



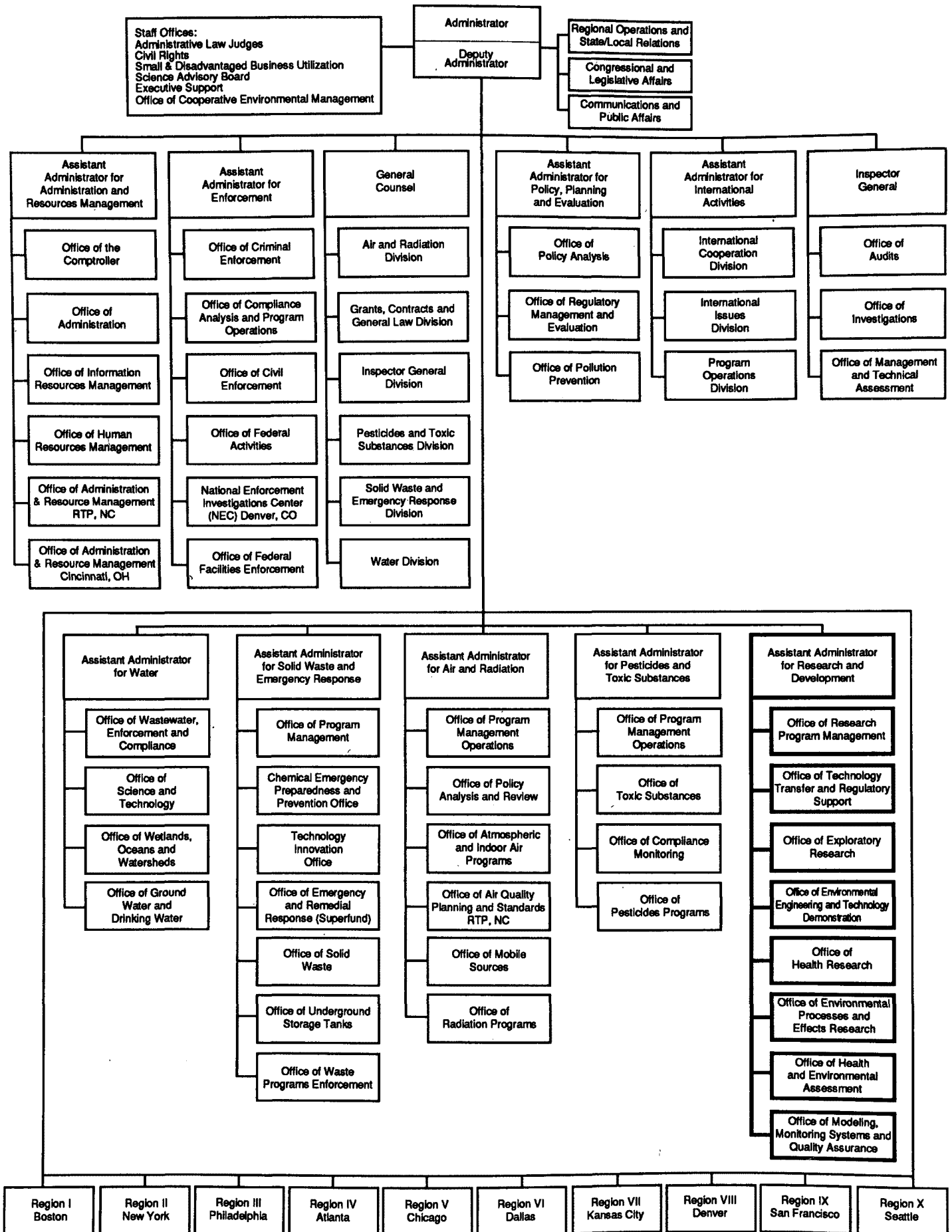
Technical Assistance Directory

TABLE OF CONTENTS

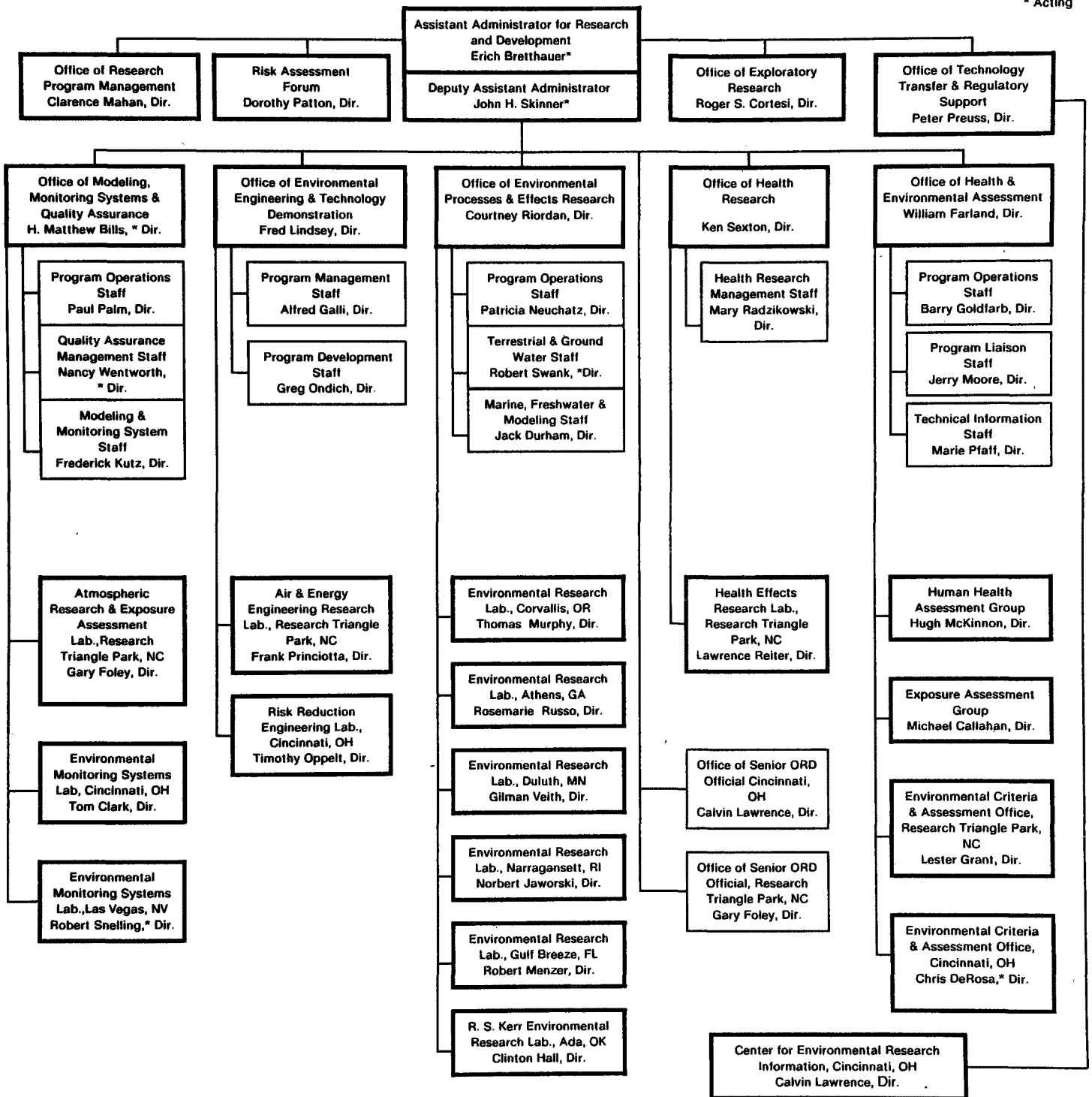
USEPA Organization Chart	ii
ORD Organization Chart	iii
Directory Description	1
Office of Technology Transfer and Regulatory Support	2
Office of Health and Environmental Assessment	5
Human Health Assessment Group	8
Exposure Assessment Group	10
Office of Exploratory Research	12
Office of Health Research	15
Office of Environmental Processes and Effects Research	17
Office of Modeling, Monitoring Systems and Quality Assurance	19
Office of Environmental Engineering and Technology Demonstration	22
Center for Environmental Research Information	25
Risk Reduction Engineering Laboratory	27
Air and Energy Engineering Research Laboratory	30
Environmental Monitoring Systems Laboratory - Cincinnati	33
Environmental Monitoring Systems Laboratory - Las Vegas	35
Atmospheric Research and Exposure Assessment Laboratory	39
Health Effects Research Laboratory	42
Environmental Criteria and Assessment Office - RTP	45
Environmental Criteria and Assessment Office - Cincinnati	47
Robert S. Kerr Environmental Research Laboratory	49
Environmental Research Laboratory - Corvallis	52
Environmental Research Laboratory - Gulf Breeze	54
Environmental Research Laboratory - Duluth	56
Environmental Research Laboratory - Athens	58
Environmental Research Laboratory - Narragansett	60
Expertise Index	62



U. S. Environmental Protection Agency Organization Chart



* Acting



Environmental Protection Agency Office of Research and Development

The Office of Research and Development conducts an Agency-wide integrated program of research and development relevant to pollution sources and control, transport and fate processes, health and ecological effects, measurement and monitoring, and risk assessment. The office rigorously disseminates its scientific and technical knowledge and upon request provides technical reviews, expert consultations, technical assistance and advice to environmental decision makers in federal, state, local, and foreign governments.

The ORD implements its activities through its Washington, DC, headquarters' offices and associated laboratories and field locations (see organizational chart). The programs, areas of expertise, and primary contacts in each of the major ORD

operations are conveyed in the following directory. These information sheets are made available in an effort to improve communication and technology transfer with our clients.

In addition, information may be obtained from the following offices in Washington, DC. ORD publications may be requested from the Center for Environmental Research Information in Cincinnati, OH.

Clients are urged to make direct contacts. If help or coordination is needed to properly access the listed operations, directory assistance can be easily obtained by contacting the Office of Technology Transfer and Regulatory Support in Washington, DC, on (COM) 202-382-7669 or (FTS) 8-382-7669.

	Commercial	FTS
Office of Health Research	202-382-5900	8-382-5900
Office of Environmental Processes and Effects Research	202-382-5950	8-382-5950
Office of Modeling, Monitoring Systems and Quality assurance	202-382-5767	8-382-5767
Office of Health and Environmental Assessment	202-382-7317	8-382-7317
Office of Research Program Management	202-382-7500	8-382-7500
Office of Environmental Engineering and Technology Demonstration	202-382-2600	8-382-2600
Office of Exploratory Research	202-382-5750	8-382-5750
Office of Technology Transfer and Regulatory Support	202-382-7669	8-382-7669
Center for Environmental Research Information	513-569-7562	8-684-7562

For additional help in contacting ORD headquarters' offices, call the EPA HEADQUARTERS LOCATOR at:
COM: 202-382-2090 or FTS: 8-382-2090 (before September 1, 1991)
COM: 202-260-2090 or FTS: 8-260-2090 (after September 1, 1991)

Office of Technology Transfer and Regulatory Support

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The Office of Technology Transfer and Regulatory Support (OTTRS) has three main functions:

- analysis and integration of scientific and technological information in the development of regulations,
- managing the delivery of ORD products and services through an organized program of technology transfer and technical information exchange, and
- promoting the EPA Regions' interests in Agency research activities.

The Director advises ORD's Assistant Administrator on: (1) matters concerning the scientific and technical aspects of Agency-wide regulatory and enforcement issues; (2) methods to enhance overall ORD effectiveness through technical information exchange, technology transfer, implementation of the Technology Transfer Act of 1986; and (3) efforts to support the science and technology needs of the regional offices. There are three headquarters staffs, in addition to the Center for Environmental Research Information, that are responsible for implementing ORD's goal of broadening the impact of the Agency's research on environmental quality.

The Regulatory Staff responsibilities are to:

- analyze, integrate, and communicate policy issues and research requirements,
- make sure ORD evaluates and contributes to the scientific basis of regulatory actions, and
- coordinate ORD's involvement in regulatory activities.

The Technology Transfer Staff responsibilities are to:

- administer EPA's implementation of the Federal Technology Transfer Act of 1986,
- identify innovative ways to channel ORD information and technology to decision makers both inside and outside EPA,
- evaluate the needs of state and local environmental decision makers for ORD products and support programs to deliver those products, and
- develop policy guidance for ORD offices and laboratories on improving the "transferability" of their work and coordinate those efforts among the different ORD groups when necessary.

The Regional Operations Staff responsibilities are to:

- serve as the liaison among regional offices and ORD offices and laboratories,
- identify regional research requirements,
- assist regions with achieving short- and long-term research goals by representing them in ORD's planning and budgeting process,
- administer ORD's Regional Scientist Program, and
- coordinate ORD's Superfund technical liaison program to foster a strong working relationship between ORD Laboratory scientists and the regional Superfund staff.

Program Activities

The OTTRS regulatory support staff is a focal point for the program offices' interaction with ORD. The staff provides assistance to and coordination with other offices in the Agency in their regulatory activities, ensuring that ORD scientists review the technical and scientific basis for regulations. The regulatory support staff develops cross-media research strategies in areas, such as ground water, that cross traditional program and laboratory organization structures. OTTRS has taken the lead in ensuring ORD input into Agency-wide work being done on lead in drinking water, indoor air, ecology, and pollution prevention in Antarctica. The staff provides early and active ORD analysis of legislation and initiatives such as the Clean Air Act, Pollution Prevention, and Risk Assessment. The staff develops strategies for working with other offices, such as Enforcement and Compliance Monitoring, that have not been traditional ORD clients.

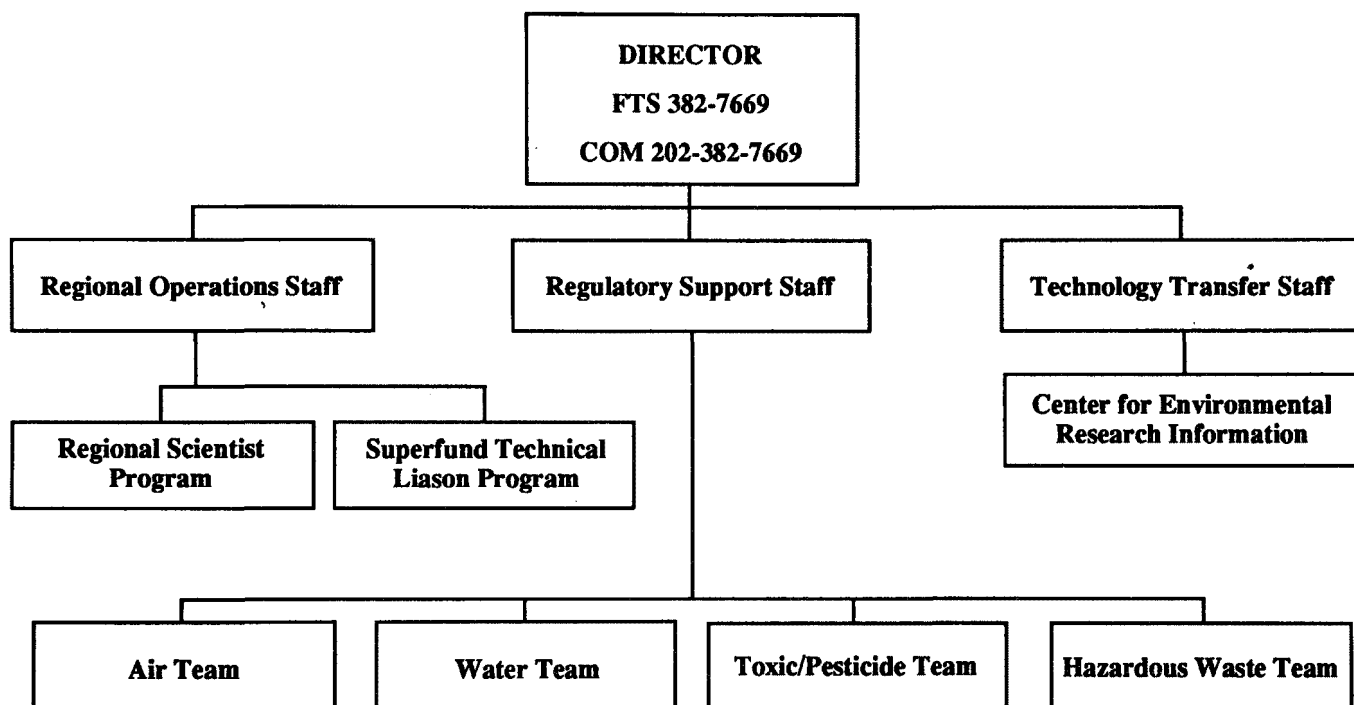
As the regulatory support staff works within the Agency to bring ORD into activities, the technology transfer staff promotes ORD science and information to the broadest possible audience outside the Agency. There are many complex environmental issues facing states and municipalities that lend themselves to solutions that can be provided through aggressive EPA technology transfer programs. The OTTRS technology transfer staff has taken the lead in developing and advocating biotechnology initiatives, environmental education resources for all levels of students, small community outreach, and electronic information services such as the ORD bulletin board system.

Many of the ORD products are already available in the form of documents or workshop manuals. It is the Technology

Transfer staff's role to find additional users of the information and unique or customized ways to present it. The areas of pollution prevention, risk assessment modeling, international technology transfer, and communications have been particularly fruitful opportunities for technology transfer activities. Through the Agency's program for the implementation of the Federal Technology Transfer Act of 1986, ORD resources, through joint efforts with the private sector, are more fully utilized.

