PB91-148346
In-situ Biotransformation of Carbon Tetrachloride under Anoxic Conditions.
PB91-148346 PC **A06**/MF **A01**

PB91-148353
Manual for the Evaluation of Laboratories Performing Aquatic Toxicity Tests.
PB91-148353 PC **A06**/MF **A01**

PB91-148361
Chemical-Specific Parameters for Toxicity Characteristic Contaminants.
PB91-148361 PC **A03**/MF **A01**

PB91-148379
Remedial Action, Treatment, and Disposal of Hazardous Waste. Proceedings of the Annual RREL Hazardous Waste Research Symposium (16th). Held in Cincinnati, Ohio on April 3-5, 1990.
PB91-148379 PC **A99**/MF **A04**

PB91-148387
Environmental Challenge of the 1990's. Proceedings. International Conference on Pollution Prevention: Clean Technologies and Clean Products. Held in Washington, DC. on June 10-13, 1990.
PB91-148387 PC **A99**/MF **A04**

PB91-148395
Watershed Manipulation Project: Quality Assurance Implementation Plan for 1986-1989.
PB91-148395 PC **A10**/MF **A02**

PB91-148403
Watershed Manipulation Project: Field Implementation Plan for 1986-1989.
PB91-148403 PC **A05**/MF **A01**

PB91-148411
PM10 Emission Factor Listing Developed by Technology Transfer and Airs Source Classification Codes with Documentation.
PB91-148411 PC **A04**/MF **A01**

PB91-148429
Risk Management Recommendations for Dioxin Contamination at Midland, Michigan.
PB91-148429 PC **A05**/MF **A01**

PB91-148437
Great Lakes Demonstration Program, Section 108a.
PB91-148437 PC **A03**/MF **A01**

PB91-148452
Laboratory Evaluation of the Low Temperature Characteristics of Four Protective Clothing Materials.
PB91-148452 PC **A03**/MF **A01**

PB91-148460
Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview.
PB91-148460 PC **A08**/MF **A01**

PB91-149518
Self-Consistent Deutschian ESP Model.
PB91-149518 PC **A05**/MF **A01**

PB91-149526
Environmental Monitoring and Assessment Program: Research Plan for Monitoring Wetland Ecosystems.
PB91-149526 PC **A09**/MF **A01**

PB91-149534
Approach for Estimating Global Landfill Methane Emissions.
PB91-149534 PC **A04**/MF **A01**

PB91-149542
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542 PC **A05**/MF **A01**

PB91-149567
Everett Harbor Action Program: 1989 Action Plan. Puget Sound Estuary Program.
PB91-149567 PC **A03**/MF **A01**

PB91-149575
Effects of Sediment Holding Time on Sediment Toxicity. Puget Sound Estuary Program.
PB91-149575 PC **A03**/MF **A01**

PB91-149583
Elliot Bay Action Program: 1988 Action Plan.
PB91-149583 PC **A06**/MF **A01**

PB91-149591
Neanthes Long-Term Exposure Experiment: The Relationship between Juvenile Growth and Reproductive Success. Puget Sound Estuary Program.
PB91-149591 PC **A03**/MF **A01**

PB91-149609
State-of-the-Art Procedures and Equipment for Internal Inspection of Underground Storage Tanks.
PB91-149609 PC **A07**/MF **A01**

PB91-149617
Up and Running: New EPA Case History Database and Library System.
PB91-149617 PC **A01**/MF **A01**

PB91-149625
Bioassay Procedures for Predicting Coliform Bacterial Growth in Drinking Water.
PB91-149625 PC **A03**/MF **A01**

PB91-149633
Documenting the U.S. Landfill/Impoundment Permit: A Guide to Technical Resources.
PB91-149633 PC **A02**/MF **A01**

PB91-149641
Air Emissions from the Incineration of Hazardous Waste.
PB91-149641 PC **A03**/MF **A01**

PB91-149658
Neurotoxic Effects of Colchicine.
PB91-149658 PC **A03**/MF **A01**

PB91-149724
Role of Short-Term Tests in Evaluating Health Effects Associated with Drinking Water.
PB91-149724 PC **A03**/MF **A01**

PB91-149732
Acute Inhalation Exposure to Epichlorohydrin Transiently Decreases Rat Sperm Velocity.
PB91-149732 PC **A03**/MF **A01**

PB91-149740
Acute, Subchronic, and Chronic Exposure to a Simulated Urban Profile of Ozone: Effects on Extrapulmonary Natural Killer Cell Activity and Lymphocyte Mitogenic Responses.
PB91-149740 PC **A03**/MF **A01**

PB91-149757
Effects of Chlorine Dioxide on the Developing Rat Brain.
PB91-149757 PC **A03**/MF **A01**

PB91-149765
Toxicological Mechanisms of Implantation Failure.
PB91-149765 PC **A03**/MF **A01**

PB91-149773
Immune Alterations in Rats Following Subacute Exposure to Tributyltin Oxide.
PB91-149773 PC **A03**/MF **A01**

PB91-149781
Effects of Wastewater Treatment and Seawater Dilution in Reducing Lethal Toxicity of Municipal Wastewater to Sheepshead Minnow ('Cyprinodon variegatus') and Pink Shrimp ('Penaeus duorarum').
PB91-149781 PC **A03**/MF **A01**

PB91-149799
Use of the Blue Mussel, 'Mytilus edulis', in Water Quality Toxicity Testing and In situ Marine Biological Monitoring.
PB91-149799 PC **A03**/MF **A01**

PB91-149807
Quantitative Method for Evaluating Avian Food Avoidance Behavior.
PB91-149807 PC **A03**/MF **A01**

PB91-149815
Dose Paradigms for Inhaled Vapors of Primary Carcinogens and Their Impact on Risk Assessment.
PB91-149815 PC **A03**/MF **A01**

PB91-151472
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators.
PB91-151472 PC **E99**/MF **E99**

PB91-151480
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 1. Summary Report.
PB91-151480 PC **A03**/MF **A01**

PB91-151498
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 2. Site 1 Final Emission Test Report.
PB91-151498 PC **A13**/MF **A02**

PB91-151506
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 3. Site 2 Final Emission Test Report.
PB91-151506 PC **A12**/MF **A02**

PB91-151514
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 4. Site 2 Final Emission Test Report. Appendices.
PB91-151514 PC **A02**/MF **A01**

