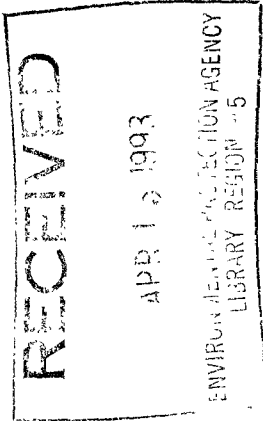


TECHNOLOGY TRANSFER

from
Office of Research and Development
Office of Science, Planning, and Regulatory Evaluation



New Technology Transfer Publications

[use form in back to order]

Manuals

Guidelines for Water Reuse (625/R-92/004)

Opportunities for water reuse and the benefits that water reuse can present as reduced investment for potable water systems and other infrastructure are delineated in this document. The key water reuse planning issues are identified and discussed in a manner that liberally employs case study experience to illustrate the importance of each issue and successful solutions.

This manual will be a valuable tool for regulatory agencies at all levels of government, engineers, planners, and all other groups affected by water reuse programs.

A major portion of the manual deals with the water quality requirements for reclaimed water used in irrigating various vegetation and crops, industrial cooling and process water, construction projects, recreational projects, aesthetic impoundments, ground-water recharge, and stream augmentation. Although direct potable water reuse is discussed, it is dismissed at this time because more definitive research on all microconstituents of raw and treated municipal wastewater is needed.

A comprehensive listing of state water reuse guidelines by category of reuse is provided, along with an analysis of the variations between states within each category. This analysis is then followed with a series of suggested guidelines for water quality required for each category of reuse. These guidelines are based on the state guidelines and experiences described earlier, and they offer a suggested starting point for state, regional, and local governments that plan to establish water reuse procedures, both in terms of water quality requirements and procedures for design, operation, and monitoring.

Wastewater Treatment/Disposal for Small Communities (625/R-92/005)

This manual describes the key issues that must be addressed by small communities in developing a wastewater management program. Those key issues are planning, management, site evaluation, wastewater characteristics, and technological alternatives. They are addressed in a straightforward, easily understandable context to provide small community decision makers and planners with a resource that enables them to develop optimum planning and management schemes; determine the adequacy of site evaluation proposals; and judge the rationality of proposed collection and treatment methods.

Small community planners and management officials can use this manual as a project development guide. It can also be used with more detailed technical resource documents to guide consulting engineers and state regulators through project design and construction.

The manual is a useful tool to small community planners and decision makers who must integrate planning and management with technology in the thousands of small rural communities across the country.

Seminar Publications

Organic Air Emissions from Waste Management Facilities (625/R-92/003)

The organic chemicals contained in wastes processed during waste management operations can volatilize into the atmosphere and cause toxic or carcinogenic effects or contribute to ozone formation. Because air emissions from waste management operations pose a threat to human health and the environment, regulations were developed to control organic air emissions from these operations

3 DAYS ONLY

The U.S. Environmental Protection Agency (EPA) has promulgated standards under the authority of Section 3004 of the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act (RCRA). The standards limit organic air emissions as a class from process vents and equipment leaks at hazardous waste treatment, storage, and disposal facilities requiring a permit under Subtitle C of RCRA. EPA has also promulgated standards under the authority of Section 112 of the Clean Air Act (CAA) that limit emissions of benzene from benzene waste operations.

This document will help improve understanding of those air rules that apply to waste management operations, focusing on control technologies and the RCRA and CAA regulations.

The National Rural Clean Water Program Symposium (625/R-92/006)

The Rural Clean Water Program (RCWP), a federally sponsored nonpoint source control program, was initiated in 1980 as an experimental effort to address agricultural nonpoint source pollution problems in rural watersheds across the country. The RCWP was administered by the U.S. Department of Agriculture (USDA), Agricultural Stabilization and Conservation Service, in cooperation with the U.S. EPA and other USDA agencies.

This document contains the peer-reviewed technical papers presented at the National RCWP Symposium, held September 13-17, 1991. These papers document the results of the RCWP, which ended in 1992. The technical papers address the following topics:

- Water quality and land treatment monitoring
- Relating water quality to land treatment
- Land treatment and operation and maintenance of best management practices
- Project coordination and farmer participation
- Institutional arrangements, program administration and project spin-offs
- Information and education
- Technology transfer, lessons learned, and socioeconomics
- Future research needs.

These papers reflect the results of projects implemented in 22 states. The technical papers were written and re-

viewed by individuals from federal and state government and leading academic institutions.

RCRA Corrective Action Stabilization Technologies (625/R-92/014)

EPA has begun implementing an aggressive program strategy (stabilization) to increase the number of RCRA cleanup activities. While comprehensive facility cleanup is the long-term goal for the RCRA corrective action program, the new, stabilization initiative emphasizes the importance and value of controlling releases and preventing the further spread of contaminants.