Traditionally, ORD has been very responsive to ad hoc requests for technical assistance. Regional research needs,

however, have not received the priority attention that they deserve in the ORD planning process. In order to foster a more interactive relationship, we have established the ORD Regional Scientist Program. Senior ORD scientists are assigned to work in the EPA regional offices. Regional Scientists broker technical assistance in the regions and champion regional research needs within ORD. Cooperative agreements with the National Governor's Association, the National League of Cities, and the Association of State and Territorial Health Officials provide us with additional insight into better serving state and local clients.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Peter W. Preuss, Director	7669	Risk assessment
Jay Benforado, Deputy Director	7669	
Technology Transfer Staff		
Michael Moore, Director	7671	Technology transfer research and planning Information support Federal Technology Transfer Act
Ronald Slotkin	7671	
Mary Wigginton	7671	
Larry Fradkin	8-684-7960	
Regional Operations Staff		
David Klauder, Director	7667	Superfund Technical Liaison Program Regional Scientist Program Coordinator
Jerry Garman	7667	
Ron Landy	7667	
Regulatory Support Staff		
Jay Benforado, Director	7669	
Air Team		
Kevin Teichman, Chief	7669	Global change; indoor air; radiation
Stan Durkee		Mobile sources; municipal waste; particles
Stacy Katz		Clean Air Act amendments; lead; acid aerosols
Bob Fegley		Clean Air Act amendments; air toxics; ozone
Hazardous Waste Team		
Joe DeSantis, Chief	7891	RCRA implementation; regulation development
Becky Madson		Risk assessment; Superfund
Darlene Williams		Chemical accident prevention; hazardous waste; mining waste; medical waste
Becky Daiss		Solid waste; plastics; pollution prevention; FCCSET
Toxic/Pesticide Team		
Herman Gibb, Chief	7891	Research committee activities; non-cancer risk assessment; reference dose (RFD) activities
Vivian Prunier		Pesticide risk/registration; food safety
David Cleverly		CFCs; toxic investigation; air toxics; incineration; dioxin
Michael Troyer		Endangered species; eco-toxics; FIFRA; pesticide review
Water Team		
Ronnie Levin, Chief	7891	Lead; drinking water
Amy Mills		Ground water
Gail Robarge		Agricultural chemicals; drinking water
Burnell Vincent		Sewage sludge; sediment; non-point sources

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Office of Health and Environmental Assessment

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The Office of Health and Environmental Assessment (OHEA) is EPA's focal point for the scientific assessment of the degree of risks imposed by environmental pollutants in varying exposure situations on human health and ecological systems. OHEA occupies a critical position in the Office of Research and Development (ORD) between: (1) the researchers in other ORD components who are generating new findings and data, and (2) the regulators in the EPA program offices and regions who must make regulatory, enforcement, and remedial action decisions. In support of its mission to provide the Agency with assessments of risk to human health and the environment, OHEA carries out three functions:

- Prepare human health risk assessments that serve as the scientific bases for regulatory and enforcement decisions within the Agency.
- Help promote Agency-wide coordination and consistency of risk assessments through the preparation of guidelines; by providing expert advice, reviews, and data analysis; and by participating in the regulatory decision process.
- Plan and conduct research to reduce uncertainties in risk assessment. As the primary client for the results of this research, OHEA, in cooperation with other offices, plans research projects that are carried out by other ORD organizations (e.g., Health Effects Research Laboratory) as well as through its own selected extramural projects.

Program Activities

Air

- Evaluate research findings concerning health effects of hazardous air pollutants, including background information on physical and chemical properties, sources, emissions, transport and transformation, and ambient concentrations. Such assessments also evaluate the effects of motor vehicle emissions, fuels, and additives.
- Review criteria for setting National Ambient Air Quality Standards (NAAQS) for sulfur oxides, particulate matter, nitrogen oxides, ozone and other photochemical oxidants, carbon monoxide, and lead.
- Assess risks from indoor air pollutants. This includes updating and revising the Indoor Air Pollution Information Assessment and the Indoor Air Reference Data Base; determining the extent

of population exposure to indoor air pollutants; and developing biological contaminant measurement methods.

Water

- Assess the health effects of exposure to drinking water contaminants by evaluating scientific data describing the physical and chemical properties, the pharmacokinetics, the health effects in animals and humans, and the mechanisms of toxicity.
- Assess the risk of human exposure to toxic chemicals, and evaluate site-specific health hazards for ambient waters as required by the states and EPA.
- Provide risk assessment methodologies for chemicals and pathogens in support of regulatory decision making on the use and disposal of municipal sludge.

Hazardous Waste

- Provide health and environmental effects documents to support RCRA 3001 listing decisions and the land disposal restriction program in the form of reference dose documentation.
- Develop methods for assessing risks from hazardous and municipal waste treatment and disposal techniques and waste minimization options.
- Develop PC-based systems that will permit risk assessors to conduct risk assessments and assess options for corrective measures.

Pesticides and Toxic Chemicals

- Assist the Office of Pesticide Programs in health risk assessments for cancer, mutagenicity, reproductive and developmental effects, and exposure assessment.
- Assist the Office of Toxic Substances in health risk assessments for cancer, mutagenicity, reproductive and developmental effects, and in exposure assessment to support decision making under TSCA (i.e., existing chemical programs, PMN review, and test guidelines and test rules development).
- Develop risk assessment methods for cancer/noncancer effects in humans caused by exposure to environmental chemicals.

Multimedia

- Provide guidance and support for exposure and risk assessment regulatory decision making by EPA through risk assessment guidelines, the Risk Assessment Forum, and the Integrated Risk Information System (IRIS).
- Plan and fund extramural research to reduce uncertainty in risk assessments through the validation of assumptions about route-to-route and species-to-species extrapolations, dose-rate effects, dose-response models, biomarkers, and gender equivalence, and by evaluating methods for improving carcinogen risk assessment.
- Manage Agency-wide work groups that provide consensus information on Reference Doses (RfDs) or Agency agreed-upon Risk Estimates of Carcinogenicity (RECs) for IRIS.

Superfund

- Review site-, chemical-, and situation-specific risk assessments to assist the program offices and regions in evaluating Superfund alternative courses of action.
- Operate the Technical Support Center for health and risk assessments to provide guidance and information to regional and state offices associated with the Superfund program.
- Provide site- and chemical-specific health assessments to support needs for the remedial planning and cost recovery efforts.
- Provide chemical-specific data on carcinogenicity and chronic effects to support program office activities necessary to adjust, by regulation, the Reportable Quantities (RQs) for hazardous substances. These include listings in association with Section 3001 of RCRA, designation of Extremely Hazardous Substances as CERCLA Hazardous Substances, support for designation of new substances, and review of old RQ calculations.
- Conduct research to fill information and assessment gaps that exist in the various phases of the Superfund public health evaluation process in the areas of reproductive and developmental toxicity, pharmacokinetics, exposure assessment methods, and assessment of chemical mixtures.

Issues

OHEA's role has been evolving from being the primary EPA office performing chemical-specific risk assessments to an office that is a major force in assuring consistency and high scientific quality in the risk and exposure assessments conducted in other parts of the Agency, especially in the regions. In addition, OHEA's role of being both a planner of and a client for risk assessment-related research conducted throughout EPA has been expanding. The risk assessments prepared by OHEA are becoming multi-media, multi-effect documents. This evolution will continue, and OHEA must seek ways of successfully fulfilling these broader responsibilities in order to help keep EPA in the forefront of this developing field of science.

Issues Related to Conducting Risk Assessments

OHEA's initial assessment of lead developed as part of the office's mandate to prepare Criteria Documents for the National Ambient Air Quality Standards Program. From that work we began to recognize that the adverse effects of lead on neurological and intellectual development can be seen at lower and lower doses--to the point that lead can be considered a nonthreshold pollutant for those effects. OHEA's work on the lead criteria document brought about its involvement in several other areas such as:

- the development of the Maximum Contaminant Level in drinking water for the Drinking Water Criteria Document,
- involvement in the congressionally-mandated study of effects of lead in children and in demonstration projects for its removal from soils in urban areas,
- the request from the Department of Housing and Urban Development to provide assistance in removal of lead-based paint from homes, and
- the principal role in evaluating whether lead should be considered a suspect carcinogen, and whether the critical health effect is its carcinogenic potential or its neurological effects.

OHEA is likely to see changes in emphasis in the air medium. OHEA is continuing work on assessing risks from acid aerosols in support of OAQPS' consideration of acid aerosols as another criteria pollutant. More work is being requested in the area of indoor air as we realize that risks from exposure to indoor air pollutants may be greater than the risks from exposure to ambient outdoor air. Finally, because of amendments to the Clean Air Act in 1990, we will very likely see a significant increase in OHEA work in the area of hazardous air pollutants.

Issues Related to Risk Assessment Research

OHEA influences research efforts to reduce uncertainties in risk assessment. It provides direction to such research and must work with other ORD offices to incorporate research results into its ongoing agenda of risk assessment documents, its assessment guidelines, and the databases used throughout the Agency. ORD is pursuing research efforts in understanding ecological risk and in improving exposure assessment. Pharmacokinetics, model validation, and reducing the uncertainty in exposure assessment are areas of future research.

OHEA pursues research to understand the effects and interactions of chemical mixtures and complex exposures and is using this information to develop techniques for assessing risks from such mixtures and exposures. We are cooperating with other ORD offices in assessing environmental risk and developing techniques for comparing risks of different remedial strategies and risk reduction techniques across media, and across different health and environmental effects.

OHEA is an important client for research conducted by the other ORD offices and, in cooperation with these offices, plans needed research to be conducted by ORD. The ultimate result of such enhanced planning will be research findings that are better targeted to the needs of the risk assessors.

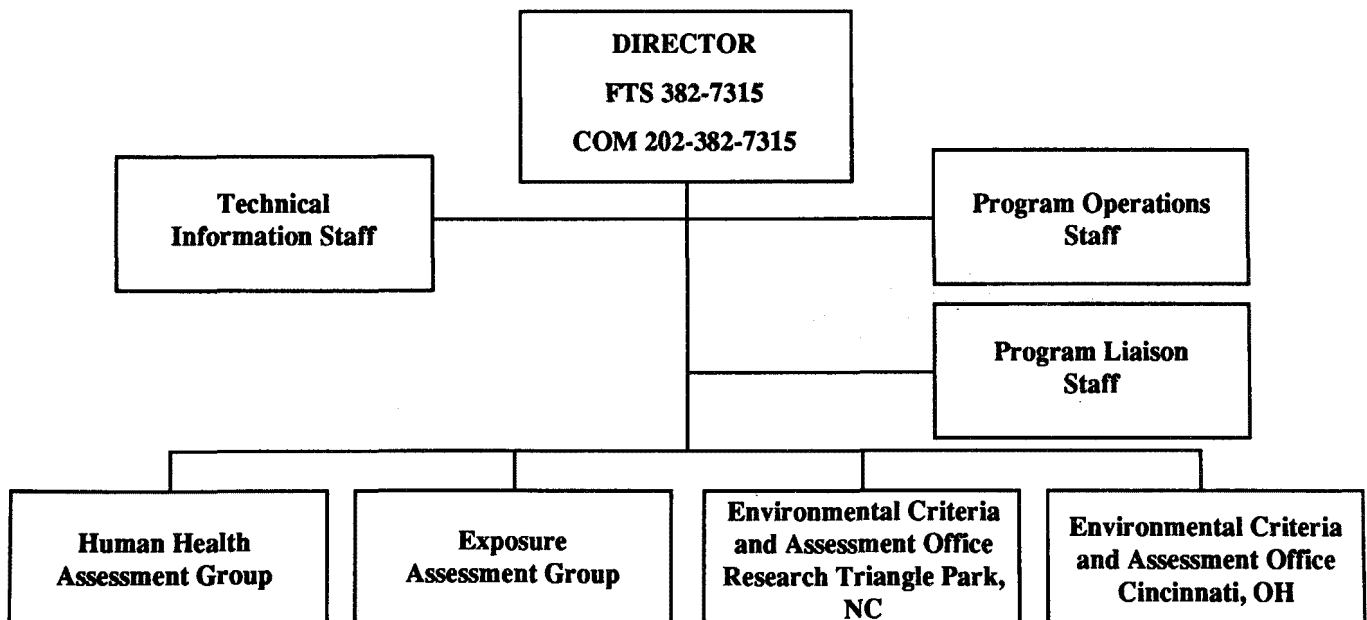
Issues Related to Providing Guidance and Consistency to Agency Risk Assessment Activities

OHEA has provided scientific leadership to Agency work groups developing risk assessment guidelines under the Risk Assessment Forum.

Five guidelines were published in 1986. Still underway are: additions and amendments to the existing guidelines (exposure measurement, developmental toxicity amendments, carcinogen guidelines revisions), and new efforts in reproductive toxicity, neurotoxicity, quantitative assessment of chronic effects, and development of guidelines for assessing ecological risk.

The conduct of risk assessment has become more and more decentralized as many of the remedial and regulatory programs have shifted to site-specific concerns, e.g., hazardous waste facilities and Superfund site cleanups. As a result, a critical issue is managing the flow of risk assessment information. Five such activities are illustrative:

- OHEA manages the Integrated Risk Information System (IRIS) which provides consensus risk assessment information to those conducting risk assessments. This function includes chairing the Reference Dose (RfD) and Cancer Risk Assessment Verification Endeavor (CRAVE) Work Groups, which verify the information, develop the consensus profiles, and support users. A work group has been established to develop methods for, and begin verifying, inhalation Reference Concentrations (RfCs). The IRIS database started as an E-Mail based system, was recently made available on TOXNET (the National Library of Medicine's Toxicology Data Network), and is being converted to a PC-based system. Currently, there are about 400 different chemicals on the system.
- OHEA works with OAQPS in managing the Air Risk Information Support Center (AirRISC). AirRISC assists state and local air pollution control agencies and EPA regional offices on technical matters pertaining to health, exposure, and risk assessment for toxic air pollutants. Its primary goal is to obtain information and provide assistance in the review and interpretation of that information.
- OHEA chairs the governmental advisory group to, and is the major source of funding for, the National Academy of Sciences' Committee on Risk Assessment Methodology (CRAM). CRAM will address the inconsistencies, limitations, and uncertainties in risk assessments conducted by different government agencies by using NAS' auspices to resolve key scientific issues, uncertainties, and problems in using risk assessment at the highest level of scientific credibility.
- OHEA has provided the lead on the Developmental and Reproductive Toxicology (DART) Database, a literature database that includes citations from reproductive and developmental toxicology. The database is an outgrowth of a narrower one on teratology alone (the Environmental Teratology Information Center at Oak Ridge National Laboratory), and is accessible through the National Library of Medicine's TOXNET system.
- OHEA has established a new Technical Support Center for Health and Risk Assessment for Superfund to provide a contact point for dissemination of health and risk assessment information to regional and state officials and private organizations involved in Superfund. It is one of five such centers ORD operates.