PB91-151522
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 5. Site 3 Final Emission Test Report.
PB91-151522 PC **A08**/MF **A01**

PB91-151530
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 6. Site 4 Final Emission Test Report.
PB91-151530 PC **A13**/MF **A02**

PB91-151548
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 7. Site 4 Final Emission Test Report. Appendices.
PB91-151548 PC **A09**/MF **A01**

PB91-151555
Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators. Volume 8. GC/MS Tapes Review Report.
PB91-151555 PC **A06**/MF **A01**

PB91-153775
Environmental Investments: The Cost of a Clean Environment. A Summary.
PB91-153775 PC **A04**/MF **A01**

PB91-153783
Environmental Investments: The Cost of a Clean Environment. Report of the Administrator of the Environmental Protection Agency to the Congress of the United States.
PB91-153783 PC **A22**/MF **A03**

PB91-154211
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program. Bulk Sample Rounds 16, 17 and 18.
PB91-154211 PC **A08**/MF **A01**

PB91-154617
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 81, 82, and 83 Neurotoxicity. Addendum 10.
PB91-154617 PC **A04**/MF **A01**

PB91-156331
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331 PC **A05**/MF **A01**

PB91-156737
Hazardous Waste Data Management System Extract Tape. Data Tape Documentation.
PB91-156737 PC **A20**/MF **A03**

PB91-156745
Resource Conservation and Recovery Information System Extract Tape. Data Tape Documentation.
PB91-156745 PC **A20**/MF **A03**

PB91-157222
National Radon Contractor Proficiency Program. Proficiency Report: Supplement.
PB91-157222 PC **A07**/MF **A01**

PB91-158394
Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals. Series 84, Mutagenicity. Addendum 9.
PB91-158394 PC **A03**/MF **A01**

PB91-159590
Temporal Variability in Lakewater Chemistry in the Northeastern United States: Results of Phase 2 of the Eastern Lake Survey.
PB91-159590 PC **A11**/MF **A02**

PB91-159608
Global Warming Mitigation Potential of Three Tree Plantation Scenarios.
PB91-159608 PC **A04**/MF **A01**

PB91-159616
Watershed Manipulation Project: Rationale for Hypothesis Formulation and Testing.
PB91-159616 PC **A04**/MF **A01**

PB91-159624
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 1.
PB91-159624 PC **A08**/MF **A01**

PB91-159632
Cancer Risk from Outdoor Exposure to Air Toxics. Volume 2. Appendices.
PB91-159632 PC **A11**/MF **A02**

PB91-159640
Health Advisory for 1,3-Dinitrobenzene.
PB91-159640 PC **A05**/MF **A01**

PB91-159657
Health Advisory for Hexachloroethane.
PB91-159657 PC **A04**/MF **A01**

PB91-159665
Toxic Substances Control Act Chemical Substance Inventory: 1990 Supplement to the 1985 Edition of the TSCA Inventory. User Guides and Indices.
PB91-159665 PC **A13**/MF **A02**

PB91-159673
Pesticide Fact Sheet Number 93.1: 'Bacillus thuringiensis' (Revised).
PB91-159673 PC **A02**/MF **A01**

PB91-159681
Pesticide Fact Sheet Number 219: Tribenuron Methyl.
PB91-159681 PC **A03**/MF **A01**

PB91-159699
Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.
PB91-159699 PC **A04**/MF **A01**

PB91-159707
Two Indoor Air Exposure Modeling Studies: CONTAM Modeling Results, and Serial Correlation Effects.
PB91-159707 PC **A03**/MF **A01**

PB91-160549
Proceedings of the International Symposium on Oil and Gas Exploration and Production Waste Management Practices (1st). Held in New Orleans, Louisiana on September 10-13, 1990.
PB91-160549 PC**$95.00**/MF **E09**

PB91-160556
Treatment Technology Background Document.
PB91-160556 PC **A12**/MF **A02**

PB91-160564
Chloromethane: Health Advisory.
PB91-160564 PC **A03**/MF **A01**

PB91-160572
Bromochloromethane: Health Advisory.
PB91-160572 PC **A03**/MF **A01**

PB91-160580
Dichlorodifluoromethane: Drinking Water Health Advisory.
PB91-160580 PC **A03**/MF **A01**

PB91-160598
o-Chlorotoluene: Drinking Water Health Advisory.
PB91-160598 PC **A03**/MF **A01**

PB91-160606
1,3,5-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160606 PC **A03**/MF **A01**

PB91-160614
Bromomethane: Drinking Water Health Advisory.
PB91-160614 PC **A03**/MF **A01**

PB91-160622
BIS-(2-Chloroisopropyl) Ether: Drinking Water Health Advisory.
PB91-160622 PC **A03**/MF **A01**

PB91-160630
1,1,2-Trichloroethane: Drinking Water Health Advisory.
PB91-160630 PC **A03**/MF **A01**

PB91-160648
Trichlorofluoromethane: Drinking Water Health Advisory.
PB91-160648 PC **A03**/MF **A01**

PB91-160655
1,2,4-Trichlorobenzene: Drinking Water Health Advisory.
PB91-160655 PC **A03**/MF **A01**

PB91-160663
Hexachlorobutadiene: Drinking Water Health Advisory.
PB91-160663 PC **A03**/MF **A01**

PB91-160671
1,1,1,2-Tetrachloroethane: Drinking Water Health Advisory.
PB91-160671 PC **A03**/MF **A01**

PB91-160689
Naphthalene: Drinking Water Health Advisory.
PB91-160689 PC **A03**/MF **A01**

PB91-160697
1,2,3-Trichloropropane: Drinking Water Health Advisory.
PB91-160697 PC **A03**/MF **A01**

PB91-160705
p-Chlorotoluene: Drinking Water Health Advisory.
PB91-160705 PC **A03**/MF **A01**

PB91-160739
Santa Clara Valley Integrated Environmental Management Project: Revised Stage One Report.
PB91-160739 PC **A17**/MF **A03**

PB91-160747
Santa Clara Valley Integrated Environmental Management Project: Stage Two Report.
PB91-160747 PC **A11**/MF **A02**

PB91-161026
White Phosphorus Health Advisory.
PB91-161026 PC **A05**/MF **A01**

PB91-161380
Ambient Water Quality Criteria Document: Addendum for Chlorinated Naphthalenes.
PB91-161380 PC **A03**/MF **A01**