This seminar publication provides an overview of many technologies that can be used in the stabilization concept. Technologies discussed include covers, grouting, slurry walls, hydrofracture, horizontal well drilling, vacuum extraction, and bioventing.

Information included in each discussion includes applications and limitations, screening criteria, implementation issues, and monitoring strategies.

Control of Lead and Copper in Drinking Water (625/R-93/001)

This publication presents subjects relating to the control of lead and copper in drinking water systems. It is of interest to system owners, operators, managers, and local decision makers, such as town officials, regarding drinking water treatment requirements and the treatment technologies suitable for them. State and federal regulatory officials, consultants, academicians, and manufacturers will also find this information useful.

Chapter one discusses regulatory issues, presenting both an overview of the new federal requirements and a state perspective on implementing these requirements. Chapter two presents information about the corrosion characteristics of materials. Chapter three discusses the design and implementation of a corrosion monitoring program. Topics include baseline monitoring, selecting an analytical laboratory, monitoring at the customer's tap, designing a monitoring program using utility employees and customers, and integrating water testing and occupancy certification. Chapter four focuses on corrosion control assessment,

including coupon tests, pipe loop tests, and electrochemical methodologies for corrosion measurement. Finally, corrosion control strategies are addressed in chapter five, which includes an overview of control strategies as well as secondary effects. Throughout, the document presents the experience of utilities in monitoring, assessment, and control strategies.

Wellhead Protection: A Guide for Small Communities (625/R-93/002)

This document is designed to help small community decision makers, utility personnel and other interested community members. It provides the basic information needed to begin a wellhead protection program. Chapter two introduces some basic concepts about ground water that are useful in developing wellhead protection programs. It discusses the hydrogeologic cycle, types of aquifers, and fundamentals of groundwater movement. Chapter three explains how ground water becomes contaminated, sources of ground water contamination, and the potential effects on human health and local economies. It also discusses legislation and regulations designed to protect ground water supplies. Chapter four, the core of the publication, presents the five steps for developing a wellhead protection program. The remaining sections present case studies, lists of publications, financial assistance programs and regional resources.

Handbooks

Vitrification Technologies for Treatment of Hazardous and Radioactive Waste (625/R-92/002)

Vitrification technologies are being considered for remediating hazardous waste sites and are currently being used to treat high-level radiation waste. The purpose of the technology is to immobilize metals and destroy organics by pyrolysis. This handbook presents the theory behind the vitrification process and reviews potential applications and limitations of vitrification for waste treatment, including radioactive waste.

The handbook describes both *in situ* and *ex situ* methods and lists locations where the process has been applied. It further presents the various characteristics of treated material, off-gas treatment concerns, and cost. It also provides a description of the physical and chemical

tests that are typically used in a treatability study.

This handbook is one of the few comprehensive documents available on vitrification technologies and will be useful to scientists and engineers involved with hazardous and radioactive waste disposal.

Control of Air Emissions from Superfund Sites (625/R-92/012)

This document is an easy-to-use tool for decision makers to evaluate air emission control devices for use with Superfund remediation actions. It will assist in the selection of cost-effective control options. The audience for this handbook is engineers and scientists involved in preparing remedial design (RD) plans for Superfund sites. The handbook contains a summary of existing information, and an overview of the topic of air emission controls is presented. It contains background information to familiarize the user with the technical basis for each control technology. Specific guidance is provided to assist the user in limiting the choices of potential control technologies and in selecting a specific set of control technologies for a given application. References are included for users seeking more detailed guidance. The user must perform a detailed engineering evaluation of the control options, gather vendor information, and perform feasibility studies.

Many of the cleanup processes used at Superfund sites are emerging technologies with limited operating histories. For these technologies, data on which to base emission estimates and control needs are very limited. Furthermore, each Superfund site has a unique set of contaminants and site conditions. These site-specific factors may force modifications of the cleanup hardware or operating conditions which could affect air emissions.

Environmental Regulations and Technology Publication

Control of Pathogens and Vectors In Sewage Sludge (625/R-92/013)

This document describes the federal requirements concerning pathogens in sewage sludge and septage destined for land application or surface disposal, and it provides guidance for meeting those requirements. It is especially intended for

- Owners and operators of municipal wastewater treatment works.

- Developers or marketers of sludge treatment processes.
- Groups that distribute and market sludge products.
- Individuals involved in applying sludge or septage to land.
- Regional, state, and local government officials responsible for implementing and enforcing the Part 503 Subpart D regulation. These include the Regional Sludge Coordinators, State Sludge Coordinators, and permit writers.
- Consultants to these groups.