Human Health Assessment Group

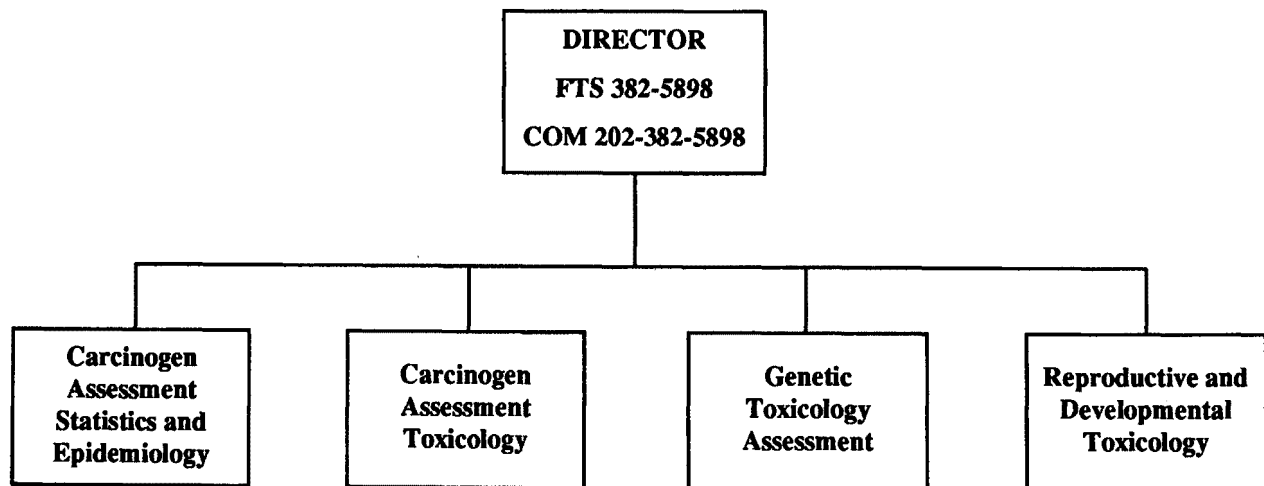
Hugh McKinnon,
Director

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The Human Health Assessment Group develops human health risk assessments and reviews assessments developed elsewhere in EPA; participates in the development and implementation of EPA's risk assessment guidelines, including guidelines training courses; and performs research to improve health risk assessments. The Group also provides advice on the health risks associated with suspected cancer-causing agents and the risks associated with chemicals suspected of causing mutagenic and adverse developmental and reproductive effects. Expertise is provided in the following areas:

- **Carcinogen Assessment Statistics and Epidemiology:** health risks associated with suspected cancer-causing agents as interpreted from epidemiology data and the statistical analysis of both human and animal data.
- **Carcinogen Assessment Toxicology:** health risks associated with suspected cancer-causing agents as interpreted from animal toxicology and pathology data.
- **Genetic Toxicology Assessment:** health risks associated with suspected genotoxins as interpreted from *in vitro*, experimental animal, and human data; and provides a focus on health risk issues related to the molecular and cellular determinants of environmentally induced diseases.
- **Reproductive and Developmental Toxicology:** health risks associated with suspected reproductive and developmental toxicants as interpreted from *in vitro*, experimental animal, and human data.
- **Technical Assistance:** technical assistance to state and local health and pollution control agencies, regional offices, other U.S. Governmental agencies, and the international community on matters pertaining to health and risk assessments, including assistance to the Agency's Air RISC Support Center and Superfund Technical Support Center; revisions to proposed and final regulations and guidance documents for various agency and regional offices; and risk assessments for EPA program and regional offices and state agencies.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Hugh McKinnon, Director	5898	Preventive medicine, including environmental and occupational medicine; public health practice; environmental health policy and management
Charles Ris, Deputy Director	5898	Risk assessment methods; cancer risk assessment; risk assessment/management policy
Robert McGaughy, Senior Scientist	5898	Risk assessment (all phases) for chemical carcinogens; toxicology; medical problems in manned space flight; basic physics; spectroscopy; modelling epidemiology; radiation
Carcinogen Assessment Statistics and Epidemiology Branch		
V. James Coglianor, Chief	3814	Cancer risk estimation; biostatistics; epidemiology; pharmacokinetics; mathematical modelling; computer simulation
Carcinogen Assessment Toxicology Branch		
Jean Parker, Chief	5898	Toxicologic and carcinogenic effects of agents; risk assessment methodology; pharmacology; metabolism pathology; biochemistry; human physiology
Genetic Toxicology Assessment Branch		
Vicki Dellarco, Chief	7336	Mechanisms of mutagenesis and carcinogenesis; genetic risk assessment; genetics; biochemistry; molecular and cellular biology; biotechnology
Reproductive and Developmental Toxicology Branch		
Babasaheb (Bob) Sonawane, Chief	7495	Reproductive and developmental toxicology; neuro-developmental toxicology; experimental design and test methodology issues; epidemiology; qualitative and quantitative approaches to risk assessment; research to reduce uncertainties in risk assessment of developmental and reproductive toxicants

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Exposure Assessment Group

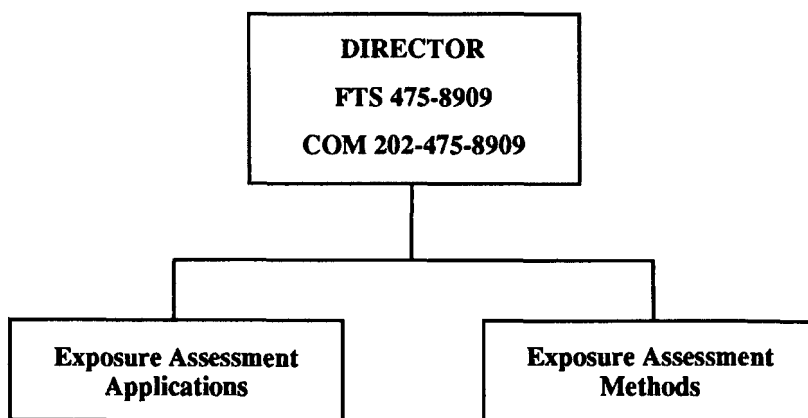
Michael A. Callahan,
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Exposure Assessment Group provides advice on the exposure characteristics and factors of agents that are suspected of causing detrimental health effects; provides state-of-the-art methodology, guidance, and procedures for exposure and recommendations concerning the exposure potential of specific agents. The Exposure Assessment Group offers expertise in the following areas:

- **Exposure Assessment Applications:** performing exposure assessments, applying exposure assessment methods to site-specific cases, reviewing Regional Superfund risk assessments, and reviewing exposure assessments prepared by other organizations.
- **Exposure Assessment Methods:** developing methods for use in exposure assessments, chairing Agency-wide work groups on subjects such as guidelines development and related Risk Assessment Forum topics, performing exposure assessments, and reviewing exposure assessments prepared by other organizations.
- **Technical Assistance:** conducting exposure assessment workshops for the regions and states and providing peer review of regional and state risk and exposure assessments and endangerment assessments.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Michael A. Callahan, Director	8909	Chemistry; exposure assessment
Exposure Assessment Applications Branch		
Kevin Garrahan	2588**	Environmental engineering; civil engineering; landfill design; water treatment; hydrology Chemical engineering; fish ingestion; exposure scenarios; reviewing risk assessments; showering exposures
Jacqueline Moya	2385**	

(continued)

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**FTS: 382-xxxx; COM: 202-382-xxxx

Areas of Expertise

(continued)

	Telephone*	Area of Expertise
Karen Hammerstrom	8919	Chemical engineering; dermal exposure; chemical fate and transport
Malcolm Fields	8921	Hydrogeology; karst geology; groundwater investigation and remediation
Sue Norton	6955**	Environmental science; ecological risk assessment; wildlife factors; Superfund reasonable maximum exposure (RME) scenario
Anne Sergeant	9376	Environmental science; soil science; ecological assessments; wetlands; ecological indicators of risk
Amy Long	8918	Environmental science; dermal absorption; Superfund reasonable maximum exposure (RME) scenario
Exposure Assessment Methods Branch		
John Schaum	5988**	Environmental engineering; exposure assessment; dermal exposure
Matthew Lorber	8924	Agricultural engineering; pesticide exposure; fate modeling; PCB; dioxin
Paul White	2589**	Statistics; food ingestion; soil ingestion; uncertainty analysis
Russ Kinerson	8915	Biology; plant uptake; exposure software; exposure factors
Rich Walentowicz	8922	Biomedical engineering; exposure software; model selection; model validation; pharmacokinetics
Kim Chi Hoang	2059**	Chemical engineering; pharmacokinetics; dermal exposure

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Office of Exploratory Research

Roger S. Cortesi,
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The Office of Exploratory Research (OER) is responsible for planning, administering, managing and evaluating EPA's exploratory research program in general and, in particular, its extramural grant research in response to Agency priorities as established by Agency planning mechanisms. It supports fundamental research aimed at developing a better basic scientific understanding of the environment and its inherent problems and entails close relations with the American environmental research community. OER's main goals are:

- to have the environmental research community aware of and working on problems of interest to EPA;
- to promote close interaction and mutual awareness between EPA researchers and the environmental research community;
- to provide general support to the research community for work on fundamental environmental research, thereby promoting a solid foundation of knowledge for the country's large applied environmental research program, a cadre of scientific and technical personnel in the environmental sciences, and an "over-the-horizon" capability for identifying problems and solutions.

OER's goals are accomplished primarily through four core programs: (a) a competitive investigator-initiated research grants program, (b) an environmental research centers program, (c) a small business innovation research (SBIR) program, and (d) a visiting scientists program.

Program Activities

The Research Grants Program (RGP) -- supports research initiated by individual investigators in areas of interest to the Agency. Research proposals are solicited via two mechanisms: (1) the general "Solicitation for Research Proposals," which is published each year and invites proposals in six broadly defined areas of environmental science and engineering; and (2) the Request for Applications (RFA), which is a more targeted solicitation mechanism that requests proposals in well-defined areas of particular interest to the Agency such as global climate change and hazardous substances. All proposals received in response to either mechanism are subjected to external peer review. In an effort to provide more support to minority institutions for the conduct of basic environmental research, the Research Grants Program makes available pre-application assistance for minority faculty at Historically Black Colleges and Universities (HBCUs) and members of the Hispanic Association of Colleges and Universities (HACU) through its Minority Institutions Assistance Program.

The Environmental Research Centers Program (ERCP) -- supports multidisciplinary research conducted in a university setting and focused in areas of priority interest to EPA. The research centers program has two components: the Academic Research Centers Program (ARC) and the Hazardous Substance Research Centers Program (HSRC). The ARC program was started in FY 1980 and, since then, has provided continued support to eight university-based research centers. These are: the Center for Environmental Epidemiology, the Advanced Environmental Control Technology Research Center, the Industrial Waste Elimination Research Center, the Hazardous Waste Research Center, the National Center for Intermedia Transport Research, the Marine Science Research Center, the National Center for Ground Water Research, and the Ecosystems Research Center. This (1991) is the final year of operation for these centers. A competition will be held in 1991 to select four new academic research center consortia which will begin operation in fiscal year 1992.

The HSRC program was started in FY 1989 with the establishment of five university-based consortia to conduct superfund research, training and technology transfer. The lead institution for each consortia is: the New Jersey Institute of Technology for Region Pair 1/2, the University of Michigan for Region Pair 3/5, North Carolina State University for Region Pair 4/6, Kansas State University for Region Pair 7/8, and Stanford University for Region Pair 9/10.

The Small Business Innovation Research Program -- is mandated by Public Law 97-219 which requires EPA to devote 1.25% of its extramural research and development budget to Small Business Innovation Research (SBIR). The SBIR Program supports, via contracts, small businesses with ideas relevant to EPA's mission. The program focuses exclusively on projects in control technology or process instrumentation development. In FY 1988, the program was expanded to include support for Superfund projects. It receives 1.25 percent of the Agency's resources devoted to extramural Superfund research.

The Visiting Scientists Program (VSP) -- is administered in two components: (1) an Environmental Science and Engineering Fellows Program (ESEFP) and (2) a Resident Research Associateship Program (RRAP). The ESEFP is administered in cooperation with the American Association for the Advancement of Science (AAAS). Each year, under summer fellowships, it supports ten mid-career post-doctoral scientists and engineers at EPA headquarters and regional offices where they conduct studies on hot topics. The RRAP is administered in cooperation with the National Research Council (NRC) and attracts national and international scientists and engineers to EPA research laboratories for up to three years to collaborate

with Agency researchers on important environmental issues.

In addition to the above core programs, OER administers other programs which are also important to the accomplishment of its goals. They include:

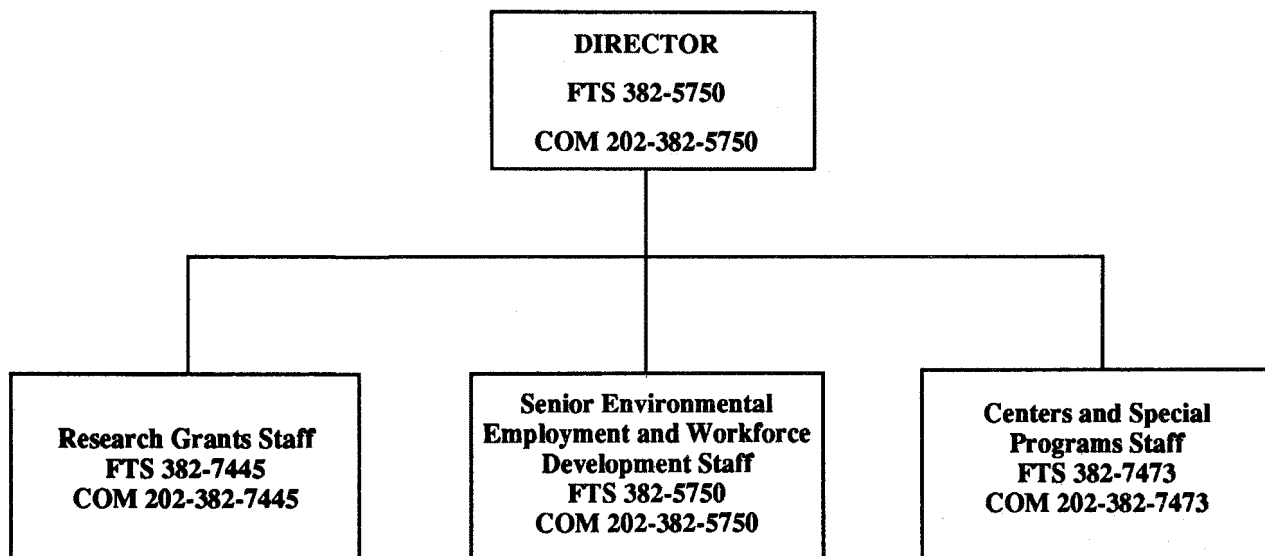
A Minority Fellowship Program -- which awards fellowships to college seniors and graduate students enrolled on a full-time basis at Historically Black Colleges and Universities and member institutions of the Hispanic Association of Colleges and Universities and majoring in curricula that could be applied to the solution of environmental problems.

A Minority Summer Intern Program -- which extends to recipients of fellowships under the Minority Fellowship Program the opportunity for hands-on experience in the area of their academic training by way of a summer internship at EPA or some other environmental organization.

The Agency's Senior Environmental Employment Program (SEE) -- which utilizes the skills and talents of older Americans to meet employment needs of environmental programs throughout EPA.

The Federal Workforce Training Program -- which coordinates ORD's participation in work force training programs used by state and local governments.

An Experimental Program to Stimulate Competent Research (EPSCoR) -- which is dedicated to stimulating better research and developing better researchers in those states which have traditionally lacked a strong university-based research effort and have, therefore, been relatively unsuccessful in garnering Federal research support. This program was first initiated about 10 years ago by the National Science Foundation to redress this imbalance. In fiscal year 1991, Congress has requested that EPA initiate an EPSCoR program.



Areas of Expertise

Office of the Director	Telephone*	Area of Expertise
Roger S. Cortesi, Director	5750	
Science Review Administration		
Clyde Bishop	7445	Environmental biology research grants; environmental health research grants
Deran Pashayan	7445	Air chemistry and physics research grants; EPSCoR
Louis Swaby	7445	Water chemistry and physics research grants; engineering research grants
Program Analysis		
Virginia Broadway	7445	Minority institution assistance; minority student fellowships
Alvin Edwards	7473	Program operations; minority summer internships; research associateships
Ted Just	3573	Workforce development
Susan Street	2573	Manpower development
Robert Papetti, Director	7473	Exploratory research grants
Karen Morehouse, Director	5750	Academic Research Center; centers and special programs
Dale Manty, Director	7445	Superfund research centers; Hazardous Substance Research Center Program
Patricia Powers, Director	2573	Senior Environmental Employment Program; manpower development
Donald Carey, Program Manager	7445	Small Business Innovation Research

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Office of Health Research

Ken Sexton,
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The Office of Health Research (OHR) is responsible for planning, implementing, and evaluating a comprehensive, integrated human health research program. This program:

- documents adverse effects to man from environmental exposure to pollutants which ORD uses to support the Agency's regulating activities;
- develops test systems, methods, and protocols;
- conducts laboratory and field research studies;
- develops interagency programs which effectively use pollutants;
- offers technical assistance to the regions and program offices;
- develops health science policy for the Agency; and
- provides a focal point for the effects of human exposure to environmental pollutants.

The Health Research Management Staff:

- plans, manages, and evaluates research programs dealing with health impacts of exposures to criteria and non-criteria air pollutants, emissions from mobile sources, drinking water, and ambient water pollutants, solid and hazardous wastes and toxic chemical substances (including pesticides) and Superfund;
- develops health research policy, priorities and program plans;
- determines resource allocations to carry out the health research program;
- provides program implementation guidelines to the Health Effects Research Laboratory;
- assures effective integration of all laboratory health research activities;
- reviews laboratory management practices and research activities to determine progress toward program objectives;
- provides health research information and advice to steering committees, regulation review committees, interagency committees, and domestic and international organizations which request such assistance;
- administers the ORD planning, reporting and review system;
- develops management systems necessary to support programs, personnel and budgets of the office and associated laboratories;

- reviews plans, progress, and resources for compliance with ORD, Agency and legislative requirements; and
- recommends planning and programming activities of the office to the Office of Administration and Resources Management and the Office of Policy, Planning and Evaluation.

Program Activities

The Office of Health Research (OHR) supports a research program that has three main goals: 1) Hazard identification, 2) Dose response assessment, 3) Development of chemical-specific information. These three goals serve as the core around which each of the media specific programs are planned and implemented. Below is a brief description of the health issues which are being addressed in OHR's research program.

Air

- In the air health research program major efforts are being directed at providing dose-response data for use in quantifying the health risk resulting from exposure to the criteria pollutants. This research is being conducted using animal toxicology studies and both human clinical and epidemiological studies and develops data describing the effects of exposure to these pollutants on pulmonary function, changes in host defense functions (immunotoxicity), cardiovascular disease, and neurological function. Research is also developing better methods to determine the deposition of pollutants in the lung in order to improve our risk assessment capabilities. Research on hazardous air pollutants is focused on determining the potential mutagenic and carcinogenic hazard of VOC's and mixtures of air pollutants. The indoor air health effects research program is focusing on developing methodology and data to evaluate the effects, both cancer and non-cancer, from exposure to combustion emissions from kerosene heaters, wood stoves, environmental tobacco smoke, and other sources of indoor air pollution.

Water

- The drinking water health effects research program primary focus is to determine the health effects from the use of various drinking water disinfectants (chlorine, chloramine, ozone). Epidemiology

studies are being planned and conducted to determine the relationship between water disinfection and both cancer and reproductive effects. These methods are used to identify and isolate the biologically active components or chemicals from drinking water concentrates for further in depth health characterization. Dose-response studies are also being conducted on drinking water disinfection by-products to support the development of drinking water standards.