PB91-161398
Ambient Water Quality Criteria Document: Addendum for Acrylonitrile.
PB91-161398 PC **A03**/MF **A01**

PB91-161406
Ambient Water Quality Criteria Document: Addendum for Nitrosamines.
PB91-161406 PC **A03**/MF **A01**

PB91-161414
Ambient Water Quality Criteria Document: Addendum for Nitrophenols.
PB91-161414 PC **A03**/MF **A01**

PB91-161422
Ambient Water Quality Criteria Document: Addendum for Hexachlorocyclopentadiene.
PB91-161422 PC **A03**/MF **A01**

PB91-161430
Ambient Water Quality Criteria Document: Addendum for Fluoranthene.
PB91-161430 PC **A03**/MF **A01**

PB91-161448
Ambient Water Quality Criteria Document: Addendum for Diphenylhydrazine.
PB91-161448 PC **A03**/MF **A01**

PB91-161455
Ambient Water Quality Criteria Document: Addendum for Hexachlorobutadiene.
PB91-161455 PC **A03**/MF **A01**

PB91-161463
Ambient Water Quality Criteria Document: Addendum for Heptachlor.
PB91-161463 PC **A03**/MF **A01**

PB91-161471
Ambient Water Quality Criteria Document: Addendum for DDT.
PB91-161471 PC **A03**/MF **A01**

PB91-161489
Ambient Water Quality Criteria Document: Addendum for Ethylbenzene.
PB91-161489 PC **A03**/MF **A01**

PB91-161497
Ambient Water Quality Criteria Document: Addendum for 2,4-Dimethylphenol.
PB91-161497 PC **A03**/MF **A01**

PB91-161505
Ambient Water Quality Criteria Document: Addendum for Endrin.
PB91-161505 PC **A03**/MF **A01**

PB91-161513
Ambient Water Quality Criteria Document: Addendum for Acenaphthene.
PB91-161513 PC **A03**/MF **A01**

PB91-161521
Ambient Water Quality Criteria Document: Addendum for Aldrin/Dieldrin.
PB91-161521 PC **A03**/MF **A01**

PB91-161539
Ambient Water Quality Criteria Document: Addendum for Antimony.
PB91-161539 PC **A03**/MF **A01**

PB91-161547
Ambient Water Quality Criteria Document: Addendum for Chlordane.
PB91-161547 PC **A03**/MF **A01**

PB91-161554
Ambient Water Quality Criteria Document: Addendum for Carbon Tetrachloride.
PB91-161554 PC **A03**/MF **A01**

PB91-161562
Ambient Water Quality Criteria Document: Addendum for Chloroform.
PB91-161562 PC **A03**/MF **A01**

PB91-161570
Ambient Water Quality Criteria Document: Addendum for 2-Chlorophenol.
PB91-161570 PC **A03**/MF **A01**

PB91-161588
Ambient Water Quality Criteria Document Addendum for Toxaphene.
PB91-161588 PC **A03**/MF **A01**

PB91-161596
Ambient Water Quality Criteria Document: Addendum for 2,4-Dichlorophenol.
PB91-161596 PC **A03**/MF **A01**

PB91-161604
Ambient Water Quality Criteria Document: Addendum for Benzidene.
PB91-161604 PC **A03**/MF **A01**

PB91-161612
Ambient Water Quality Criteria Document: Addendum for Acrolein.
PB91-161612 PC **A03**/MF **A01**

PB91-161620
Ambient Water Quality Criteria Document: Addendum for Chloroalkyl Ethers.
PB91-161620 PC **A03**/MF **A01**

PB91-161638
Ambient Water Quality Criteria Document: Addendum for Phenol.
PB91-161638 PC **A03**/MF **A01**

PB91-161646
Ambient Water Quality Criteria Document: Addendum for Haloethers.
PB91-161646 PC **A03**/MF **A01**

PB91-161653
Ambient Water Quality Criteria Document: Addendum for Phthalate Esters.
PB91-161653 PC **A03**/MF **A01**

PB91-161661
Ambient Water Quality Criteria Document: Addendum for Chlorinated Phenols.
PB91-161661 PC **A03**/MF **A01**

PB91-161679
Biological Remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes: Report of a Workshop, Manitowoc, Wisconsin, July 17-19, 1990.
PB91-161679 PC **A09**/MF **A02**

PB91-161687
Global Inventory of Volatile Organic Compound Emissions from Anthropogenic Sources.
PB91-161687 PC **A04**/MF **A01**

PB91-161695
Asbestos Fiber Reentrainment during Dry Vacuuming and Wet Cleaning of Asbestos-Contaminated Carpet.
PB91-161695 PC **A04**/MF **A01**

PB91-161703
Multispectral Identification of Potentially Hazardous Byproducts of Ozonation and Chlorination. Part 1. Studies of Chromatographic and Spectroscopic Properties of MX.
PB91-161703 PC **A04**/MF **A01**

PB91-161711
Preliminary Testing, Evaluation and Sensitivity Analysis for the Terrestrial Ecosystem Exposure Assessment Model (TEEAM).
PB91-161711 PC **A06**/MF **A01**

PB91-161729
Modal Aerosol Dynamics Modeling.
PB91-161729 PC **A13**/MF **A02**

PB91-161737
Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations.
PB91-161737 PC **A06**/MF **A01**

PB91-161745
Polymer Manufacturing Industry - Enabling Document.
PB91-161745 PC **A08**/MF **A01**

PB91-161752
Ongoing Research and Regulatory Development Projects.
PB91-161752 PC **A10**/MF **A02**

PB91-162404
Ultrasonic Flowmeters That Are Insensitive to Suspended Solids.
PB91-162404 PC **A03**/MF **A01**

PB91-162412
Development and Implementation of the U.S. EPA's Waste Reduction Innovative Technology Evaluation (WRITE) Research Program.
PB91-162412 PC **A02**/MF **A01**

PB91-162420
Cost Estimates for Controlling SOCs by GAC Treatment.
PB91-162420 PC **A03**/MF **A01**

PB91-162438
Ozonation and Biological Stability of Water in an Operating Water Treatment Plant.
PB91-162438 PC **A03**/MF **A01**

PB91-162446
Succeeding at Waste Minimisation.
PB91-162446 PC **A03**/MF **A01**

PB91-162453
Cost Modeling for Drinking Water Unit Treatment Processes.
PB91-162453 PC **A03**/MF **A01**