Chapter 2 of this document discusses why pathogen control is necessary, and Chapters 3 through 6 summarize the current federal requirements under Subpart D of Part 503. Chapter 7 discusses sampling and analytical techniques that can be used to meet the monitoring requirements. Chapters 8 and 9 describe the sludge treatment processes listed under Part 503. Chapter 10 discusses the kind of support EPA's Pathogen Equivalency Committee can provide to both the regulated community and the permitting authorities involved in the implementation of the Part 503 requirements for pathogen control.

Under authority of Sections 405(d) and (e) of the Clean Water Act (CWA), as amended (33 U.S.C.A. §1251, *et seq.*), EPA promulgates regulations to protect public health and the environment from any reasonably anticipated adverse effects of certain pollutants that may be present in sewage sludge. Standards for the Use or Disposal of Sewage Sludge, 40 CFR Part 503, was promulgated on December 23, 1992. It establishes requirements for the final use and disposal of sewage sludge in three circumstances. First, the regulations establish requirements for sewage sludge when the sludge is applied to the land for a beneficial purpose (including sewage sludge or sewage sludge products that are sold or given away for use in home gardens). Second, the regulations establish standards for sludge when the sludge is disposed on land by placing it on surface disposal sites (including sewage sludge-only landfills). Third, the regulations establish requirements for sewage sludge when incinerated.

The standards for each end use and disposal practice consist of general requirements, numerical limits on the pollutant concentrations in sewage sludge, management practices and, in some cases, operational requirements. The final rule also includes monitoring and record-keeping requirements. Reporting requirements are specified for POTWs with a design flow rate equal to or greater than one million gallons per day, and POTWs that serve 10,000 people or more. The

standards apply to publicly and privately owned treatment works that generate or treat domestic sewage sludge, as well as to any person who uses or disposes of sewage sludge from such treatment works.

Summary Reports

Small Community Water and Wastewater Treatment (625/R-92/010)

This report presents information on the unique needs of small communities facing new water and wastewater treatment requirements. The information focuses on treatment technologies suited for small community application and encourages effective communication within and between small communities.

This report contains three main sections: technology overviews, small community case studies, and a resource directory. The technology overviews address wastewater collection and treatment technologies and drinking water treatment technologies. Each overview presents a process description and discussions of operation and maintenance requirements, technology limitations, and financial considerations.

The case studies show how six small communities addressed their site-specific drinking water and wastewater problems. Case studies were selected to illustrate the use of cost-effective technologies and available technical and financial assistance.

The resource directory presents listings of organizations (EPA; Coalition of Environmental Training Centers; Rural Community Assistance Program; U.S. Department of Agriculture, Extension Service; and National Rural Water Association) that can provide a wide variety of technical and financial services to small communities.

This report will be a valuable resource for small communities facing the challenges of improving and maintaining the infrastructure that supports the provision of safe drinking water and reliable wastewater collection and treatment.

Software

Groundwater Information Tracking System with STATistical Analysis Capability (625/11-91/002)

The Nationwide Groundwater Information Tracking System with STATistical Analysis Capability GRITS/STAT is a comprehensive ground-water database/analysis system designed to store and retrieve information generated through

ground-water monitoring programs at RCRA, CERCLA, and other regulated facilities and sites.

The PC-based system provides data entry, storage, and analysis capabilities for the IBM-AT and compatible platforms (640K RAM required). Establishing an electronic database of ground-water information is a must for efficient environmental monitoring.

The database section of the system stores facility information including latitude, longitude, and state and county FIPS codes. Well information includes well construction, some hydrologic information, and location codes. Parameter information is selected individually or as custom parameter groupings.

Replicates, duplicates, individual non-detects (elution and matrix interferences), laboratory data qualifiers, CAS numbers, method codes, etc. are accommodated in the data structures. Full editing capability exists for the facility, well, date, and parameter information.

Spreadsheet data entry is accomplished by Lotus templates. Laboratory qualifiers and individual non-detect values are included in the template data entry. After the information is entered in Lotus, the GRITS/STAT system imports the information and stores the data in the database. Database report generation includes well x parameter, parameter x date, date x well, CME/paired results, single date, all dates, well data report, parameter data report, sampling dates report, and data scan report.

The statistical data analysis requirements for detection, compliance and corrective monitoring for RCRA subtitle C and D are implemented. The statistical analysis procedures include but are not limited to ANOVA, Prediction Intervals, Tolerance Intervals, Confidence Intervals, Control Charts, Probability Plots, Normality Tests, Homogeneity of Variance Tests, T-Test, and Wilcoxin Rank Sum Test. Defining the scope of the data analysis allows selection of parameter, range of dates, upgradient wells, downgradient wells, and filtering of laboratory quality data. The system provides a powerful tool for statistical analysis, but proper guidance should be obtained from the appropriate permit or reference to appropriate guidance documents. Proper statistical guidance can be found in the following documents:

- *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities - Interim Final Guidance Document, 4/89 (NTIS # PB89-151 047) - EPA/530-SW-89-026*
- *Statistical Training Course for Groundwater Monitoring Data Analysis (EPA/530/R-93/003) (Call 202-260-9327 to order.)*

The database design allows exporting of the electronically stored ground-water information to other software applications (e.g., SURFER Version 4). The information stored in the GRITS/STAT system can potentially be transferred to other future database/tracking/analysis systems. The development of GRITS/STAT has been a collaborative effort between the U.S. EPA Office of Solid Waste/Permits and State Programs Division, Regions V and VII, and the U.S. EPA Office of Research and Development/Center for Environmental Research Information (CERI).