Pesticides and Toxics

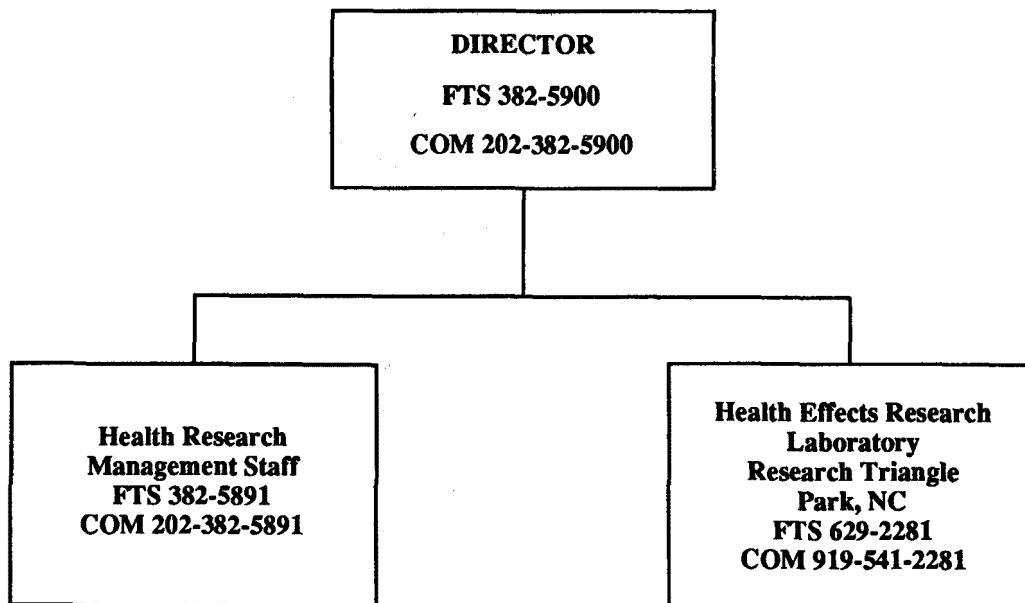
- The pesticides and toxic substances research program develops test methods for determining the health effects from pesticides and commercial chemicals, developing both animal and human biomarkers to improve our understanding of exposure-dose relationships and to apply these methods in biochemical epidemiology studies,

research to determine the potential health effects from microbial pesticides and genetically engineered organisms and research to develop structure activity relationship models to support TSCA section 5.

Hazardous Waste/Superfund

- The hazardous waste health research program is developing a test methodology for comparing the potential cancer and non-cancer health risks from hazardous waste incineration and municipal waste combustion.

Finally, the health effects Superfund research program is conducting research to develop test methods to screen and evaluate the potential health hazard from exposure to waste mixtures.



Office of Environmental Processes and Effects Research

Courtney Riordan,
Director

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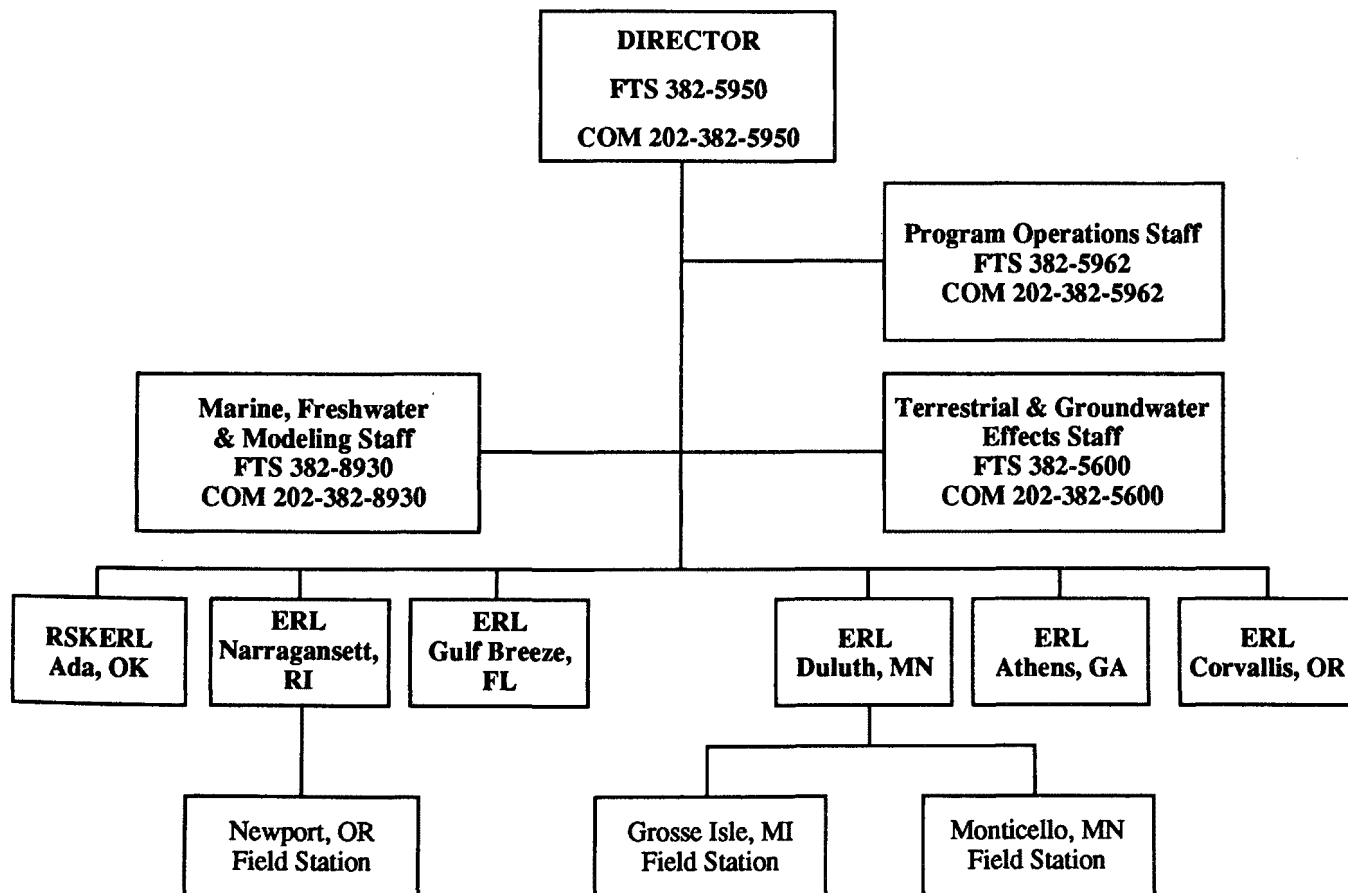
The Office of Environmental Processes and Effects Research (OEPER) is responsible for the administration of a broad range of ecological research programs. These programs are structured to provide the scientific data and technological methods necessary to understand, predict, and control the entry and movement of pollutants into the environment and to determine the effects of such substances on organisms and ecosystems. The information and research products resulting from these programs are directly applicable to fulfilling the Agency's regulatory responsibilities.

Research is conducted within the full realm of environmental media - atmosphere, soil, ground water, surface water, and coastal and marine waters. The development and implementation of our research programs are coordinated and managed by the Headquarters staff with contributions and guidance provided by our six field laboratories and the Agency's program offices. These offices have the responsibility to comply and

implement legislative mandates; and much of their effort to establish rules, regulations, criteria, and standards relies on the research findings we provide. Our research focuses on meeting their needs.

Our major research activities will focus on: Global Change (primarily climate), Estuaries and Near Coastal Systems, Environmental Sustainability (biodiversity, habitat, etc.), Freshwater Systems Wetlands, Great Lakes, Biotechnology (recombinant DNA), Ground water, Arctic Systems, Oil Spills, Contaminated Land Sites, Contaminated Sediments, New Chemicals, and Existing Chemicals.

The office also actively provides technical support in environmental science and technology to regions and states in order to assist in problem solving and to transfer information and technology to local users.



ERL = Environmental Research Laboratory

Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Courtney Riordan, Director	5950	Global climate change; acid precipitation
Michael W. Slimak, Deputy Director	5950	Wildlife ecology; ecological risk assessment; ecotoxicology; biodiversity
Program Operations Staff		
Patricia Neuschatz, Director	5962	Administrative and budget processes
Marine, Freshwater and Modeling Staff		
Jack Durham, Director	8930	Atmospheric chemistry; aerosols; acid precipitation
Marine Effects Team		
Robert Frederick, Acting Team Leader	5967	Biotechnology; pesticides and toxics
Hal Bond	5970	Biosciences
Ken Hood	3976	Ocean pollution; agricultural ecology; plant physiology
Garet Lahvis	5943	Biomarkers; marine mammal physiology
Surface Water and Modeling Team		
Robert Worrest, Acting Team Leader	5871	Global climate change (matrix manager); stratospheric ozone depletion (matrix manager); Arctic ecology; marine ecology
Paul Ringold	5609	Global climate change; aquatic and terrestrial effects; marine ecology
Lowell Smith	5717	Global climate biogeochemical cycles; emissions inventory and modeling
Dennis Trout	5991	Acid deposition; atmospheric transport and dispersion
Terrestrial and Groundwater Effects Staff		
Robert Swank, Acting Director	5980	Groundwater model validation (matrix manager); multimedia pollutant transport and fate modeling; industrial pollution control and prevention technology
Groundwater Effects Team		
Steve Cordle, Team Leader	5940	Ground water; wetlands; water quality; hazardous waste; bioremediation
Will LaVeille	5990	Hazardous waste and Superfund; ecorisk; bioremediation
Barbara Levinson	5983	Wellhead protection; underground injection control; agricultural; nonpoint source
Chieh Wu	5977	Water quality management; water quality criteria; wetlands; water treatment; environmental engineering
Terrestrial Effects Team		
Peter Jutro, Team Leader	5600	Environmental sustainability; biodiversity; ecology; conservation biology

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Office of Modeling, Monitoring Systems and Quality Assurance

H. Matthew Bills,
Acting Director

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The Office of Modeling, Monitoring Systems and Quality Assurance (OMMSQA) is responsible for:

- characterizing the sources, atmospheric and environmental transformations and pathways, and the physical, chemical, and biological properties of pollutants stressing human and ecological systems;
- quantifying human and ecosystem exposure to pollutants and to support exposure assessments essential to the Agency's risk assessment program;
- determining the status and trends in pollutant concentrations and ecosystem condition;
- developing models to estimate the atmospheric sources, transport, fate, and concentrations of pollutants for use in exposure and risk assessments and in developing effective control strategies for risk reduction;
- developing the measurement techniques, analytical tools, and quality assurance protocols necessary to assess pollutant exposure and ecosystem condition;
- developing and supporting policies, procedures, and management systems to assure the quality of environmental data; and
- generating research tools and environmental data to predict air pollutant source to receptor relationships and to conduct hazard and exposure assessments for developing risk management strategies to verify their effectiveness.

In carrying out these responsibilities, the Office:

- identifies research, development, demonstration, and service needs and priorities;
- establishes program policies and guidelines;
- administers program plans including objectives and estimates of resources required;
- assigns program responsibility and resources to the laboratories;
- reviews program progress and assures timeliness, quality and responsiveness of outputs.

Program Activities

Air

- National Ambient Air Quality Standards - Evaluate and standardize monitoring systems for measuring

criteria air pollutants and develop quality assurance procedures. Develop a data base to support the development and evaluation of secondary (welfare) national ambient air quality standards, especially air pollutant effects on visibility reduction and material damage.

- New Source Performance Standards (NSPS) and State Implementation Plans (SIPs) - Develop and evaluate monitoring methodology in support of NSPS and SIPs, including methods for remote monitoring, compliance, and quality assurance. Develop and evaluate air quality models for assessing the effectiveness of abatement control strategies on reducing ambient air pollutants, including ozone and particulate matter.
- Hazardous Air Pollutant Regulatory Activities - Develop and evaluate monitoring methodology for hazardous air pollutants (HAPs). Also, assess the effects of human exposure to HAPs. Determine the concentrations, transformation products, and removal rate of HAPs in the atmosphere.
- Mobile Source Pollutant Regulatory Activities - Determine population exposure to mobile source pollutants. Characterize the tail pipe and evaporative emissions of motor vehicles using gasoline, methanol, ethanol, and other alternative fuels to determine the effects of driving conditions and seasonal conditions (winter vs. summer) on motor vehicle emissions.
- Indoor Air Quality Research - Investigate sources, exposures, health effects and mitigation of pollutants in indoor air with other federal agencies through the Committee on Indoor Air Quality (CIAQ).
- Stratospheric Ozone - Analyze air models to predict the influence of increasing ultraviolet-B (UV-B) radiation on ambient ozone formation in urban areas. Determine UV-B changes at the earth's surface and exposure of humans, plants, and animals. This work is an integral component of ORD's stratospheric ozone program.
- Global Warming - Develop and evaluate statistical methods and air quality models to detect and predict the impact of the emissions of trace gases on climate and air quality levels. This work is an integral component of ORD's global climate program.

- **Acid Deposition** - Determine the status and trends of wet and dry deposition in urban and non-urban areas and provide quality assurance for measurements. Determine effects of acid deposition on various ecosystems (surface waters and forests) and on cultural resources (metals and painted surfaces). Develop simulation models (e.g., RADM) and use as assessment tools.

Water Quality

- **Water Quality Based Approach** - Permitting. Provide assurance that ambient water quality monitoring data for regulation setting, enforcement, or compliance purposes are scientifically valid and legally defensible. Obtain precision and accuracy data for each monitoring method. Promulgate "Analytical Methods for the Analysis of Pollutants" as required by Section 304(h) of the Clean Water Act.
- **Waste Water Treatment Technology** - Provide quality control materials and calibration standards for regulated CWA analytes. Evaluate performance of EPA, EPA Contractors Grantee, state and local laboratories. Evaluate and revise data quality criteria and develop reference materials.

Drinking Water

- **Drinking Water Technology** - Provide contaminant monitoring procedures to assure compliance with maximum contaminant levels pursuant to Section 1401 of the Safe Drinking Water Act and provide quality assurance/quality control programs for on-site evaluation and certification of drinking water monitoring laboratories. Support laboratories and offices involved with data collection. Develop methods and analytical procedures to produce measurement systems for chemical, radiochemical, and microbiological analysis. Develop and distribute QC and PE samples for drinking water laboratory certification program.
- **Groundwater** - Develop measurement systems, methods for locating abandoned wells, geophysical methods to detect and evaluate underground movement of fluids from injection wells, quality control procedures and guidelines to support Agency-wide QA program, and methods for well head protection.

Hazardous Waste

- **Waste Identification** - Develop analytical techniques for hazardous waste characterization. Develop and evaluate subsurface monitoring methods for use at RCRA waste sites.
- **Quality Assurance** - Support quality assurance of the RCRA data generated by the EPA regional offices, contractors and state and local agencies.
- **Releases** - Provide aerial photography, satellite

imagery, and multispectral scanner support to assist regional offices in Spill Prevention, Control and Counter-measure (SPCC) surveys, planning, and emergency response. Develop and evaluate procedures for external monitoring around underground storage tanks (UST), determining active leaks and the boundaries for corrective action, and UST cleanup progress.

Pesticides

- **Health: Markers, Dosimetry, and Extrapolation** - Evaluate the use of biomarkers in monitoring of pesticide exposure and support the operation of the pesticides and industrial chemical repository.
- **Exposure Monitoring** - Monitor dietary, non-dietary and residential exposure scenarios to investigate human exposure to pesticides.

Radiation

- **Manage Off-Site Radiation Monitoring Program** for DOE including hydrologic and human surveillance monitoring. Maintain quality assurance support program for measurement of ionizing radiation contaminants in air, water, milk and food.

Multimedia Planning

- **Manage EPA's Quality Assurance Program**, the Environmental Monitoring and Assessment Program (EMAP), and exposure research. Conduct quality assurance management system reviews; implement the data quality objectives process; and manage an Agency-wide QA training program.