PB91-162461
Standardized Costs for Water Supply Distribution Systems.
PB91-162461 PC **A03**/MF **A01**

PB91-162479
Results from the Stabilization Technologies Evaluated by the Site Program. New England Environmental Expo 90.
PB91-162479 PC **A03**/MF **A01**

PB91-162487
Novel Delivering of Nutrients and Oxygen to Aid In situ Bioreclamation.
PB91-162487 PC **A03**/MF **A01**

PB91-162495
Comparison of Modified Carson and EPA Mixing Height Estimates Using Data from Five Field Experiments.
PB91-162495 PC **A03**/MF **A01**

PB91-162503
Evaluation of the EPA Complex Terrain Dispersion Model (CTDMPLUS) with the Lovett Power Plant Data Base.
PB91-162503 PC **A03**/MF **A01**

PB91-162511
Toxicity and Fate of Total Residual Chlorine in Outdoor Experimental Streams (Book Chapter).
PB91-162511 PC **A03**/MF **A01**

PB91-162529
Fish Acute Toxicity Syndromes: Application to the Development of Mechanism-Specific QSARS.
PB91-162529 PC **A03**/MF **A01**

PB91-162537
Controlling PCDD/PCDF Emissions from Incinerators by Flue Gas Cleaning.
PB91-162537 PC **A02**/MF **A01**

PB91-162545
Acid Rain Control Options.
PB91-162545 PC **A03**/MF **A01**

PB91-162552
Combustion Control of PCDD/PCDF Emissions from Municipal Waste Incinerators in North America.
PB91-162552 PC **A02**/MF **A01**

PB91-162560
Bioassay of Complex Mixtures of Indoor Air Pollutants. Chapter 7.
PB91-162560 PC **A03**/MF **A01**

PB91-162578
32P-Postlabeling DNA Adduct Assay: Cigarette Smoke-Induced DNA Adducts in the Respiratory and Nonrespiratory Rat Tissues.
PB91-162578 PC **A03**/MF **A01**

PB91-162594
Assessment of the Mutagenicity of Volatile Organic Air Pollutants Before and After Atmospheric Transformation.
PB91-162594 PC **A02**/MF **A01**

PB91-162602
Future Directions in Research on the Genetic Toxicology of Complex Mixtures.
PB91-162602 PC **A03**/MF **A01**

PB91-162610
In vitro Assessment of Gamete Integrity.
PB91-162610 PC **A03**/MF **A01**

PB91-162628
Soil Bioventing Demonstration Project.
PB91-162628 PC **A03**/MF **A01**

PB91-162636
Bilateral Wastewater Land Treatment Research.
PB91-162636 PC **A02**/MF **A01**

PB91-162644
Microbial Carbon Dioxide Generation and Oxygen Utilization in the Unsaturated Subsurface at a Gasoline Spill Site.
PB91-162644 PC **A03**/MF **A01**

PB91-162651
Simplified Soil Gas Sensing Techniques for Plume Mapping and Remediation Monitoring.
PB91-162651 PC **A03**/MF **A01**

PB91-162669
Hydrocarbon Spill Exposure Assessment Modeling.
PB91-162669 PC **A03**/MF **A01**

PB91-162677
Do Behavioral Responses to Pesticide Exposure Affect Wildlife Population Parameters.
PB91-162677 PC **A03**/MF **A01**

PB91-162685
Initial Growth and Ontogeny of Bigleaf Maple 'Acer macrophyllum' in an Enriched Carbon Dioxide Environment.
PB91-162685 PC **A03**/MF **A01**

PB91-162693
Advanced Screening Model for Complex Terrain Applications.
PB91-162693 PC **A03**/MF **A01**

PB91-162701
Proceedings Hazardous Materials Management Conference/Central (3rd). O'Hare Exposition Center Held at Rosemont, Illinois, on March 13-15, 1990.
PB91-162701 PC **A03**/MF **A01**

PB91-162719
Three Case Studies of Waste Minimization through Use of Metal Recovery Processes.
PB91-162719 PC **A03**/MF **A01**

PB91-162727
Future of Expert Systems in the Environmental Protection Agency.
PB91-162727 PC **A02**/MF **A01**

PB91-162743
Expert Systems to Assist in Evaluation of Measurement Data.
PB91-162743 PC **A02**/MF **A01**

PB91-162750
Development and Application of a Research Database for Drinking Water Systems Evaluation.
PB91-162750 PC **A03**/MF **A01**

PB91-162768
Database Management Techniques to Ensure Project Integrity. Annual SAS Users Group International Conference (14th). Held in San Francisco, California on April 9-12, 1989.
PB91-162768 PC **A02**/MF **A01**

PB91-162776
Assay of Beta-Glucuronidase in Non-coli Escherichia Using EC-Mug Medium and the Colilert (Trade Name) System.
PB91-162776 PC **A03**/MF **A01**

PB91-162784
Factors Affecting the Applicability of Plasma Systems to the Cleanup of Superfund Sites.
PB91-162784 PC **A03**/MF **A01**

PB91-162792
Methods of Removing Drinking Water Contaminants and Their Limitations: Inorganics and Radionuclides.
PB91-162792 PC **A03**/MF **A01**

PB91-162800
Evaluating Capacities of GAC Preloaded with a Natural Water.
PB91-162800 PC **A03**/MF **A01**

PB91-162818
Concept of Presence Absence Testing.
PB91-162818 PC **A03**/MF **A01**

PB91-162826
Service Life of Geosynthetics in Hazardous Waste Management Facilities.
PB91-162826 PC **A03**/MF **A01**

PB91-162834
Geosynthetic Leachate Collection Systems.
PB91-162834 PC **A03**/MF **A01**

PB91-163493
Field Evaluation of Barriers to Walleye Egg and Larva Survival in the Lower Fox River, Wisconsin.
PB91-163493 PC **A03**/MF **A01**

PB91-163501
Optical Heterogeneity in Green Bay.
PB91-163501 PC **A02**/MF **A01**

PB91-163519
Economies of Scale and Scope in Water Supply.
PB91-163519 PC **A03**/MF **A01**

PB91-163527
Little Rock Lake (Wisconsin): Perspectives on an Experimental Ecosystem Approach to Seepage Lake Acidification.
PB91-163527 PC **A03**/MF **A01**