EPA is establishing a database of GRITS/STAT users. The database will be used to notify GRITS/STAT users of updates to the software and potential problems and solutions encountered in using the software. If you are a GRITS/STAT user, send your name, organization, address, and phone number to the following:

**USEPA
Attn: GRITS/STAT
Mail Code #5303 W
401 M St., S.W.
Washington DC 20460**

EPA is pleased to offer you software we feel will enable you to analyze technical data efficiently. Since the software is currently being improved and expanded, send any problems encountered while using it or enhancement ideas for it to the above address.

Future Technology Transfer Meetings

Bioremediation of Hazardous Wastes: Research, Development, and Field Evaluations

This annual symposium is sponsored by the U.S. Environmental Protection Agency's Biosystems Technology Development Program, which coordinates EPA's research, development, and evaluation of full-scale bioremediation activities. The Biosystems Technology Development Program strives to balance research on degradation processes with engineering activities that contribute to environmental cleanups.

This symposium will present and discuss the research, development, and field evaluations of bioremediation projects undertaken in 1992 by EPA's Biosystems Technology Development Program. Bioremediation projects conducted by EPA's Hazardous Substance Research Centers also will be presented. Topics to be discussed cover the *in situ* treatment of the surface and subsurface and the *ex situ*

treatment of aqueous and gaseous phase and soils. Presentations and poster sessions of ongoing and completed projects include the following:

- Bioremediation Field Initiative
- Performance Evaluation
- Field Research
- Pilot-Scale Research
- Process Research

The presentations will be beneficial to researchers and field personnel in bioremediation from federal, state, and local agencies; industry; vendors; contractors; and academia.

The symposium is being held in Dallas, TX, May 4-6, 1993. For registration information contact Helen Murray, ERG, at 617-674-7307 or register by fax at 617-674-2906. For technical information on symposium content, contact Fran Kremer, CERI, at 513-569-7346.

Bioremediation of Hazardous Wastes: Practical Approaches to Implementation

This seminar series is intended to provide participants with state-of-the-art information on the practical aspects of implementing bioremediation. The seminar will address site characterization issues specific to biotreatment, carrying out treatability studies, and approaches for *ex situ* and *in situ* treatment of soils, water, sediments, sludges, and gaseous phases.

Some background information will be provided; however, participants should have experience in the use of the technology. The seminar will be beneficial to individuals from federal, state, and local agencies; industry; vendors; contractors; and academia.

Dates and locations are as follows:
May 20-21 - Atlanta, GA
June 7-8 - New York, NY
June 10-11 - Chicago, IL
June 21-22 - San Francisco, CA
June 24-25 - Denver, CO

For registration information contact Denise Gaffey, ERG, at 617-674-7317 or register by fax at 617-674-2906. For technical information on symposium content, contact Fran Kremer, CERI, at 513-569-7346.

Remediation of Sites Contaminated with Explosives and Radioactive Waste

This two-day seminar series, co-sponsored by the Department of Defense,

will involve sampling methodologies, treatment technologies, and management options for sites contaminated with explosives or radioactive waste. This information will be of use to scientists and engineers involved with site remediation or base closures and will include technologies under Subpart X of RCRA.

Topics include explosive safety, field screening methods for TNT, white phosphorous sediment sampling, radioactive soil characterization, reactive waste management, depleted uranium management, open burn/open detonation methods, incineration, biological treatment, physical/chemical methods, and volume reduction methods.

The dates and locations of future seminars are

July 20-21, 1993 - Sacramento, CA

July 22-23, 1993 - Dallas, TX

Aug. 24-25, 1993 - Newark, NJ

Aug. 26-27, 1993 - Wash., DC

For registration information contact Heike Milhench, ERG, at 617-674-7274 or register by fax at 617-674-2906. For technical information on seminar content, contact Ed Barth, CERL, at 513-569-7669.

Characterizing and Remediating Dense Nonaqueous-Phase Liquids at Hazardous Sites

This seminar series will deal with the evaluation and characterization of sites where dense nonaqueous-phase liquids (DNAPLs) are a problem. Types of DNAPLs and their behavior in the environment will be discussed. Options for remediation will be suggested. This information will be useful to scientists and engineers whose work involves any aspect of the management of a hazardous site that may contain DNAPLs. The speakers for the series include Dr. David Creamer, Dr. Robert Cohen, Dr. James Mercer, and Dr. Charles Newell.