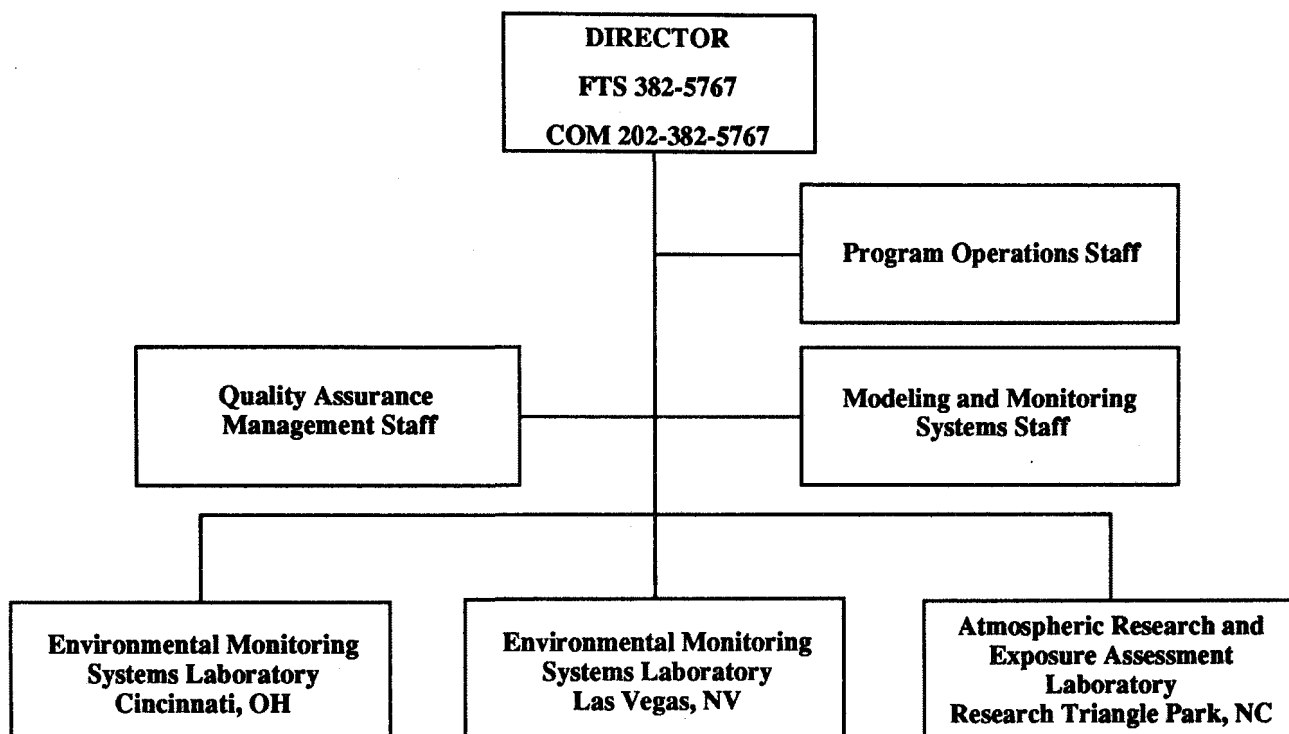
Toxic Substances

- **Analytical Methods Development for Toxic Substances** - Develop immunoassays for measurement of organic compounds in biological and environmental samples and investigate new separation procedures for analysis including chemometric approaches.
- **Health: Markers, Dosimetry, and Extrapolation** - Evaluate DNA and protein adducts for use in human exposure monitoring studies.
- **Exposure Monitoring Systems Development** - Develop predictive models for human exposure and characterize human activity patterns.
- **Biotechnology/Microbial and Biochemical Pesticides Control Agents** - Develop guidelines and processes for monitoring the release of genetically engineered microorganisms (GEMS) in the environment. Determine half-life in bacterial aerosols.
- **Support** - Provide quality assurance and reference standards and develop guidelines to govern routine exposure and environmental monitoring for toxic chemicals.

Superfund

- Provide techniques and procedures for site and situation assessments. Provide monitoring techniques and procedures for site assessment; geophysical methods; remote sensing; soil sampling methods and survey designs.
- Assist in site-specific monitoring and characterization of Superfund investigations.

- Provide quality assurance/quality control support for the Superfund Contract Laboratory Program; provide assessment and improvement of methods to evaluate Superfund sites; and provide an independent QA laboratory to support monitoring activities. Under the Superfund Innovative Technology Evaluation (SITE) program, evaluate systems for characterizing and assessing contamination at Superfund sites.



Areas of Expertise

	Telephone*	Area of Expertise
William Keith	5716	Air; radiation
Tom Pheiffer	5798	Water; drinking water; global climate; stratospheric ozone
Mike Dellarco	5794	Superfund
Laurie Schuda	8936	Toxics; pesticides
Ken Sala	4346	Hazardous waste
Multimedia		
Chris Saint	5772	Exposure research
Frederick Kutz	5967	EMAP
Nancy Wentworth	5763	Quality assurance program
Kevin Hull	5780	Quality assurance training
Dean Neptune	9464	Data quality objectives
Fred Haeberer	5785	Quality control - technical systems
Gary Johnson	8-629-7612	Quality assurance management systems review
Jim Stemmler	7353	Quality assurance program plans

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Office of Environmental Engineering and Technology Demonstration

Alfred W. Lindsey,
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The Office of Environmental Engineering and Technology Demonstration (OEETD) is responsible for planning, managing, and evaluating a comprehensive program of research, development, and demonstration of cost effective methods and technologies to:

- Control and manage hazardous waste generation, storage, treatment and disposal;
- Provide innovative technologies for response actions under Superfund and technologies for control of hazardous waste spills;
- Control environmental impacts of public sector activities including publicly-owned waste water and solid waste facilities;
- Improve drinking water supply and system operations, including improved understanding of water supply technology and water supply criteria;
- Characterize, reduce, and mitigate indoor air pollutants including asbestos and radon; and
- Characterize, reduce, and mitigate acid rain precursors and other air pollutants from stationary sources.

OEETD is also responsible for the development of engineering data needed by the Agency in reviewing pre-manufacturing notices relative to assessing potential release and exposure to chemicals, treatability by waste treatment systems, containment and control of genetically engineered organisms, and the development of alternatives to mitigate the likelihood of release and exposure to existing chemicals.

In carrying out these responsibilities, the Office:

- Develops program plans and manages the resources assigned to it;
- Implements the approved programs and activities;
- Assigns objectives and resources to the OEETD laboratories;
- Conducts appropriate reviews to ensure the quality, timeliness, and responsiveness of outputs; and
- Conducts analyses of the relative environmental impacts of engineering methods and control technologies and strategies.

The Office of Environmental Engineering and Technology Demonstration is the focal point within the Office of Research and Development for providing liaison with the Department of Energy on issues associated with clean coal and energy development. It is also the focal point within the Office of Research and Development for liaison with the rest of the Agency on

issues relating to engineering research and development, and control of pollution discharges.

Program Activities

Air

- SO_x and NO_x control technologies (LIMB, ADVACATE, REBURNING).
- Hazardous air pollutant control technologies.
- Indoor air source characterization and control technologies
- Ozone attainment - control of VOC emissions from products.
- Global Climate - Stratospheric Modification.

Water Quality

- Municipal sewage innovative and alternative wastewater and sludge technologies.
- Toxicity treatability protocols for wastewater treatment processes.
- Storm and combined sewer overflow control technologies.

Drinking Water

- Disinfection technologies, including evaluation of by-products.
- Water quality problems in distribution systems, e.g., lead solder.
- VOCs, pesticides, and radionuclides treatment technologies.

Hazardous Wastes/Superfund

- Pretreatment technologies for land disposal.
- Waste minimization technologies and clearinghouse.
- Land disposal technology, including air emissions.
- Incineration of hazardous wastes and municipal solid wastes.
- Cleanup technologies for leaking underground storage tanks.
- Superfund Innovative Technology Evaluation program (SITE).
- Evaluate cleanup technologies for Superfund sites.
- Municipal solid waste and sludge innovative technology evaluations (MITE).

- Evaluate technologies for sludge and municipal solid waste disposal.

Pesticides

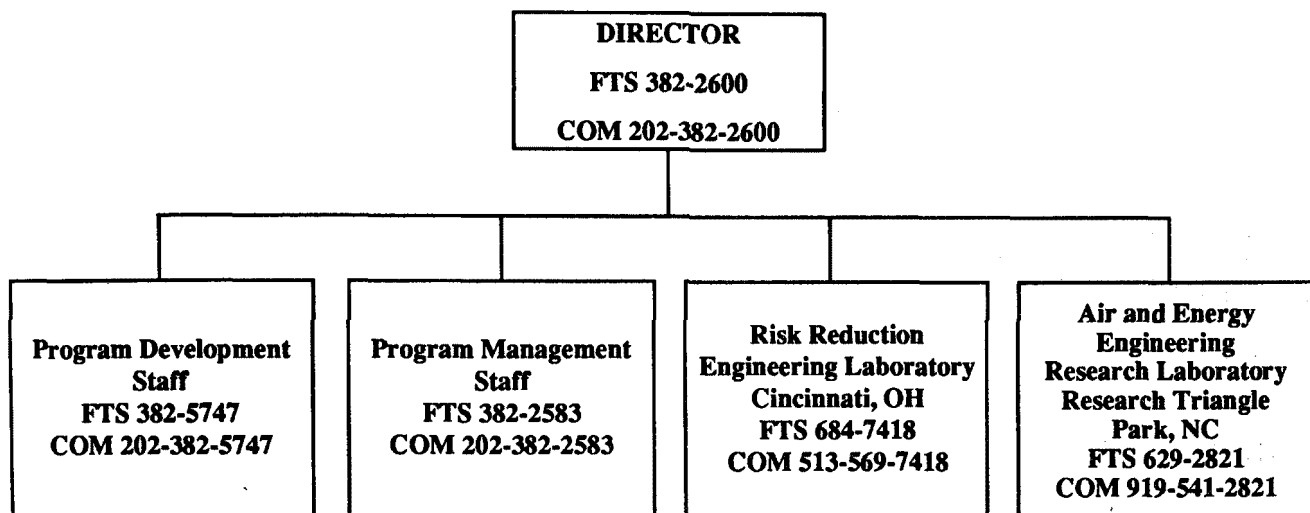
- Personal protection technology for applicators.

Radiation

- Radon mitigation technologies for schools and homes.

Toxic Substances

- Toxicity assessment methodology for pre-manufacturing notices.
- Asbestos abatement technologies for schools and tall buildings.
- Risk management for genetically engineered microorganism manufacturers.



Areas of Experts

	Telephone*	Area of Expertise
Marshall Dick	2580	Radon; indoor air; global climate; stratospheric ozone; air toxics; air pollution; energy
Bala Krishnan	2583	Hazardous waste; municipal solid waste; pollution prevention
William McCarthy	2580	Drinking water; toxic substances; asbestos; pesticides
Richard Nelesnik	2583	Superfund alternative treatment technologies; innovative technology evaluation; technical assistance response team; underground storage tanks; medical waste
Don Tang	2583	Municipal wastewater; industrial wastewater; storm-water and combined sewer overflow; constructed wetlands
Thomas Baugh	5748	Bioremediation; Alaska bioremediation project

(continued)

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Areas of Expertise

(continued)

	Telephone*	Area of Expertise
Paul desRosiers	5748	Pesticides Disposal Methods; pulp, paper, and paperboard wastes and treatment; municipal solid wastes; dioxins/furans sources and disposal; hazardous waste treatment
Michael L. Mastracci	5748	Commercialization of environmental technologies: <ul style="list-style-type: none"> - National Environmental Technology Applications Corporation - Alternative procurement and investment incentive mechanism
Russell Kulp	5748	Pollution prevention
Kurt Jakobson	5748	Oil spills
Paul Shapiro	5748	Global climate; stratospheric ozone; DOE/DOD coordination
Myles Morse	5748	Pollution prevention; international cleaner production; alternative treatment technologies; technical information transfer; data networking
Curtis Harlin	5748	Alternative treatment technology information center; Superfund; drinking water treatment; municipal wastewater treatment

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Center for Environmental Research Information

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The Center for Environmental Research Information (CERI) is a focal point for the exchange of scientific and technical information both within the federal government and to the public. CERI's Technology Transfer, Research Communication, and Document Management Branches coordinate a comprehensive program in support of the activities of EPA's Office of Research and Development (ORD), its laboratories, and associated programs nationwide.

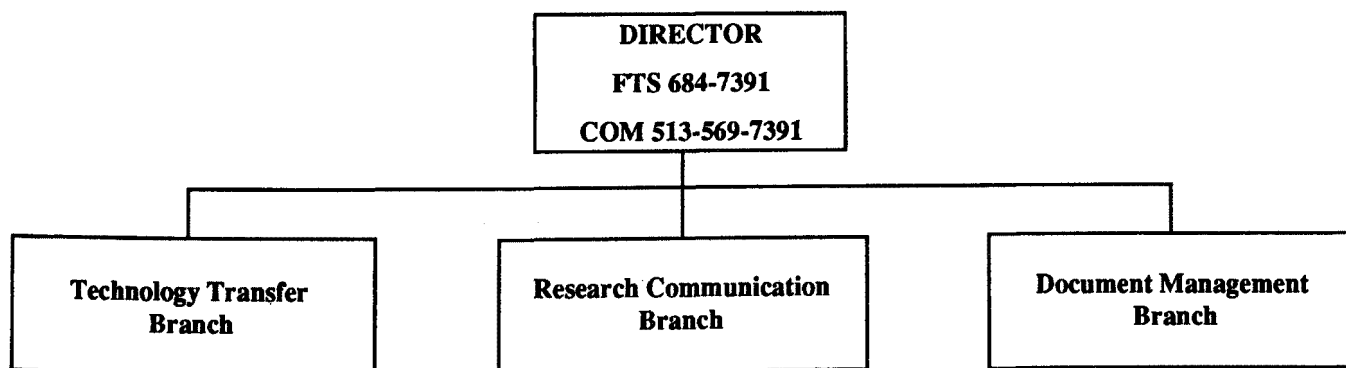
The Technology Transfer Branch works with the ORD laboratories, program offices, Regions, academia and the private sector to produce technology transfer products (i.e. reports, summaries, journal articles, design manuals, handbooks, capsule reports, seminars, workshops, and training courses) that aid states, local governments, and the regulated community in complying with EPA regulations. This information is based upon the latest technology and is in a form that is easily understood as well as comprehensive in coverage. Topics include groundwater remediation, pollution prevention, solid and hazardous wastes, sludge, small community water treatment, municipal wastewater treatment, air pollution, and EMAP.

CERI's Research Communication Branch is responsible for working with the ORD laboratories, program offices and regions to produce information products that summarize re-

search, technical, regulatory, and enforcement information that will assist non-technical audiences in understanding environmental issues. Additionally, Research Communication products will allow a non-technical audience to make informed decisions necessary to respond to EPA's regulatory requirements and enforcement actions.

The Document Management Branch is responsible for the production and distribution of scientific and technical reports, responding to requests for publications, and quality control of information products through the application of standardized procedures for the production of documents. Our personnel employ state-of-the-art electronic publishing systems to efficiently produce, edit, publish, and distribute documents in the most appropriate format.

Electronic links with the Offices, Regions, laboratories, researchers, and the private sector afford our Center the immediate ability to serve the needs of our clients. A noteworthy component of this service is the ORD Electronic Bulletin Board System (BBS). It facilitates the exchange of technical information and ORD products among our clients in the form of electronic messages, brief bulletins about ORD products and activities, files for downloading, participation in conferences, and on-line databases for identifying ORD publications.



Areas of Expertise

	Telephone*	Area of Expertise
Ed Barth	7669	Treatment of hazardous wastes (solidification; stabilization; vitrification)
Carol Grove	7362	Ground water
Charles Guion	7272	ORD Electronic Bulletin Board System
James F. Kreissl	7394	Small community wastewater, drinking water, and solid waste management
Fran Kremer	7346	Treatment of hazardous wastes (bioremediation; oil spills)
Denis Lussier	7354	Municipal wastewater treatment
Justice Manning	7349	Air pollution
Hector Moreno	7404	Parasitology
Daniel J. Murray	7522	Non-point source water pollution; industrial wastewater pretreatment; wastewater and water quality monitoring
Jose D. Perez	7502	Expert systems
J. E. Smith	7355	Drinking water and wastewater treatment; residuals management; hazardous waste management; working with international organizations to solve developing country industrial and hazardous waste problems
Jack Teuschler	7314	Expert systems; computer systems development; software development
H. Douglas Williams	7361	Hazardous materials risk reduction for waste minimization; pollution prevention

Risk Reduction Engineering Laboratory

E. Timothy Oppelt,
Director

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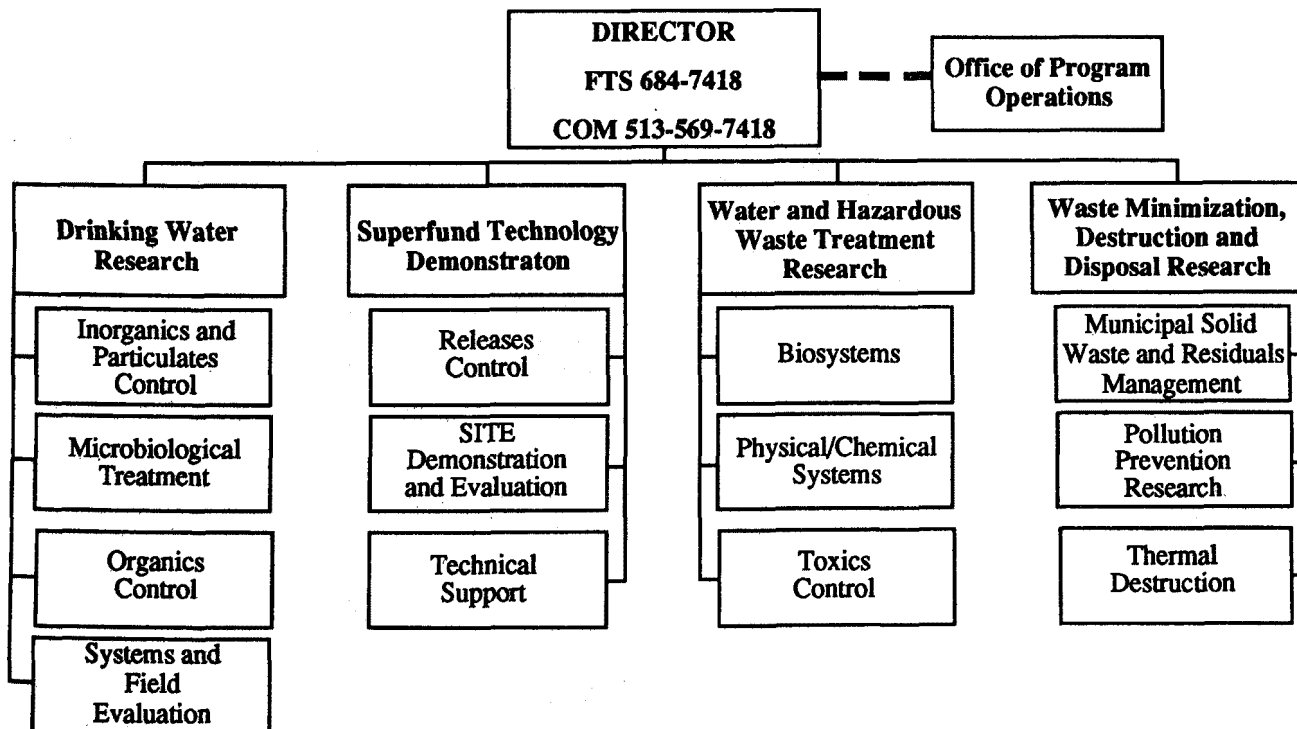
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The mission of the Risk Reduction Engineering Laboratory (RREL) is to advance the understanding, development and application of engineering solutions for the prevention or reduction of risks from environmental contamination. This mission is accomplished through basic and applied research studies, engineering technology evaluations, new process development and demonstration studies designed to:

- Enhance our understanding of environmental engineering technology design, performance and operation.
- Anticipate engineering control and prevention measures for environmental problems not of immediate regulatory or enforcement concern.
- Provide a sound scientific basis for development and enforcement of environmental regulations, standards, guidelines and policy decisions in areas for which EPA is responsible.
- Foster the development, evaluation and commercialization of improved and innovative environmental engineering technology in collaboration with industry.
- Provide a basis for technical assistance and engineering support to EPA, other government organizations and private industry regarding the implementation of environmental regulations, standards and guidelines.