PB91-163535
Randomized Intervention Analysis and the Interpretation of Whole-Ecosystem Experiments.
PB91-163535 PC **A03**/MF **A01**

PB91-163543
Effects of Dicofol on Mallard Eggshell Quality.
PB91-163543 PC **A02**/MF **A01**

PB91-163550
Subchronic Effects of Sodium Selenite and Selenomethionine on Several Immune-Functions in Mallards.
PB91-163550 PC **A03**/MF **A01**

PB91-163568
Toxicity of Sediments from Western Lake Erie and the Maumee River at Toledo, Ohio, 1987: Implications for Current Dredged Material Disposal Practices.
PB91-163568 PC **A03**/MF **A01**

PB91-163576
Overview of Case Studies on Recovery of Aquatic Systems from Disturbance.
PB91-163576 PC **A03**/MF **A01**

PB91-163584
Optimal Characterization of Structure for Prediction of Properties.
PB91-163584 PC **A03**/MF **A01**

PB91-163592
Seven-Day Tests and Chronic Tests.
PB91-163592 PC **A01**/MF **A01**

PB91-163600
Effect of Lindane on Intestinal Nitroreductase, Azoreductase, SS-Glucuronidase, Dechlorinase, and Dehydrochlorinase Activity.
PB91-163600 PC **A03**/MF **A01**

PB91-163618
Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview.
PB91-163618 PC **A03**/MF **A01**

PB91-163626
Effect of Acute Exposure to Boric Acid on the Male Reproductive System of the Rat.
PB91-163626 PC **A03**/MF **A01**

PB91-163634
Evidence for an Involvement of Associative Conditioning in Reflex Modification of the Acoustic Startle Response with Gaps in Background Noise.
PB91-163634 PC **A02**/MF **A01**

PB91-163642
Modelling Working and Reference Memory in Rats: Effects of Scopolamine on Delayed Matching-to-Position.
PB91-163642 PC **A03**/MF **A01**

PB91-163659
Examination of Immune Parameters and Host Resistance Mechanisms in B6C3F1 Mice Following Adult Exposure to 2,3,7,8-Tetrachlorodibenzo-'p'-Dioxin.
PB91-163659 PC **A03**/MF **A01**

PB91-163667
Cyclophosphamide Teratogenesis: Evidence for Compensatory Responses to Induced Cellular Toxicity.
PB91-163667 PC **A03**/MF **A01**

PB91-163675
Flow Cytometric Analysis of the Mechanism of Methylmercury Cytotoxicity.
PB91-163675 PC **A03**/MF **A01**

PB91-163683
Increasing Sensitivity of the Ortho Analytical Cytofluorograph by Modifying the Fluid System.
PB91-163683 PC **A02**/MF **A01**

PB91-163691
Immunohistochemical Detection of Tumour-Associated Aldehyde Dehydrogenase in Formalin-Fixed Rat and Mouse Normal Liver and Hepatomas.
PB91-163691 PC **A02**/MF **A01**

PB91-163709
Respiratory Tract Dosimetry Model for Air Toxics (October 1990).
PB91-163709 PC **A03**/MF **A01**

PB91-163717
U.S. Environmental Protection Agency's Inhalation RFD Methodology: Risk Assessment for Air Toxics.
PB91-163717 PC **A03**/MF **A01**

PB91-163725
Importance of Glycolysable Substrates for In vitro Capacitation of Human Spermatozoa.
PB91-163725 PC **A02**/MF **A01**

PB91-163733
ISIM3D: An ANSI-C Three-Dimensional Multiple Indicator Conditional Simulation Program.
PB91-163733 PC **A03**/MF **A01**

PB91-163741
Field Demonstration of the UV/Oxidation Technology to Treat Ground Water Contaminated with VOCs.
PB91-163741 PC **A02**/MF **A01**

PB91-163758
Control Technology: Estimating Innovative Technology Costs for the SITE Program.
PB91-163758 PC **A02**/MF **A01**

PB91-163766
Characterizing the Dispersive State of Convective Boundary Layers for Applied Dispersion Modeling.
PB91-163766 PC **A03**/MF **A01**

PB91-163774
Field Comparison of Methods for the Measurement of Gaseous and Particulate Contributors to Acidic Dry Depcsition.
PB91-163774 PC **A03**/MF **A01**

PB91-163782
Genes Encoding Mercuric Reductases from Selected Gram-Negative Aquatic Bacteria Have a Low Degree of Homology with merA of Transposon TN50.
PB91-163782 PC **A02**/MF **A01**

PB91-163790
Comparison of the Seagrass 'Thalassia testudinum' and Its Epiphytes in the Field and in Laboratory Test Systems.
PB91-163790 PC **A03**/MF **A01**

PB91-163808
Pericyte of a Teleost Fish: Ultrastructure, Position, and Role in Neoplasia as Revealed by a Fish Model.
PB91-163808 PC **A02**/MF **A01**

PB91-163816
Dynamics of Plasmid Transfer on Surfaces.
PB91-163816 PC **A02**/MF **A01**

PB91-163824
Effect of Growth Rate and Hydrophobicity on Bacteria Surviving Protozoan Grazing.
PB91-163824 PC **A02**/MF **A01**

PB91-163832
Dynamic Interactions of 'Pseudomonas aeruginosa' and Bacteriophages in Lake Water.
PB91-163832 PC **A03**/MF **A01**

PB91-163840
Field Observations of the Ecology and Habits of Mangrove Rivulus ('Rivulus marmoratus') in Belize and Florida (Teleostei: Cyprinodontiformes: Rivulidae).
PB91-163840 PC **A03**/MF **A01**

PB91-163857
Diversity and Origin of 'Desulfovibrio' Species: Phylogenetic Definition of a Family.
PB91-163857 PC **A03**/MF **A01**

PB91-163865
Bioaccumulation of Kepone by Grass Shrimp ('Palaemonetes pugio'): Importance of Dietary Accumulation and Food Ration.
PB91-163865 PC **A03**/MF **A01**

PB91-163873
Effect of Fluorinated Analogues of Phenol and Hydroxybenzoates on the Anaerobic Transformation of Phenol to Benzoate.
PB91-163873 PC **A03**/MF **A01**

PB91-163881
Effects of Temperature and Salinity on 'Menidia beryllina' Embryos Exposed to Terbufos.
PB91-163881 PC **A03**/MF **A01**