The dates and locations of the seminars are

June 2, 1993 - Chicago, IL

June 3, 1993 - Kansas City, MO

June 15, 1993 - Bellevue, WA

June 16, 1993 - San Francisco, CA

June 29, 1993 - Dallas, TX

June 30, 1993 - Denver, CO

July 13, 1993 - Philadelphia, PA

July 14, 1993 - Atlanta, GA

July 27, 1993 - New York, NY

July 28, 1993 - Boston, MA

For registration information contact Elaine Brenner, ERG, at 617-674-7334 or

register by fax at 617-674-2906. For technical information on seminar content, contact Susan Schock, CERL, at 513-569-7551.

Tips on Using the Bibliographic Database in the ORD Electronic Bulletin Board System

Dial the ORD BBS at 513-569-7610 or 800-258-9605. The communications parameters are 8 data bits, no parity, 1 stop bit, full duplex and emulation VT-100 or VT-102. Once you are on-line, it will ask for your first name and last name. Then it will ask for a password (make one up that you will remember). Then type "OPEN 1" to get into the database. After about 90 seconds the Database Menu will come up. The ORD Bibliographic Database is a compendium of publications from EPA's Office of Research and Development (ORD) and its laboratories. This is a text searchable database, and you can combine searches to search for more than one field at once. Here is the main menu for the database:

ORD Bibliographic Database

Would you like to search by:

- [1] Title and abstract words
- [2] Title words
- [3] Authors
- [4] Laboratories
- [5] Sponsoring agencies
- [6] Performing organizations
- [7] EPA report numbers or substrings
- [8] NTIS order numbers (PB numbers)
- [9] Contract or grant numbers
- [10] Report years
- [O] On-line Document Ordering Information
- [Q] Quit ORD Bibliographic Database

When you type ? at the main menu you will see the following:

The ORD Bibliographic Database contains abstracts of all ORD research reports published since 1977. Although the database contains records from as far back as 1968, it is complete beginning in 1977. The purpose of the database is to provide an index to the thousands of documents produced by ORD. Hard copies of publications listed in the database can be ordered either from the National Technical Information Service (NTIS) or EPA-CERL. Ordering information is displayed when you type the letter O from the database main menu. The text of all help files is found in the file OBDHELP.ZIP, which can be downloaded

from the BBS main menu prompt (type D OBDHELP.ZIP).

You can display help for any prompt in the database by typing ? at the prompt you want help with.

Main Menu Options

- [1] Title and abstract words
Allows you to search by any words from the title or abstract of a report.
- [2] Title words
Allows you to search by any words from the title of a report.
- [3] Author
Allows you to search by the author's name.
- [4] Laboratories
Allows you to search using a controlled list of abbreviations of ORD laboratories that sponsored a report.
- [5] Sponsoring agencies
Allows you to search by the full name of a laboratory or organization that sponsored a report.
- [6] Performing organizations
Allows you to search by the name of the organization that wrote a report.
- [7] EPA report number or substring
Allows you to search by the EPA publication number (usually in the format EPA/600/#-###/###) or a substring of that number.
- [8] NTIS order number (PB numbers)
Allows you to search by the order number used by NTIS.
- [9] Contract or grant number
Allows you to search by a contract or grant number for the project for which a report is issued. It is usually an EPA report is issued. It is usually an EPA contract or grant number.
- [10] Report years
Allows you to search by the year a report was issued.
- [O] On-line Document Ordering Information
Display information on how to order publications listed in the database.
- [Q] Quit the ORD Bibliographic Database
Quits the database and returns you to the ORD electronic BBS.

To get further information about these options, type ? at the prompt for that option.

Enter a 1 and ? for Title and Abstract Search help:

Enter words from the title or abstract of a report. To search more than one word in a single title or abstract, separate them by

"&" (e.g., hazardous & waste). This will retrieve records including the words hazardous and waste in the title or abstract field. To search for several words where any of the words are in a title or abstract, separate the words by "," (e.g., dioxin, pcb). This will retrieve records with either dioxin or pcb in the title or abstract. To search for the root of a word with any ending, enter the root followed by "*" (e.g., hazard*). This will retrieve records with hazard, hazards, or hazardous in the title or abstract. Note that this type of search can take a very long time for common words.

Enter a 3 and ? for Author Search help:

Enter the first and/or last name of the personal author of the report. Not all reports have a personal author, but those that do frequently have several authors. To search more than one author for the same report, separate the names by "&" (e.g., Smith & Jones). This will retrieve reports with both Smith and Jones as authors). To search for more than one author where either one could be the author, separate them by "," (e.g., smith, jones). This will retrieve reports written by either Smith or Jones. Most authors in this database are listed by their first initial and last name instead of their full first name. It is best to search by the author's last name only, unless it is a very common name.