Research development and technical support are provided in the following specific areas of concern:

- Treatment, distribution and preservation of safe public drinking water supplies.
- Treatment, disposal, recycling and minimization alternatives for hazardous wastes, municipal solid wastes and medical wastes.
- Technologies for remedial action at uncontrolled hazardous waste sites and for corrective action at existing hazardous waste facilities.
- Detection and remedial action for leaking underground storage tank facilities.
- Alternatives for controlling the release of asbestos, existing and new chemicals in manufacturing, and emissions from biotechnology operations.
- Alternatives for remediation of oil spills.
- Engineering alternatives for disposal of cancelled and suspended pesticides and for minimizing worker exposure to pesticides.
- Prevention, treatment and control of municipal and industrial wastewater discharges, sludges and urban runoff pollution.
- Pollution prevention through industrial process change, product substitution, development of clean products and clean technology.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
E. Timothy Oppelt, Director	7418	Hazardous waste management
John J. Convery, Deputy Director	7896	Municipal wastewater treatment
Drinking Water Research Division		
Robert M. Clark, Director	7201	Drinking water treatment
Thomas J. Sorg	7370	Drinking water inorganics control; radionuclides
Donald Reasoner	7234	Drinking water microbiological treatment
Ronald Dressman	7342	Organics control; disinfection byproducts
Benjamin W. Lykins	7460	Drinking water field evaluations; costs
Marvin Gardels	7217	Corrosion
Richard Miltner	7403	Activated carbon adsorption
J. Keith Carswell	7389	Ozone; granular activated carbon
Edwin E. Geldreich	7232	Drinking water management
Michael R. Schock	7412	Corrosion
Kim R. Fox	7820	Filtration
Gunther Craun	7422	Waterborne outbreaks
Carol Ann Fronk	7592	Membrane technology
Superfund Technology Demonstration Division		
Robert A. Olexsey, Director	7861	Superfund engineering technology
John S. Farlow	8-340-6635**	Superfund releases control (Edison, NJ site)
Steven C. James	7696	Innovative technology evaluation; demonstrations
Benjamin L. Blaney	7406	Superfund technical assistance
Donald E. Sanning	7875	Superfund containment technology
Frank Freestone	8-340-6632**	Superfund on-site technology (Edison, NJ site)
Paul dePercin	7797	Fugitive dust control
Naomi P. Barkley	7854	Containment technology - plume management
Water and Hazardous Waste Treatment Research Division		
Subhas K. Sikdar, Director	7528	Water and hazardous waste research
Alden G. Christianson	7997	Hazardous waste alternative technologies
Carl A. Brunner	7655	Municipal wastewater treatment
Roger C. Wilmoth	7509	Toxics control; asbestos
Dolloff F. Bishop	7629	Municipal wastewater toxics control; pilot plants
Kenneth A. Dostal	7503	Industrial wastewater treatment
John O. Burckle	7506	Biotechnology
Richard A. Dobbs	7649	Fate and treatability of toxics
Waste Minimization, Destruction and Disposal Research Division		
Ronald D. Hill, Director	7546	Waste minimization, destruction and disposal
Clyde R. Dempsey	7504	Thermal treatment/destruction
Harry M. Freeman	7529	Pollution prevention; waste minimization
James S. Bridges	7683	Waste minimization in federal facilities

(continued)

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**Edison, NJ location FTS: 340-xxxx; COM: 201-321-xxxx

Areas of Expertise

(continued)

	Telephone*	Area of Expertise
Robert E. Landreth	7871	Landfill design and operation
Carlton C. Wiles	7795	Stabilization; municipal solid waste
George L. Huffman	7431	Thermal destruction; combustion
Michael H. Roulier	7796	In-situ treatment of soils
Donald A. Oberacker	7510	Thermal destruction of hazardous materials
Ivars J. Lics	7718	Industrial pollution prevention
Federal Technology Transfer Act Cooperative Research Agreement		
E. Timothy Oppelt	7418	Boyle Engineering, Inc. -- EPA patent on butylamine-group-containing ion exchange resins for water purification
Fred Bishop	7629	Levine-Fricke, Inc. -- Lab and pilot scale study of centralized waste treatment technology for degrading RCRA and CERCLA waste
Robert M. Clark	7201	Lewis Publishers, Inc./CRC Press, Inc. -- To develop a cost and performance model for clean-up technologies for safe drinking water

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Air and Energy Engineering Research Laboratory

Frank T. Princiotta,
Director

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Mailcode: 60
Research Triangle Park, NC 27711
FAX: FTS 629-2557

The mission of the Air and Energy Engineering Research Laboratory (AEERL) is to research, develop and demonstrate methods and technologies for controlling air pollution from stationary sources. Among these stationary sources are electric power plants, manufacturing and processing industries, and incinerators. The Laboratory does not deal with pollution from mobile sources, or nuclear power plants.

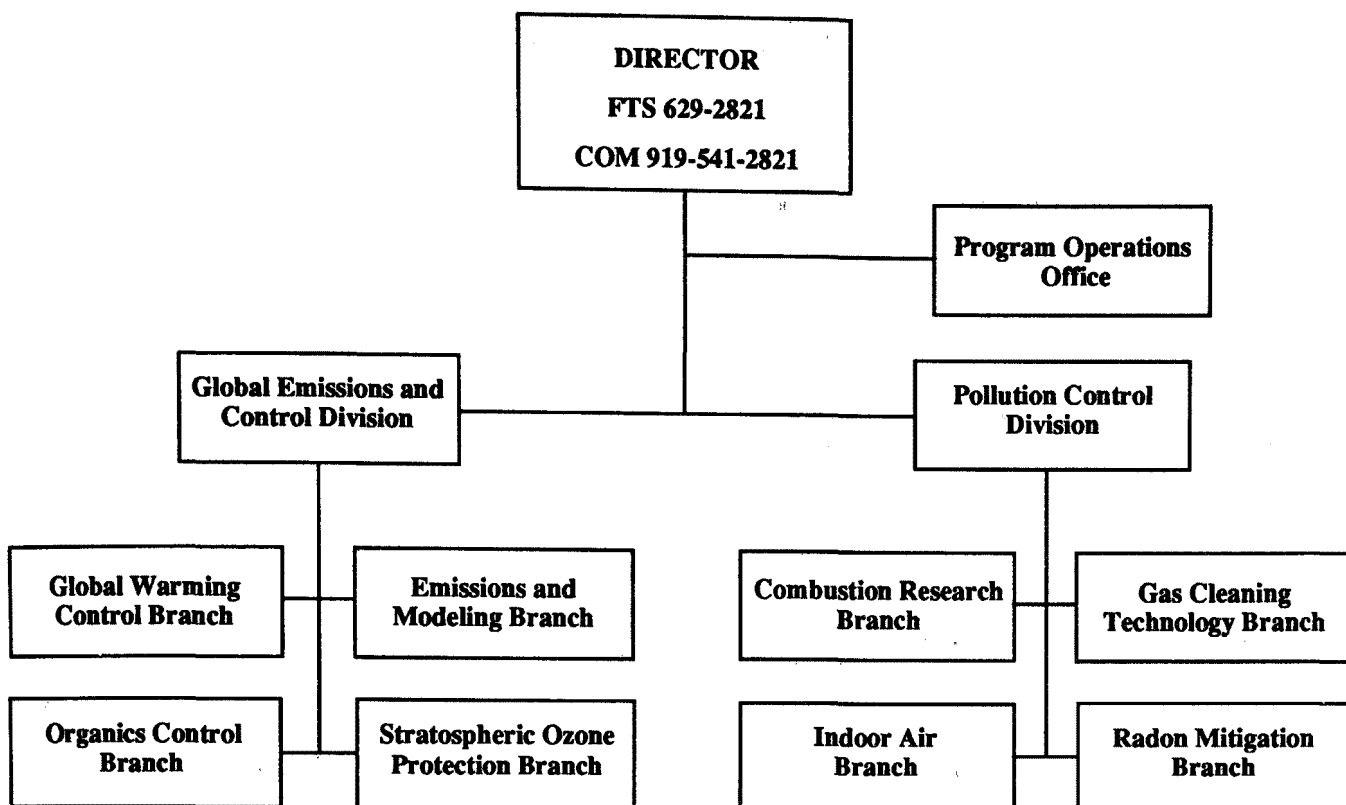
Staffed primarily by engineers, the Laboratory creates and improves air pollution control equipment, seeks means of preventing or reducing pollution through changes in industrial processes, develops predictive models and emissions estimation methodologies, identifies and assesses the importance of air pollution sources, and conducts fundamental research to define the mechanisms by which processes, equipment, and fuel combustion produce air pollution.

Currently, AEERL is concentrating its efforts in the following eight main program areas:

- *Acid Rain:* This program focuses on developing innovative controls for acid rain precursors, SO₂, and NO_x, including the Limestone Injection Multistage Burner (LIMB) and ADVACATE (advanced silicate); developing models that will identify the best possible control alternatives for various scenarios, and emissions projection modeling.
- *Air Toxics:* Emphasis is placed on developing technologies and pollution prevention approaches to reduce emissions of volatile organic compounds (VOCs); identifying sources of VOCs; developing improved designs that will achieve better control of woodstove emissions; and providing direct technical assistance to state and local agencies through the Control Technology Center (CTC) which has extensive information on existing technologies applicable to a variety of air pollution sources.
- *Hazardous Wastes:* The primary goal of this program is to study the fundamental combustion mechanisms that influence thermal destruction of hazardous wastes. Included are studies of metal

aerosols from waste incineration, failure modes in a small pilot-scale rotary kiln, and small pilot-scale studies of fluidized-bed incineration.

- *Indoor Air Quality/Radon:* Research is currently concentrating on (1) developing and demonstrating technologies for reducing the entry of naturally-occurring radon into houses, schools and other public buildings; (2) fundamental studies of processes that influence radon entry; (3) studying building materials and consumer products as sources of indoor air pollution; and (4) evaluating indoor air control options.
- *Municipal Waste Combustion:* Work focuses on evaluating techniques to minimize pollutant formation during combustion, and determining the effectiveness of various devices in controlling air pollution from municipal waste incinerators.
- *Ozone Non-Attainment:* This program supports ORD's overall ozone nonattainment strategy by developing innovative technologies, improving existing technologies, enhancing and developing emissions estimations methodologies, and developing pollution prevention approaches for VOC's and other ozone precursors.
- *Stratospheric Ozone:* In cooperation with industry, AEERL evaluates, identifies, and recommends substitute products and new industrial processes which will replace ozone depleting substances that are now in use. The current emphasis is on alternatives for home and commercial refrigeration systems. In addition, research is underway to evaluate/develop recycling and destruction approaches for CFC's and other ozone depletion substances.
- *Global Climate Change:* This program is evaluating mitigation options for greenhouse gases (carbon dioxide, methane, nitrous oxide) including innovative technological solutions to the problem. In addition, emission factors for key greenhouse gas sources are being enhanced.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Frank T. Princiotta, Director	2821	Air and energy environmental assessment and control technology development
G. Blair Martin, Deputy Director	7504	Combustion, incineration, furnace injection for SO _x control
Pollution Control Division		
Everett L. Pyler, Director	2918	Combustion modification control technology; fundamental hazardous waste incineration research; municipal waste combustion; radon control; indoor air quality
Combustion Research Branch		
Robert E. Hall, Chief	2477	Combustion modification control technology including reburning; fundamental hazardous waste incineration research; municipal waste combustion
Indoor Air Branch		
Bruce A. Tichenor, Acting Chief	2991	Indoor air pollutant source/emissions characterization; air cleaners and other indoor air quality (IAQ) mitigation approaches; IAQ modeling

(continued)

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Areas of Expertise

(continued)

	Telephone*	Area of Expertise
Radon Mitigation Branch Michael C. Osborne, Chief	4113	Radon mitigation techniques for new and existing houses, schools and other structures; fundamental studies of radon source potentials, entry, accumulation and removal mechanisms
Gas Cleaning Technology Branch Michael A. Maxwell	3091	LIMB development; low NO _x burners; fundamental sorbent reactivity/kinetics studies; flue gas cleaning technologies; NO _x selective catalytic reduction; LIMB demonstrations (wall-fired and tangentially-fired)
Global Emissions and Control Division James H. Abbott, Director	3443	Control technologies/pollution prevention approaches for volatile organic compounds (VOCs), greenhouse gases, and ozone depleting compounds; emissions models and estimation methodologies
Global Warming Control Branch Richard Stern, Acting Chief	2612	Emissions characterization and mitigation for greenhouse gases (methane, CO ₂ , etc.)
Emissions and Modeling Branch Janice Wagner, Chief	1818	Emission estimation methodologies and projection models; field validation of improved methods
Organics Control Branch Wade H. Ponder	2818	VOC controls; Control Technology Center (CTC Hotline: 919-541-0800 or FTS 629-0800); pollution prevention approaches for VOC area sources; woodstoves; coke oven controls
Stratospheric Ozone Protection Branch William J. Rhodes	2853	Substitutes for CFCs, HCFCs and other ozone depleting compounds; CFC/Halon recycling and destruction approaches; alternative refrigerants and modified refrigerator designs
Federal Technology Transfer Act Cooperative Research Agreement Michael A. Maxwell	3091	Flakt, Inc. -- Development of absorbents for air pollution control technology
Control Technology Center Hotline	0800	Extensive information on existing control technologies applicable to a variety of air pollution sources

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Environmental Monitoring Systems Laboratory

Thomas A. Clark,
Director

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The Environmental Monitoring Systems Laboratory - Cincinnati (EMSL-Cincinnati) has as its primary mission to conduct research in development, evaluation, and standardization of chemical and biological methods for environmental assessments; to conduct research for detecting, identifying, and quantifying microbial pathogens found in environmental media; and to operate the U.S. Environmental Protection Agency (USEPA) Quality Assurance (QA) Program for maintaining the scientific credibility of the Agency's water, wastewater, and solid wastes/Superfund/toxics data bases.

Developed and standardized methods are used to identify inorganic and organic pollutants and to detect and identify bacteria, viruses, parasites, and aquatic organisms in the environment. Analytical methods for effluent compliance monitoring [304(h)] are improved, modified and updated on a regular basis. These methods include procedures for inorganic, organic and biological pollutants.