PB91-163899
Testing of Insect Microsporidians (Microspora: Nosematidae) in Nontarget Aquatic Species.
PB91-163899 PC **A02**/MF **A01**

PB91-163907
Natural Transformation of a Marine 'Vibrio' Species by Plasmid DNA.
PB91-163907 PC **A03**/MF **A01**

PB91-163915
Tributyltin and Invertebrates of a Seagrass Ecosystem: Exposure and Response of Different Species.
PB91-163915 PC **A03**/MF **A01**

PB91-163923
Molecular Cloning, Characterization, and Regulation of a 'Pseudomanas pickettii' PKO1 Gene Encoding Phenol Hydroxylase and Expression of the Gene in 'Pseudomonas aeruginosa' PAO1c.
PB91-163923 PC **A02**/MF **A01**

PB91-163931
Use of 'Thalassia' and Its Epiphytes for Toxicity Assessment: Effects of a Drilling Fluid and Tributyltin.
PB91-163931 PC **A03**/MF **A01**

PB91-163949
Alterations in the Energy Metabolism of an Estuarine Mysid 'Mysidopsis bahia' as Indicators of Stress from Chronic Pesticide Exposure.
PB91-163949 PC **A03**/MF **A01**

PB91-163956
Vertebral Abnormalities in Juvenile Inland Silversides 'Menidia beryllina' Exposed to Terbufos during Embryogenesis.
PB91-163956 PC **A02**/MF **A01**

PB91-163964
General Microbiology of RecA: Environmental and Evolutionary Significance.
PB91-163964 PC **A03**/MF **A01**

PB91-163972
Genetic Variation in Clonal Vertebrates Detected by Simple-Sequence DNA Fingerprinting.
PB91-163972 PC **A02**/MF **A01**

PB91-163980
Hepatic Neoplasms in the Mummichog 'Fundulus heteroclitus' from a Creosote-Contaminated Site.
PB91-163980 PC **A02**/MF **A01**

PB91-163998
Anatomy of the Seed and Seedling of 'Spartina alterniflora' Lois. (Poaceae).
PB91-163998 PC **A03**/MF **A01**

PB91-164004
Artificial Sediments for Use in Tests with Wetland Plants.
PB91-164004 PC **A02**/MF **A01**

PB91-164012
Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates Used by Estuarine Bacteria.
PB91-164012 PC **A03**/MF **A01**

PB91-164277
Movement of Bacteria through Soil and Aquifer Sand.
PB91-164277 PC **A03**/MF **A01**

PB91-164285
Nitrate for Biorestoration of an Aquifer Contaminated with Jet Fuel.
PB91-164285 PC **A04**/MF **A01**

PB91-164293
Histological and Histopathological Evaluation of the Testis.
PB91-164293 PC **A13**/MF **A02**

PB91-168435
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Volume 4. Citations, 1990.
PB91-168435 PC **A09**/MF **A01**

PB91-168443
National Air Toxics Information Clearinghouse: Bibliography of Selected Reports and Federal Register Notices Related to Air Toxics. Index, 1990.
PB91-168443 PC **A21**/MF **A03**

PB91-172247
National Air Quality and Emissions Trends Report, 1989.
PB91-172247 PC **A07**/MF **A01**

PB91-505578
Urban Airshed Model.
PB91-505578 CP **T18**

PB91-505586
NAPAP Emissions Inventory (Version 2): U.S. Point Source Modelers' Inventory, 1985.
PB91-505586 CP **T03**

PB91-505594
NAPAP Emissions Inventory (Version 2): Canadian Modelers' Point Source Data, 1985.
PB91-505594 CP **T02**

PB91-505602
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505602 CP **T03**

PB91-505610
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505610 CP **T03**

PB91-505628
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505628 CP **T02**

PB91-505636
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tapes - Winter Weekday, 1985.
PB91-505636 CP **T02**

PB91-505644
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Winter Saturday, 1985.
PB91-505644 CP **T03**

PB91-505651
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Modelers' Tape - Winter Saturday, 1985.
PB91-505651 CP **T03**

PB91-505669
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505669 CP **T02**

PB91-505677
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505677 CP **T02**

PB91-505685
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tape, 1985.
PB91-505685 CP **T03**

PB91-505693
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Winter Sunday, 1985.
PB91-505693 CP **T03**

PB91-505701
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505701 CP **T02**

PB91-505719
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505719 CP **T02**

PB91-505727
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-505727 CP **T02**

PB91-505735
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Saturday, 1985.
PB91-505735 CP **T03**

PB91-505743
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505743 CP **T03**

PB91-505750
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505750 CP **T02**

PB91-505768
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Saturday, 1985.
PB91-505768 CP **T02**

PB91-505776
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Fall Sunday, 1985.
PB91-505776 CP **T03**

PB91-505784
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505784 CP **T03**

PB91-505792
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505792 CP **T02**

PB91-505800
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Fall Sunday, 1985.
PB91-505800 CP **T02**

PB91-505818
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Weekday, 1985.
PB91-505818 CP **T02**

PB91-505826
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Saturday, 1985.
PB91-505826 CP **T02**

PB91-505834
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Winter Sunday, 1985.
PB91-505834 CP **T02**

PB91-505842
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505842 CP **T02**

PB91-505859
Annual NAPAP Emissions Inventory (Version 2): U.S. Annual Point Sources, 1985.
PB91-505859 CP **T02**

PB91-505867
Annual NAPAP Emissions Inventory (Version 2): Canadian Annual Point Sources, 1985.
PB91-505867 CP **T02**

PB91-505875
NAPAP Annual Emissions Inventory (Version 2): U.S. Annual Area Sources, 1985.
PB91-505875 CP **T02**

PB91-505883
NAPAP Emissions Inventory (Version 2): Canadian Annual Area Sources, 1985.
PB91-505883 CP **T02**

PB91-505891
NAPAP Emissions Inventory (Version 2): U.S. Annual Natural Particulate Sources, 1985.
PB91-505891 CP **T02**

PB91-505909
NAPAP Emissions Inventory (Version 2): Canadian Annual Natural Particulate Sources, 1985.
PB91-505909 CP **T02**

PB91-505917
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Weekday, 1985.
PB91-505917 CP **T03**

PB91-505925
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505925 CP **T03**

PB91-505933
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505933 CP **T02**

PB91-505941
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Weekday, 1985.
PB91-505941 CP **T02**

PB91-505958
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505958 CP **T03**