Enter a 4 and ? for Laboratory Search help:

Enter one of the abbreviations listed in the left column instead of the full lab name.

AEERL	=	Air & Energy Engineering Research Laboratory
AREAL	=	Atmospheric Research and Exposure Assessment Laboratory
CERI	=	Center for Environmental Research Information
ECAO-CI	=	Environmental Criteria & Assessment Office-Cincinnati
ECAO-RTP	=	Environmental Criteria & Assessment Office-Research Triangle Park
EMSL-CI	=	Environmental Monitoring Systems Laboratory-Cincinnati
EMSL-LV	=	Environmental Monitoring Systems Laboratory-Las Vegas
ERL-ADA	=	Environmental Research Laboratory-Ada
ERL-ATH	=	Environmental Research Laboratory-Athens
ERL-COR	=	Environmental Research Laboratory-Corvallis
ERL-DUL	=	Environmental Research Laboratory-Duluth
ERL-GB	=	Environmental Research Laboratory-Gulf Breeze

ERL-NAR	=	Environmental Research Laboratory-Narragansett
HERL	=	Health Effects Research Laboratory
OEETD	=	Office of Environmental Engineering & Technology Demonstration
OEPER	=	Office of Environmental Processes & Effects Research
OER	=	Office of Exploratory Research
OHEA	=	Office of Health and Environmental Assessment
OHR	=	Office of Health Research
OMMSQA	=	Office of Modeling, Monitoring Systems, & Quality Assurance
ORD	=	Office of Research and Development
ORPM	=	Office of Research Program Management
OSPPE	=	Office of Science, Planning, and Regulatory Evaluation
RREL	=	Risk Reduction Engineering Laboratory

To find documents sponsored by more than one laboratory, separate the abbreviations with "&" (e.g., AREAL & HERL - will find documents sponsored by both AREAL and HERL). Use this option carefully as most documents are sponsored by only one lab. To find documents sponsored by any of a number of laboratories, separate the lab abbreviations with "," (e.g., ERL-COR, ERL-ADA, ERL-GB to find documents sponsored by either ERL-COR or ERL-ADA or ERL-GB)

Enter a 5 and ? for the Sponsoring Agency Search Help:

Enter words from the name of the sponsoring agency. The sponsoring agency is the organization that sponsors the report or research. It is generally an EPA office or laboratory. There can be more than one sponsoring agency. A report can also have a performing organization that actually writes or produces the report. The performing organization is listed in a separate field. To search for a sponsoring agency, enter a word that is part of the name of the agency. You do not have to enter the entire agency name. To search more than one word in the same agency name or more than one agency responsible for the same report, separate the words by "&" (e.g., monitoring & systems & laboratory - will retrieve records with the words monitoring & systems & laboratory in an agency name). To search for more than one agency where either agency may have sponsored the report, separate the words by "," (e.g., corvallis, duluth - will retrieve records where either corvallis or duluth is in an agency name).

Enter a 6 and ? for Performing Organization Search help:

Enter words from the name of the performing organization. The performing organization is the organization or company that writes the report. It can be an EPA office or laboratory, a contractor, a grantee, etc. There can be more than one performing organization. A report can also have a sponsoring agency that sponsors the report or research by issuing a contract, grant, etc. The sponsoring agency is listed in a separate field. To search for a performing organization, enter a word that is part of the name of the organization (e.g., Booz). You do not have to enter the entire organization name. To search more than one word in the same organization name or more than one organization responsible for the same report, separate the words by "&" (e.g., university & oregon - will retrieve records with both university and oregon in an organization name). To search for more than one organization where either organization wrote the report, separate the words by "," (e.g., oregon, booz - will retrieve records where either oregon or booz is in an organization name).

Enter a 7 and ? for EPA report numbers or substrings help:

Would you like to search by:

- [1] Full EPA report numbers
- [2] Organization codes (540, 600, 625)
- [3] Series codes (0-10, D, J, M, X)
- [R] Return to previous menu

Option 1 is to search for the full EPA report number (e.g., EPA/600/2-88/064).

Option 2 is to search for the organization code - the 3-digit number following the "EPA" in the report number. The organization codes are 600, 625, or 540.

Option 3 is to search for the series code, which is the number indicating what the document type is. The series code follows the organization and comes before the year. In the report number "EPA/600/2-88/064," 600 is the organization code and 2 is the series code. Type ? at the prompt for organization code or series code to get a list.

Enter an 8 and ? for NTIS Order # Search help:

Enter the entire NTIS order number including punctuation. Most NTIS numbers for EPA documents have one of the following formats:

PBYR-##### (where YR is the year and the #s represent an accession number)

PB-##### (for records prior to 1980 where the #s represent an accession number).