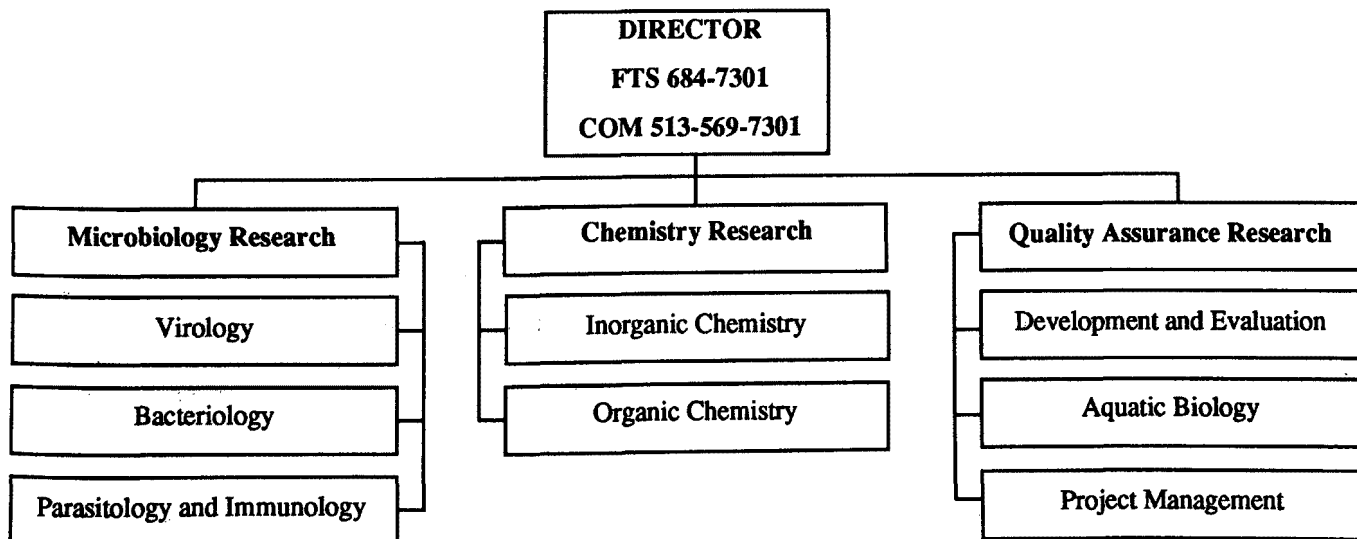
Research is conducted on biotechnological methods for determining the occurrence, distribution, transport, and fate of human pathogenic parasites in the environment. Methods are developed to be applicable to drinking water, ambient water, raw and treated wastewaters, sediments, sludges, and biological samples.

The QA program involves method confirmation and validation studies to establish the precision and bias of USEPA's selected analytical methods, QA manuals and guidelines, quality control (QC) samples, and calibration standards for all analytes regulated under water and waste programs. Performance evaluation studies and laboratory certification activities are conducted to evaluate and report on the competency of

analysts and laboratories. A QA monitoring program (biology and chemistry) evaluates the adequacy of promulgated analytical methods and procedures and effluent toxicity tests. Quality assurance samples are provided for ambient/non-point source monitoring programs.

The EMSL-Cincinnati is currently engaged in the following research and evaluation tasks:

- *Industrial Wastewater:* Validated analytical test methods for National Pollutant Discharge Elimination System (NPDES) monitoring; performance evaluation (PE) studies for discharge monitoring reports.
- *Drinking Water:* Official chemical and microbiological methods for meeting regulatory monitoring requirements of Safe Drinking Water Act (SDWA); certification of laboratories and distribution of QA materials.
- *Toxics:* Evaluation of analytical methods for key toxic organic materials and preparation of specialized QA materials.
- *Solid Waste:* Evaluation and standardization of solid waste (SW-846) methods and generic methods for the measurement of volatile and semivolatile organic compounds; preparation and distribution of QA materials.
- *Superfund:* Development of analytical methods for the measurement of toxic materials in Superfund-type samples and QA materials for evaluation of contract laboratory program (CLP) laboratories.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Thomas A. Clark, Director	7301	Methods and quality assurance
Gerald McKee, Deputy Director	7303	Methods and quality assurance
Ann Alford-Stevens	7492	Methods and quality assurance
James Lichtenberg	7306	Standardization and certification
Microbiology Research Division		
Alfred Dufour, Director	7218	Microbiology
Virology Branch		
Robert Safferman	7334	Virology
Bacteriology Branch		
Gerard Stelma	7384	Bacteriology
Parasitology and Immunology Branch		
Walter Jakubowski	7385	Parasitology
Chemistry Research Division		
William Budde, Director	7309	Chemical methods
Organic Chemistry Branch		
James Eichelberger	7278	Organic methods
Inorganic Chemistry Branch		
Larry Lobring	7372	Inorganic methods
Quality Assurance Research Division		
John Winter, Director	7325	Quality assurance matters
Development and Evaluation Branch		
Robert Slater	7325	QC/PE samples
Aquatic Biology Branch		
James Lazorchak	8114**	Aquatic biology
Project Management Branch		
Raymond Wesselman	7325	Methods standardization
Federal Technology Transfer Act Cooperative Research and Development Agreements		
Raymond J. Wesselman	7325	NSI Technologies, Inc. -- R&D of liquid organic standards; and preparation, verification, distribution and stability of these samples; Supelco, Inc. -- R&D of specific samples for water monitoring methods; Ultra Scientific -- R&D of neat organic reference materials; and preparation, verification, distribution and stability of these samples

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**Newtown facility FTS: 684-xxxx; COM: 513-533-xxxx

Environmental Monitoring Systems Laboratory

Robert N. Snelling,
Acting Director

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The Environmental Monitoring systems Laboratory-Las Vegas develops methods, systems and strategies for monitoring the environment with the primary purposes of assessing the exposure of man and other receptors in the environment to polluting substances, characterizing the status of environmental quality, and identifying the trends in environmental quality.

The Laboratory develops and applies field monitoring techniques, analytical methods, and remote sensing systems for monitoring environmental pollutants. It field tests, demonstrates and applies these systems, and initiates transfers of operational systems to Agency user organizations. It provides technical support to Agency, Regional, and Program Offices in response to their requests for pollutant monitoring, testing and surveillance assistance.

The Laboratory develops and operates quality assurance programs for radiation; hazardous wastes, and toxic/pesticide monitoring. This includes the development and maintenance of reference standards, preparation of performance evaluation materials, and the conduct of performance audits for EPA laboratories as well as other Federal, state, and local laboratories.

Under a Memorandum of Understanding with the U.S. Department of Energy (DOE), the Laboratory conducts a comprehensive off site radiological safety program for the U.S. Nuclear Weapons Testing Program which includes pathways research to determine actual and potential radiation exposure to humans and the environment from past and present nuclear testing. The Laboratory also provides quality assurance oversight for DOE's mixed waste management activities.

The Laboratory's major programs are:

- **Advanced Analytical Methods:** Development and evaluation of innovative techniques for sample extraction and analysis of organic and inorganic contaminants in complex environmental matrices. Advanced methods using Liquid Chromatography, Mass Spectrometry, Fourier Transform Infra-Red Spectroscopy, Gas Chromatography, Inductively Coupled Plasma Spectroscopy, and Immunoassay are developed and evaluated.
- **Advanced Monitoring Methods:** Research directed at providing monitoring methods that are simpler, more reliable, or more rapid to use than existing methods. Overhead remote sensing, aerial photography, multispectral scanner and laser fluorosensing technologies, airborne laser systems, and geophysical techniques are tools used to detect waste discharge, locate waste

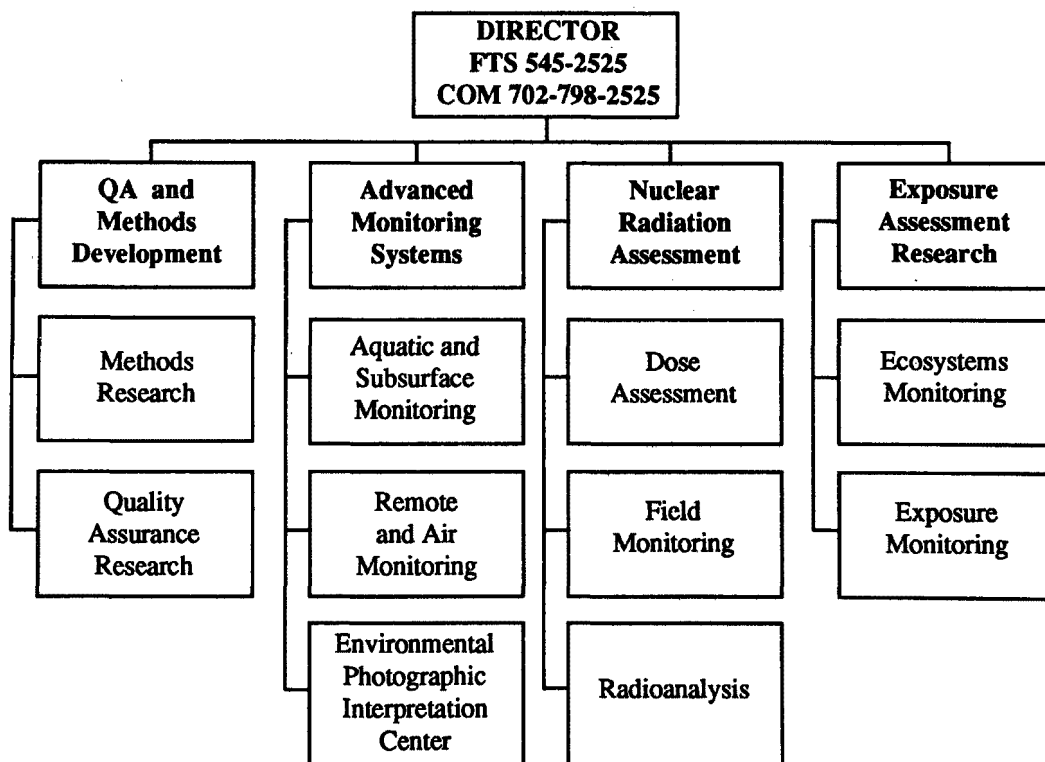
disposal sites, identify erosion, assess air particulate problems, and monitor pollutants in soils and in ground water.

- **Monitoring Network Design:** The Laboratory has long been in the forefront of monitoring design - using a concept that advocates a multimedia approach to environmental monitoring emphasizing proper selection of critical receptors, optimum siting, and number of samples, through planning and an understanding of how pollutants are transported from the source to the receptor. Geostatistics play a major role by using data from a preliminary study to establish the optimum distance between sampling points.
- **Quality Assurance:** In an effort to support the Agency's commitment to the quality assurance aspects of environmental sampling and analysis, test methods are validated and performance criteria are established. The precision, accuracy, and ruggedness of the analytical protocols are then evaluated for use in Agency monitoring programs. Quality assurance support, as well as laboratory and data audits, are provided for the Superfund Contract Laboratory Program.
- **Exposure Assessment:** Human exposure assessment provides critical information required to make risk estimates for environmental pollutants. A comprehensive approach is required to develop simultaneous information on sources, exposure, dose, effect, and control. Projects related to this topic include: examination of consumer products as sources of pollutants, evaluation/validation of indoor air models, evaluation of indoor air sinks, development of a benzene exposure model, human activity patterns, development/evaluation of immunoassays for environmental pollutants, monitoring of microorganisms in residential settings, and the examination of biomarkers as indicators of exposure.
- **Radiological Monitoring and Analysis:** The Laboratory maintains extensive radioanalytical, field radiological monitoring and health physics capability to conduct an integrated program of environmental monitoring, sampling, analysis, exposure assessment and quality assurance in support of the United States Nuclear Weapons Testing Program. The group responds to radiation accidents and potential emergencies such as the

Three Mile Island incident and the launches of Galileo and Ulysses deep space probes carrying radioisotope thermoelectric generators. They play a major role in the Federal Radiological Monitoring and Assessment Center. A whole body-counting facility is operated at the Laboratory for determining radionuclide identification and distribution in people. Also, the laboratory conducts an EPA-wide occupational radiation monitoring exposure program. This group supports the National Interim Primary Drinking Water Regulations by conducting the Drinking Water Laboratory Certification Program which includes providing radioactive reference standards, conducting intercomparison studies and performing audits of State drinking water laboratories.

- **Ecological Monitoring:** The Laboratory participates in the Agency's Environmental Monitoring and Assessment Program (EMAP), a national research program to prevent unwanted or irreversible damage to the nation's ecosystems. Research classifies, characterizes, and monitors status and trends of important ecosystems and their subclasses. The monitoring efforts specifically focus on conditions over periods of years to decades. Advanced monitoring methods are being used to determine status and trends in forest, agricultural and arid lands. The Laboratory is responsible for conducting initial ecosystem characterization, providing remote sensing support, providing guidance and support for field logistics and quality assurance, and for developing and implementing a distributed data base management system.

- **Monitoring and Measurement Technologies:** Under the aegis of the Superfund Innovative Technology Evaluation (SITE) Program, the Laboratory is responsible for identifying, evaluating, demonstrating, and transferring alternative or innovative technologies used for site characterization and for monitoring the progress of remedial activities. Technologies that have participated in the Program include portable gas chromatographs, ion mobility spectrometers, long-path-length infrared spectrometers, immunochemical test kits, fiber optic and other chemical sensors, x-ray fluorescence spectrometers, and mass spectrometers, among others. The Monitoring and Measurement Technologies Program also focuses on technologies used to characterize the physical characteristics of sites. The Monitoring and Measurement Technologies Program is matrix managed, involving the expertise residing in EMSL-LV's sister laboratories--EMSL-CI and AREAL-RTP.
- **Technical Assistance:** The Laboratory's Technical Support Center provides Regional personnel with monitoring and site assessment expertise. Areas of assistance include sampling and monitoring design assistance; remote sensing, mapping and geostatistics; analytical methods and quality assurance; bore-hole and surface geophysics; field portable x-ray fluorescence field methods; mixed waste and radiological analysis. Technical assistance is provided in a variety of ways, including reviews, information research and retrieval, technology transfer, teleconferencing, on-site measurements, training programs, seminars and workshops.



Areas of Expertise

Office of the Director	Telephone*	Area of Expertise
Robert N. Snelling, Acting Director	2525	Environmental monitoring
Margaret A. Rosiker	2522	Program management; ecological assessment
K. Bruce Jones	2671	Ecological monitoring; EMAP
Walter B. Galloway	2620	Quality assurance; safety
Kenneth W. Brown	2270	Technical support
Office of Program Management and Support		
Richard L. Garnas	2564	Environmental chemistry; program management
Quality Assurance and Methods Development Division		
Llewellyn R. Williams	2101	Organic and bioanalytical chemistry
Stephen Billets	2232	Physical analytical chemistry; mass spectrometry
Methods Research Branch		
Donald F. Gurka	2206	Physical analytical chemistry; infrared spectroscopy
Quality Assurance Research Branch		
Michael Hiatt	2383	Organic analytical chemistry; trace level environmental contaminant analysis
Advanced Field Monitoring Methods Program		
Eric N. Koglin	2432	Field screening/analytical methods; ground-water monitoring technologies
Exposure Assessment Research Division		
J. Gareth Pearson	2203	Environmental monitoring; quality assurance
Robert D. Schonbrod	2229	Analytical chemistry; quality assurance
Ecosystems Monitoring Program		
Ann M. Pitchford	2366	Environmental monitoring; quality assurance
Exposure Monitoring Program		
Stephen C. Hern	2594	Microbiology; exposure monitoring
Advanced Monitoring Systems Division		
Eugene P. Meier	2237	Ground-water monitoring; analytical environmental chemistry
John M. Moore	2237	Program management; systems engineering; systems analysis

(continued)

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Areas of Expertise

(continued)

	Telephone*	Area of Expertise
Aquatic and Subsurface Monitoring Branch		
Joseph J. D'Lugosz	2598	Hydrogeology; ground-water monitoring
Remote and Air Monitoring Branch		
Thomas H. Mace	2262	Remote sensing; geographical information systems
Mason J. Hewitt	2377	Geographical information systems
Environmental Photographic Interpretation Center (Warrenton, VA)		
Don Garofalo	3110**	Remote sensing
Nuclear Radiation Assessment Division		
Charles F. Costa	2305	Health physics
Daryl J. Thome	2314	Gamma spectrometry; mathematical statistics; health physics
William G. Phillips	2331	Health physics
James G. Payne	2204	Radiation emergency response
Dose Assessment Branch		
Norman R. Sunderland	2538	Data validation; health physics
Field Monitoring Branch		
Milton Chilton	2374	Health physics
Radioanalysis Branch		
Terence Grady	2136	Radiochemistry
Federal Technology Transfer Act Cooperative Research Agreement		
Stephen C. Hern	2594	Dow Corning -- Use of EPA's Indoor Air Chamber to test a Dow-developed instrument
Donald F. Gurka	2113	Hewlett-Packard -- Advanced laboratory instrumentation for exposure analysis

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**FTS: 557-xxxx; CML: 703-349-8970

Atmospheric Research and Exposure Assessment Laboratory

Gary J. Foley,
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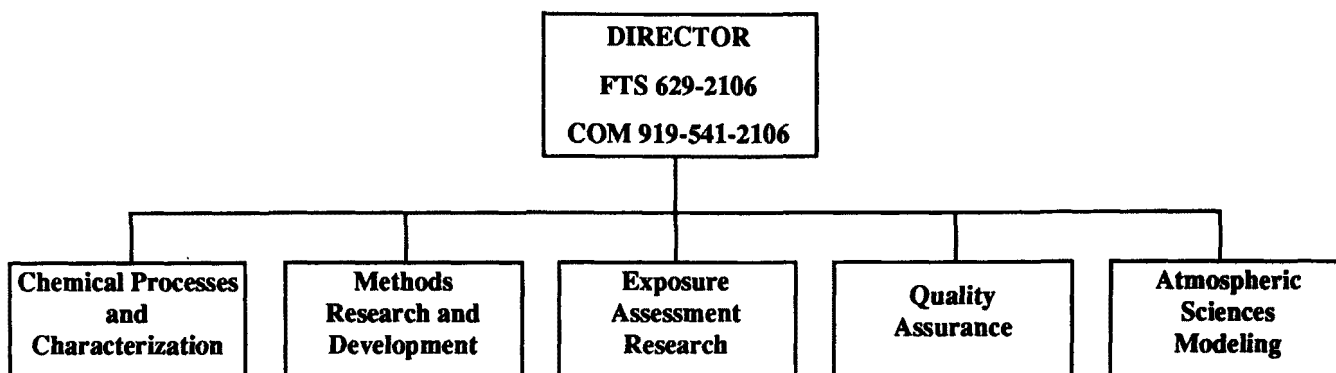
The Atmospheric Research and Exposure Assessment Laboratory (AREAL), Research Triangle Park, North Carolina conducts intramural and extramural research programs, through laboratory and field research, in the chemical, physical, and biological sciences designed to:

- characterize and quantify present and future ambient air pollutant levels and resultant exposures to humans and ecosystems on local, regional, and global scale;
- develop and validate models to predict changes in air pollution levels and air pollutant exposures and determine the relationships among the factors affected by predicted and observed change;
- determine source-to-receptor relationships relating to ambient air quality and air pollutant exposures, developing predictive models to be used for assessments of regulatory alternatives derived from these relationships, directly or indirectly;
- provide support to Program and Regional Offices and state and local groups, in the form of technical advice, methods research and development, quality assurance, field monitoring, instrument development, and modeling for quantitative risk assessment and regulatory purposes;
- develop and carry out long-term research in the areas of atmospheric methods, quality assurance, biomarkers, spatial statistics, exposure assessment, and modeling research to solve cutting edge scientific issues relating to EPA's mission;
- collect, organize, manage, and distribute research data on air quality, human and ecosystem exposures and trends for Program and Regional Offices, ORD, the scientific community, and the public at large.