PB91-505966
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Saturday, 1985.
PB91-505966 CP **T03**

PB91-505974
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505974 CP **T02**

PB91-505982
NAPAP Emissions Enventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Spring Saturday, 1985.
PB91-505982 CP **T02**

PB91-505990
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-505990 CP **T03**

PB91-506006
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Spring Sunday, 1985.
PB91-506006 CP **T03**

PB91-506014
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506014 CP **T02**

PB91-506022
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506022 CP **T02**

PB91-506030
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506030 CP **T03**

PB91-506048
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Weekday, 1985.
PB91-506048 CP **T03**

PB91-506055
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Source Modelers' Tape - Summer Weekday, 1985.
PB91-506055 CP **T02**

PB91-506063
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506063 CP **T02**

PB91-506071
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506071 CP **T03**

PB91-506089
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Saturday, 1985.
PB91-506089 CP **T03**

PB91-506097
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506097 CP **T02**

PB91-506105
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Nonmobile Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506105 CP **T02**

PB91-506113
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506113 CP **T03**

PB91-506121
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Summer Sunday, 1985.
PB91-506121 CP **T03**

PB91-506139
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506139 CP **T02**

PB91-506147
NAPAP Emissions Inventory (Version 2): U.S. and Canadian TSP Nonmobile Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506147 CP **T02**

PB91-506154
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Mobile Sources Modelers; Tapes - Fall Weekday, 1985.
PB91-506154 CP **T03**

PB91-506162
NAPAP Emissions Inventory (Version 2): U.S. and Canada THC Nonmobile Sources Modelers' Tapes - Fall Weekday, 1985.
PB91-506162 CP **T03**

PB91-506170
NAPAP Emissions Inventory (Version 2): U.S. and Canada TSP Mobile Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506170 CP **T02**

PB91-506188
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Saturday, 1985.
PB91-506188 CP **T02**

PB91-506196
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Spring Sunday, 1985.
PB91-506196 CP **T02**

PB91-506204
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Weekday, 1985.
PB91-506204 CP **T02**

PB91-506212
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Saturday, 1985.
PB91-506212 CP **T02**

PB91-506220
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Summer Sunday, 1985.
PB91-506220 CP **T02**

PB91-506238
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Weekday, 1985.
PB91-506238 CP **T02**

PB91-506246
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Saturday, 1985.
PB91-506246 CP **T02**

PB91-506253
NAPAP Emissions Inventory (Version 2): U.S. and Canada Natural Particulate Sources Modelers' Tape - Fall Sunday, 1985.
PB91-506253 CP **T02**

PB91-506295
Retrofit Costs for SO2 and NOX Control Options at Coal-Fired Plants (for Microcomputers).
PB91-506295 CP **D02**

PB91-506469
Integrated Air Pollution Control System (IAPCS), Executable Model (Version 4.0) (for Microcomputers).
PB91-506469 CP **D02**

PB91-506477
Integrated Air Pollution Control System (IAPCS), Executable Model and Source Model (Version 4.0) (for Microcomputers).
PB91-506477 CP **D03**

PB91-506816
Toxic Release Inventory (TRI), 1988: Reporting Facilities Names and Addresses.
PB91-506816 CP **T02**

PB91-506964
Consolidated List of Chemical Subject to Reporting under the Emergency Planning and Community Right to Know Act: SARA Section 302 Extremely Hazardous Substances, CERCLA Hazardous Substances and SARA Section 313 Toxic Chemicals (Title III, List of Lists) (for Microcomputers).
PB91-506964 CP **D02**

PB91-592000
Hazardous Waste Data Management System Extract Tape.
PB91-592000 Subscription$5,320.00

PB91-904200
EPA (Environmental Protection Agency) Publications Bibliography, Quarterly Abstract Bulletin.
PB91-904200 Subscription

PB91-911600
Pesticide Compact Label File - 1990 Updates.
PB91-911600 Subscription

PB91-911699
Compact Label File - 1991 (Fiche 1 - 4833).
PB91-911699 MF**$1450.00**

PB91-921204
Progress Toward Implementing Superfund. Fiscal Year 1989.
PB91-921204 PC **A16**/MF **A02**

PB91-921205
Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites.
PB91-921205 PC **A14**/MF **A02**

PB91-921206
Guidance on Remedial Actions for Superfund Sites with PCB Contamination.
PB91-921206 PC **A07**/MF **A01**

PB91-921208
Guidance for Data Useability in Risk Assessment. Interim Report.
PB91-921208 PC **A12**/MF **A02**

PB91-921312
Guidance for Data Useability in Risk Assessment.
PB91-921312 PC **A02**/MF **A01**

TR-130
Calibration Methodology for the Double Sample of the National Lake Survey Phase II Sample.
PB91-149542 PC **A05**/MF **A01**

TR-1242-59
Drinking Water Criteria Document on Carbofuran.
PB91-143412 PC **A06**/MF **A01**

TR-1242-60B
Drinking Water Criteria Document on Nitrate/Nitrite.
PB91-142836 PC **A08**/MF **A01**

TR-1242-62A
Drinking Water Criteria Document on Barium.
PB91-142869 PC **A08**/MF **A01**

TR-1242-64A
Drinking Water Criteria Document on Chromium.
PB91-142844 PC **A09**/MF **A01**

TR-1242-65
Drinking Water Criteria Document on Selenium.
PB91-142828 PC **A09**/MF **A01**

UCRL-ID-105266
Guidance document for prepermit bioassay testing of low-level radioactive waste.
DE91002995 PC **A04**/MF **A01**

USGS/WRI-90-4018
Comparison of Recording Current Meters in Shallow Waters of San Francisco Bay, California.
PB91-156331 PC **A05**/MF **A01**

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
SPRINGFIELD, VA 22161

NTIS® ORDER FORM

TELEPHONE ORDERS
Call (703) 487-4650

FAX this form (703) 321-8547 TELEX 89-9405 Subscriptions: (703) 487-4630
For RUSH and EXPRESS orders call (800) 553-6847

- HANDLING FEE: A handling fee is required for each order except Express, Rush, Subscription, QuikSERVICE, or Pickup orders.
- SHIPPING: **U.S.:** Printed reports and microfiche copies are shipped First Class Mail or equivalent.
  FOREIGN: *Regular service: Printed reports and microfiche copies are shipped surface mail.*
  Air Mail service to Canada and Mexico: add $3.50 per printed report; 75¢ per microfiche copy.
  Air Mail service to all other addresses: add $7.50 per printed report; $1 per microfiche copy.
  Subscriptions and standing orders are sent surface mail; contact NTIS for Air Mail rates.