To search more than one number, separate them by commas (e.g., PB89-100000, PB89-100001).

Enter a 9 and ? for Contract or Grant # Search help:

Enter the full contract or grant number including the punctuation (e.g., EPA-68-01-0001, EPA-R-100001). Your input must match the contract or grant number exactly. However, you can use "*" on the end as a wildcard (e.g., EPA-68-01-*).

Enter a 10 and ? for Report Year Search help:

You can search a single year or use one of the following operators to search multiple years:

<(e.g., <1985 for 1977-1984)
>(e.g., >1985 for 1986-present)
<=(e.g., <=1985 for 1977-1985)
>=(e.g., >=1985 for 1985-present)
... (e.g., 1985...1987 for 1985-1987 inclusive)

Although the database has a few records from as far back as 1968, it is only complete beginning in 1977. Searching by year can be extremely slow except when you search for a single year. If you need to use any of the operators listed in the previous paragraph, the search can take up to a few minutes.

Enter a O and ? for On-line Document Ordering Information help:

You may order some of the documents listed in this database by answering a questionnaire from the Main Board. The documents that indicate "Available from CERL: Yes" in the full record display on this database may be ordered on-line. All other documents must be ordered from NTIS. To use the on-line questionnaire to order documents from CERL, type S from the "Main Board Command?" prompt. Then choose the number of the option that reads "Order form for EPA ORD publications from CERL." You will be prompted to enter the EPA report number, which you can find on the full record or summary record display in this database. You may order up to five publications each time you answer the questionnaire. For questions about publications or orders, you can leave a message addressed to "CERL PUBS" on the Main Board.

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ERRATA: Technology Transfer Seminar Publication: Control of Biofilm Growth In Drinking Water Distribution Systems (625/R-92/001)

The workshop participants listed below were left out of this publication. These individuals contributed significantly to the document by their attendance at and participation in the workshop, and the provision of additional materials.

Bob Beurivage, Manchester, NH
Paul Berger, EPA-OGWDW, Washington, DC
David Chinn, AWWA, Washington, DC
Stephen Clark, EPA-OGWDW, Washington, DC
Ed Geldreich, EPA-RREL-DWRD, Cincinnati, OH
Joe Glicker, Portland Water Bureau, Portland, OR
Arnold Greenberg, EBMUD, Oakland, CA
Mike Hage, CT-DHES, Hartford, CT
Anita Highsmith, DHHS-PHS-CDC, Atlanta, GA
Steve Hubbs, Louisville Water Co., Louisville, KY
William Jarvis, DHHS-PHS-CDC, Atlanta, GA
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Jay Vasconcelos, EPA-MEL, Port Orchard, WA
Roy Wolfe, MWDSC, LaVerne, CA
Steve Watterman, San Diego Health Dept., San Diego, CA

1993 AWWA Annual Conference

EPA's ORD and the Office of Groundwater and Drinking Water (OGWDW) will again cooperate in an exhibit at the June 6-10, 1993, American Water Works Association's Annual Conference in San Antonio, Texas. Approximately 11,000 state and utility personnel along with consultants, manufacturers and academicians regularly attend this meeting.

As part of the exhibit, ORD and OGWDW display and make available to participants many publications that are pertinent to the Agency's Drinking Water Program. At last year's meeting almost 3,000 ORD publications were requested by visitors to the booth.

1993 AWMA Annual Meeting

EPA uses the Air and Waste Management Association's annual meeting as an opportunity to display some of its research and technology transfer achievements in air pollution control and waste management. The annual meeting is scheduled for June 13-18, 1993, in Denver, CO. A major part of EPA's exhibit consists of distributing technology transfer products and guidance documents from the Office of Research and Development and the program offices. In addition, demonstrations are given of various computer software packages available for assisting the regulated community with compliance problems.

Technology Transfer Meetings

Meeting	Title	Date(s)	Location	Contact	Phone No.
Symposium	Bioremediation of Hazardous Wastes: Research, Development, and Field Evaluations	May 4-6, 1993	Dallas, TX	Helen Murray (registration)	617-674-7307
				Fran Kremer (content)	513-569-7346
Seminar	Bioremediation of Hazardous Wastes: Practical Approaches to Implementation	May 20-21, 1993	Atlanta, GA	Denise Gaffey (registration)	617-674-7317
		June 7-8, 1993 June 10-11, 1993 June 21-22, 1993 June 24-25, 1993	New York, NY Chicago, IL San Francisco, CA Denver, CO	Fran Kremer (content)	513-569-7346
Seminar	Remediation of Sites Contaminated with Explosives and Radioactive Waste	July 20-21, 1993	Sacramento, CA	Heike Milhench (registration)	617-674-2906
		July 22-23, 1993 Aug. 24-25, 1993 Aug. 26-27, 1993	Dallas, TX Newark, NJ Wash., DC	Ed Barth (content)	513-569-7669
Seminar	Characterizing and Remediating Dense Nonaqueous-Phase Liquids at Hazardous Sites	June 2, 1993	Chicago, IL	Elaine Brenner (registration)	617-674-7334
		June 3, 1993 June 15, 1993 June 16, 1993 June 29, 1993 June 30, 1993 July 13, 1993 July 14, 1993 July 27, 1993 July 28, 1993	Kansas City, MO Bellevue, WA San Francisco, CA Dallas, TX Denver, CO Philadelphia, PA Atlanta, GA New York, NY Boston, MA	Susan Schock (content)	513-569-7551