1 *Address Information*

DTIC Users Code:_____ Contract No. __ _____ __
Last six digits

PURCHASER: DATE:_____

Last Name First Initial

Title

Company/Organization

Address

City/State/ZIP

Attention

Telephone number

SHIP TO (Enter ONLY if different from purchaser):

Last Name First Initial

Title

Company/Organization

Address

City/State/ZIP

Attention

Telephone number

2 *Method of Payment*

☐ Charge my NTIS Deposit Account __ __ __ __ __ – __

☐ Check/Money order enclosed for $_____
(Payable to NTIS, in U.S. dollars)

Charge my ☐ Amer. Express ☐ VISA ☐ MasterCard

☐ Purchase order **ADD $7.50 per order†**

Account No. _____ Exp. _____

Purchase Order No. _____

Signature: _____
(Required to validate all orders)

3 *Order Selection* **(For computer products, see reverse)**

Enter NTIS order number(s) (Ordering by title only will delay your order)	Customer†† Routing (up to 8 digits)	QUANTITY Printed Copy	QUANTITY Micro-fiche	UNIT PRICE	Foreign Air Mail	TOTAL PRICE
1. /REB						
2. /REB						
3. /REB						
4. /REB						
5. /REB						
6. /REB						
7. /REB						

☐ **OVER**—Order continued on reverse

SUBTOTAL From Other Side	
Regular Service Handling Fee per order ($3 U.S., Canada, and Mexico; $4 others)	
Purchase Order Fee if required ($7.50)	
GRAND TOTAL	

†Purchase Order Service: There is a $7.50 charge for this service. It is restricted to U.S. addresses There is no additional charge for subscription orders. A late payment charge will be applied to all billings more than 30 days overdue.

†† Customer Routing Code: NTIS can label each item for routing within your organization. If you want this service, put your routing code in this box.

NTIS does not permit return of items for credit or refund. A replacement will be provided if an error is made in filling your order, if the item was received in damaged condition, or if the item is defective.

PR-OFA
11/90

U.S DEPARTMENT OF COMMERCE
National Technical Information Service
SPRINGFIELD, VA 22161

NTIS® ORDER FORM—Side 2

3 *Order Selection (Cont.)*

Enter the NTIS order number(s) (Ordering by title only will delay your order)	Customer Routing	QUANTITY Printed Copy	QUANTITY Micro-fiche	UNIT PRICE	Foreign Air Mail	TOTAL PRICE
8. /REB						
9. /REB						
10. /REB						
11. /REB						
12. /REB						
13. /REB						
14. /REB						
15. /REB						
16. /REB						
17. /REB						
18. /REB						
19. /REB						
					Subtotal	

After the original stock of a technical report is exhausted, NTIS reprints specifically for each order directly from a master archival copy. These printed-to-order copies are the best possible reproductions.

ENTER this amount on the other side of this form.

4 *Computer Products*

If you have questions about a computer product, please call the Federal Computer Products Center at (703) 487-4763.

Enter the NTIS order number(s) (Ordering by title only will delay your order)	Customer Routing	Quantity**	TAPE DENSITY (9 track) 1600 bpi	TAPE DENSITY (9 track) 6250 bpi	TOTAL PRICE
20. /REB					
21. /REB					
22. /REB					
23. /REB					
				Subtotal	

All magnetic tapes are sent air mail or equivalent service to both U.S. and foreign addresses.

ENTER this amount on the other side of this form.

SPECIAL RUSH and EXPRESS ORDERING OPTIONS

Telephone: **(800) 553-6847**
in Virginia call:
(703) 487-4650

RUSH SERVICE—Orders are processed within 24 hours and sent First Class or equivalent. U.S., Canada, and Mexico, add $12 per item, other countries add $14.50 per item (Air Mail postage additional, see other side).

EXPRESS SERVICE—Orders are processed within 24 hours AND delivered by overnight courier. Available to U.S. addresses only, add $22 per item.

The following EPA libraries maintain for reference purposes completed sets of EPA reports, on microfiche.

Region I Library
Room 2100-B, JFK Federal Bldg.
Boston, Massachusetts 02203

Region II Library
26 Federal Plaza
New York, New York 10278

Region II Field Office Library
Edison, New Jersey 08837

Region 3 Library (3PM21)
841 Chestnut Street
Philadelphia, PA 19107

Headquarters Library, Room 2904 WSM, PM-211A
401 M Street, S.W.
Washington, D.C. 20460

Central Regional Laboratory Library
839 Bestgate Rd.
Annapolis, Maryland 21401

Region IV Library
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Reference Library, MD-35
Office of Administration
Research Triangle Park,
North Carolina 27711

Environmental Research Laboratory
College Station Road
Athens, Georgia 30613

Environmental Research Laboratory
Sabine Island, Bldg. 29
Gulf Breeze, Florida 32561

Region V Library
230 South Dearborn Street Room 1420
Chicago, Illinois 60604

A.W. Breidenbach Research Center Library
26 West St. Clair Street
Cincinnati, Ohio 45268

Environmental Research Laboratory
6201 Congdon Boulevard
Duluth, Minnesota 55804

Motor Vehicle Emission Laboratory
2565 Plymouth Road
Ann Arbor, Michigan 48105

Region VI Library
First International Bldg.
1201 Elm Street
Dallas, Texas 75270

Robert S. Kerr Environmental Research Laboratory
P.O. Box 1198
Ada, Oklahoma 74820

Region 7 Library
726 Minnesota Avenue
Kansas City, KS 66101

Region VIII Library 8PM-ASL
1860 Lincoln Street
Denver, Colorado 80295

National Enforcement Investigation Center
Bldg. 53
Box 25227, Denver Federal Center
Denver, Colorado 80225

Region IX Library
215 Fremont Street
San Francisco, California 94105

National Environmental Research Center
P.O. Box 15027
Las Vegas, Nevada 89114

U.S. EPA Information Center M/S 541
1200 Sixth Avenue
Seattle, Washington 98101

Corvallis Environmental Research Laboratory
200 S.W. 35th Street
Corvallis, Oregon 97330

Los Angeles Public Contact Office
300 N. Los Angeles Street
Los Angeles, California 90012