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MANUALS

Phosphorus Removal (Sept. 1987) 625/1-87/001
 Land Treatment of Municipal Wastewater (Oct. 1981) 625/1-81/013
 Supplement for Land Treatment of Municipal Wastewater (Oct. 1984) 625/1-81/013a
 Dewatering Municipal Wastewater Sludges (Sept. 1987) 625/1-87/014
 Land Application of Municipal Sludge (Oct. 1983) 625/1-83/016
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 Alternative Collection Systems for Small Communities (Oct. 1991) 625/1-91/024
 • Guidelines for Water Reuse (Sept. 1992) 625/R-92/004
 • Wastewater Treatment/Disposal for Small Communities (Sept. 1992) 625/R-92/005

TECHNICAL CAPSULE REPORT

Radon-Resistant Construction Techniques for New Residential Construction: Technical Guidance 625/2-91/032

SEMINAR PUBLICATIONS

Permitting Hazardous Waste Incinerators 625/4-87/017
 Meeting Hazardous Waste Requirements for Metal Finishers 625/4-87/018
 Transport and Fate of Contaminants in the Subsurface 625/4-89/019
 Corrective Actions - Technologies and Applications 625/4-89/020
 Solvent Waste Reduction Alternatives 625/4-89/021
 Requirements for Hazardous Waste Landfill Design, Construction and Closure 625/4-89/022
 Technologies for Upgrading Existing or Designing New Drinking Water Treatment Facilities 625/4-89/023
 Risk Assessment, Management and Communication of Drinking Water Contamination 625/4-89/024
 Design and Construction of RCRA/CERCLA Final Covers 625/4-91/025
 Site Characterization for Subsurface Remediation 625/4-91/026
 Nonpoint Source Watershed Workshop 625/4-91/027
 Medical and Institutional Waste Incineration: Regulations, Management, Technology, Emissions, and
 Operation 625/4-91/030
 Control of Biofilm Growth in Drinking Water Distribution Systems 625/R-92/001
 • Organic Air Emissions from Waste Management Facilities 625/R-92/003
 • The National Rural Clean Water Program Symposium 625/R-92/006
 • RCRA Corrective Action Stabilization Technologies 625/R-92/014
 • Control of Lead and Copper in Drinking Water 625/R-93/001
 • Wellhead Protection: A Guide for Small Communities 625/R-93/002

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Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities 625/5-90/025

HANDBOOKS

Septage Treatment and Disposal (Oct. 1984) 625/6-84/009
 Control Technologies for Hazardous Air Pollutants (July 1991) 625/6-91/014
 Ground Water (Revised 1990) Volume I (Sept. 1990) 625/6-90/016a
 Ground Water (Revised 1991) - Volume II: Methodology (July 1991) 625/6-90/016b
 Retrofitting POTWs for Phosphorus Removal in the Chesapeake Bay Drainage Area (Sept. 1987) 625/6-87/017
 Guide to Technical Resources for the Design of Land Disposal Facilities (Dec. 1988) 625/6-88/018
 Guidance on Setting Permit Conditions and Reporting Trial Burn Results (Jan. 1989) 625/6-89/019
 Retrofitting POTWs (July 1989) 625/6-89/020
 Hazardous Waste Incineration Measurement Guidance (June 1989) 625/6-89/021
 Stabilization/Solidification of CERCLA and RCRA Wastes (July 1989) 625/6-89/022
 Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration (Jan. 1990) 625/6-89/023
 Operation and Maintenance of Hospital Waste Incinerators (Jan. 1990) 625/6-89/024
 Assessing the Geochemical Fate of Deep-Well Injected Hazardous Waste (June 1990)
 Reference Guide 625/6-89/025a
 Summaries of Recent Research 625/6-89/025b

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Optimizing Water Treatment Plant Performance Using the Composite Correction Program Approach (Feb. 1991)	625/6-91/027
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• Vitrification Technologies for Treatment of Hazardous and Radioactive Waste (May 1992).....	625/R-92/002
• Control of Air Emissions from Superfund Sites.....	625/R-92/012

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