The Laboratory is engaged in the following research and exposure tasks:

- *Methods Development:* Develop and improve monitoring systems for measuring air pollutants in ambient air and stationary sources. Implement the ambient air monitoring equivalency regulations.
- *Quality Assurance:* Develop guidance documents for assuring the quality of air pollution measurements; standardize methods and work with NIST in developing primary standards.

- *Toxics:* Develop methods for measuring toxic air pollutants in ambient air and around toxic waste sites; conduct special air monitoring studies to assess the nature and amount of pollution. Assess the sources, sinks, transport, formation, removal, reaction products, and ultimate fate of HAPs and HAPs precursors in the atmosphere.
- *Acid Deposition:* Assess related atmospheric processes to model and to evaluate acid rain, acid deposition, and acid transport and transformation over urban and regional scales; materials damage function studies. Develop methods and quality assurance materials for measuring dry and wet deposition; operate monitoring networks and serve as the data repository for national acid deposition monitoring program.
- *Gas and Particles:* Urban, regional, complex terrain, and source apportionment air quality model development, evaluation and validation; materials damage and visibility studies; air quality model documentation.
- *Mobile Sources:* Characterize the regulated and unregulated emissions from motor vehicles; assess the impact of mobile emissions on air quality.
- *Global Climate Change:* Investigate possible effects of increases in the atmospheric concentrations of trace gases on the Earth's climate and stratospheric ozone; relate projected climate change to air pollution potential in the lower atmosphere.
- *Human Exposure Assessment:* Develop means to estimate the frequency distribution of human exposure to individual pollutants including personal exposure monitors, questionnaires, and protocols which relate exposure to sources. Total Exposure Assessment Monitoring (TEAM) programs designed to estimate exposure to hazardous materials are being conducted.
- *Ecological Monitoring Assessment:* Conduct studies to determine effects of air pollution on ecosystems. Develop methods and protocols for exposure assessment of various sensitive ecosystems and for status and trends monitoring of nonurban environments.



Areas of Expertise

Telephone*

Area of Expertise

Office of the Director

Gary J. Foley, Director	2106	Atmospheric studies
William E. Wilson	2551	Visibility; aerosol chemistry
Gerald G. Akland	4885	Human exposure

Program Design and Integration Staff

Jim Vickery	2184	Acid deposition
Steve Bromberg	2919	Human exposure
Dan Vallero	0150	Ecological studies
Larry Purdue	2665	Methods evaluation; standardization
John Clements	2188	Quality assurance

Chemical Processes and Characterization Division

Jack H. Shreffler	2194	Atmospheric processes
Basil Dimitriadis	2706	Photochemistry; ozone
Joseph J. Bufalini	2422	Gas kinetics
Robert K. Stevens	3156	Source apportionment
Michael Barnes	3086	Heterogeneous chemistry
Kenneth T. Knapp	1352	Mobile sources
Frank M. Black	3039	Mobile sources

Methods Research and Development Division

Robert E. Lee	2454	Methods development
Don Scott	7948	Chemometrics
Joseph Walling	7954	Chemical analysis
Warren Loseke	2173	Inorganics analysis
Joe Bumgarner	2430	Organics analysis
Robert G. Lewis	3065	Methods development
Robert Harless	2248	Dioxin
Nancy Wilson	4723	Analytical methods development
William McClenny	3158	Monitoring methods development
James Mulik	3067	Ion chromatography

(continued)

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Areas of Expertise

(continued)

	Telephone*	Area of Expertise
Exposure Assessment Research Division		
Dale Pahl	1851	Exposure assessment
William Nelson	3184	Exposure assessment
Ross Highsmith	7828	Indoor air
Dave Holland	3126	Statistics and design
Gary Evans	3124	Monitoring design
Thomas Hartlage	3008	Air monitoring
Barry Martin	4386	Air monitoring
Andy Bond	4329	Pesticides monitoring
Thomas Lawless	2291	Computer systems
Quality Assurance Division		
Darryl J. von Lehmden	2415	Quality assurance handbook; traceability protocols
Russ Wiener	1910	Aerosols
Frank McElroy	2622	Equivalent methods
Michael Beard	2623	Asbestos
William J. Mitchell	2769	QA material development and application
Rodney Midgett	2196	Source methods
Joe Knoll	2952	Source methods
Atmospheric Sciences Modeling Division		
Francis A. Schiermeier	4542	Meteorological modeling
Jason Ching	4801	Dispersion model development
Peter L. Finkelstein	4553	Global climate change
John S. Irwin	4567	Exposure assessment modeling
James L. Dicke	5682	Regulatory use of models
William H. Snyder	1198	Fluid modeling
Joan Novak	4545	Model evaluation/applications
Federal Technology Transfer Act Cooperative Research and Development Agreements		
Ronald K. Patterson	3779	Georgia Institute of Technology -- Hydraulic model study for improved ocean outfall design at Boston harbor
Edward O. Edney	3905	Ford Motor Company -- Use of EPA's Environmental Chamber Facility for evaluating effects of environmental fallout on automotive products
William McClenney	3158	Perkin-Elmer -- Development and improvement of physical and chemical methods for trace contaminant analysis, automated canister sampling technologies for gaseous air contaminants and diffusion monitoring technologies
John W. Spence	2649	Rohm & Haas -- Paint substrate exposure study using covering-spray devices

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Health Effects Research Laboratory

Lawrence W. Reiter,
Director

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The Health Effects Research Laboratory formulates and implements a comprehensive research program to investigate human health effects resulting from exposure to environmental pollutants. Staffed by health scientists with recognized expertise in a variety of disciplines - environmental medicine, physiology, epidemiology, statistics, biochemistry, neurotoxicology, toxicology, teratology, and perinatal toxicology, geriatric toxicology, pulmonary toxicology, immunotoxicology, cardiovascular toxicology, genotoxicology, hepatotoxicology and microbiology - HERL is the focal point for toxicological, clinical and epidemiological research within the Agency. HERL also establishes cooperative research projects with academic and other scientific institutions which facilitate the Agency efforts in understanding health effects of environmental pollutants. This research program develops and applies state-of-the-science biological assays, predictive models and extrapolation methods which serve as the basis for the Agency's health risk assessments.

The long-term basic components of the HERL research program are designed to anticipate the future needs of the Agency and enable the Office of Health Research to provide direction on environmental health issues. In recognition of legislative and regulatory needs, HERL conducts an effective mission-related research program to enable the Agency to better determine toxicological hazard, define dose-response relationships, and estimate human exposure characteristics in support of the Agency's overall risk assessment and development. The breadth of expertise of the HERL researchers is also marshalled in the event of Program Office requests and environmental emergencies to address immediate public health issues. HERL evaluates and communicates its research results and provides advice on their use to offices for criteria development and scientific assessments in support of regulatory and standard setting activities.

HERL advises the Agency on the scientific interpretation and integration of information used in determination of human health risks. It responds with recognized authority to changing requirements for technical assistance to other ORD Offices, Regions, senior Agency managers, Agency Workgroups, and Interagency Task Forces. Through the active involvement of its scientific staff with Agency research and advisory committees, other Agency offices, and through interaction with academic and other independent scientific bodies, the Laboratory assists in the formulation of health science policy for the Agency. Finally, as a result of these relationships and the scientific capabilities of its staff, the Laboratory provides the leadership in the development of national and international environmental health research efforts.

Organizationally, HERL consists of six divisions. Most of the research facilities are located in the Research Triangle Park, North Carolina. Also HERL has one of the nation's few sophisticated human inhalation exposure facilities which is located on the campus of the University of North Carolina at Chapel Hill.

Research at HERL is being conducted in the following areas:

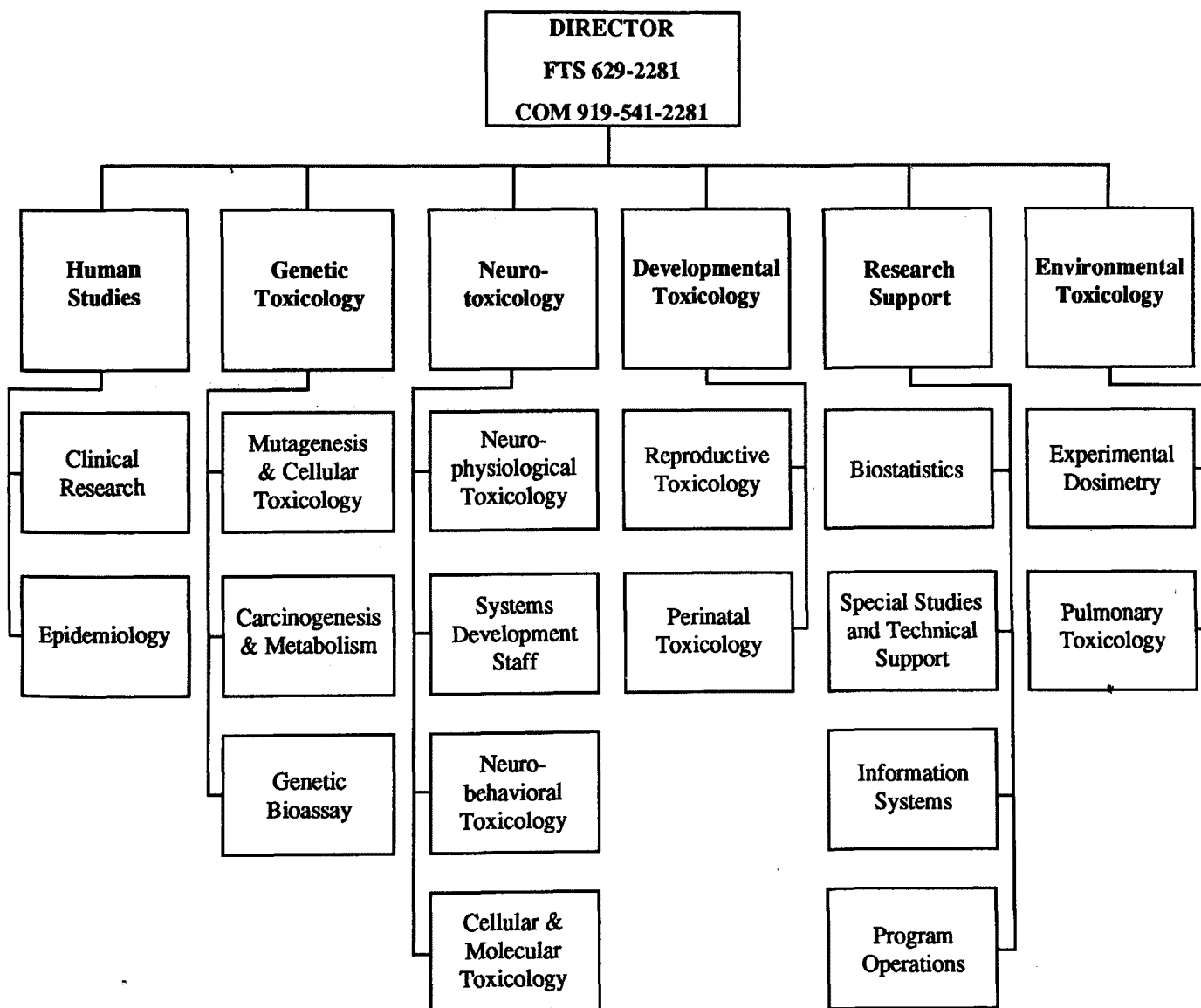
- *Oxidants*: Develop a database for use in regulatory decision making on the health effects of O₃ and NO₂ exposure by conducting human clinical, epidemiologic and animal studies. Models are also being developed to quantitatively extrapolate animal data to humans.
- *Hazardous Air Pollutants (HAP)*: Develop and validate techniques to evaluate the toxic effects of HAPs, produce dose-response data on the toxic effects of HAPs and develop models which improve our ability to use toxicological data in risk assessments.
- *Mobile Sources*: Provide quality health data on the effects of vehicle fuels and additives, including methanol and exposure to CO and develop methods for obtaining dose response data for use in risk assessments for regulatory purposes.
- *Superfund*: Develop and evaluate dose response data, extrapolation models and test methods on complex mixtures to reduce uncertainties in risk assessment.
- *Gases and Particles*: Develop a database for use in regulatory decision making on the health effects of SO₂, particles and lead by conducting human clinical, epidemiologic and animal studies. Models are also being developed to extrapolate animal data to humans and to provide information on the relationship between particle size and lung deposition in man.
- *Water Quality*: Evaluate methods to assess health hazards associated with complex mixtures arising as discharges from public owned treatment works.
- *Municipal Wastewater*: Provide data and appraisal documents on health aspects of land application of municipal sludge and use of renovated wastewater for a source of drinking water.
- *Drinking Water*: Provide health effects information for drinking water standards and health advisories with special emphasis on hazards

posed by drinking water disinfectants (chlorine, chloramine, chlorine dioxide and ozone) utilizing state-of-the-art toxicologic and epidemiologic methodologies.

- **Hazardous Waste:** Evaluate the health effects of emissions and residues from hazardous waste incineration (HWI) and municipal waste combustion (MWC).
- **Pesticides:** Develop methodologies and generate data for the assessment of health risks from pesticides; define environmental and health endpoints for future test methods. Studies are also being carried out on health effects of biological and bioengineered pesticides.
- **Indoor Air Research (with an emphasis on combustion products, sick building syndrome,**

VOCs, and environmental tobacco smoke): Apply results of the research to the development of health risk assessments.

- **Improved Health Risk Assessments:** Develop a systematic and integrated approach to improve the health risk assessment process.
- **Toxic Chemical Testing and Assessment:** Develop and validate test methods for identifying health hazards under the Toxic Substances Control Act (TSCA). Study relationship between chemical structure and toxicologic activity. Carry out human epidemiological studies on hazardous chemicals. Also, evaluate human health hazards of bioengineered materials.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Lawrence W. Reiter, Director	2281	Health effects of environmental pollutants
Harold Zenick, Deputy Director	2283	Health effects of environmental pollutants
Joe A. Elder, Assoc. Lab. Director	2542	Bioeffects of radiofrequency radiation
Elaine C. Grose, Assoc. Lab Director	3844	Health effects of pesticides/toxic substances
John R. Fowle III, Assoc. Lab Director	2479	Health effects of water pollutants
Ila L. Cote, Assoc. Lab. Director	3644	Health effects of air pollutants
Robert S. Dyer, Assoc. Lab. Director	2760	Health effects of hazardous waste and Superfund chemicals
John J. Vandenberg, RIHRA Coord.	4527	Coordinator for RIHRA program
Developmental Toxicology Division		
Robert J. Kavlock	2771	Reproductive toxicology
Sally P. Darney	3826	Reproductive physiology
Environmental Toxicology Division		
Linda S. Birnbaum	2655	Pharmacokinetics and toxicology
Daniel L. Costa	2531	Pulmonary toxicology
James D. McKinney	3585	Chemistry and metabolism
Mary Jane Selgrade	2657	Immunotoxicology
Genetic Toxicology Division		
Michael D. Waters	2537	Genetic toxicology
Stephen Nesnow	3847	Chemical carcinogenesis
Joellen Lewtas	3849	Genetic toxicology of complex mixtures
Martha M. Moore	3933	Mammalian mutagenesis
Human Studies Division		
John J. O'Neil	966-6200	Human inhalation toxicology
Tim Gerrity	966-6206	Inhalation dosimetry
Hillel Koren	966-6254	Cellular and molecular biology
Neurotoxicology Division		
Hugh A. Tilson	2671	Neurotoxicology
Robert C. MacPhail	7833	Behavioral toxicology & pharmacology
William K. Boyes	7538	Neurophysiological toxicology
Research and Regulatory Support Division		
John Creason	2598	Multivariate analysis
Robert R. Payne	2330	Computer science
Federal Technology Transfer Act Cooperative Research Agreement		
F. Bernard Daniel	8-684-7401	Pathology Associates, Inc. -- The SENCAR Mouse Assay for identifying complex mixtures in drinking water treatment plants

*FTS: 629-xxxx; COM: 919-541-xxxx

Environmental Criteria and Assessment Office

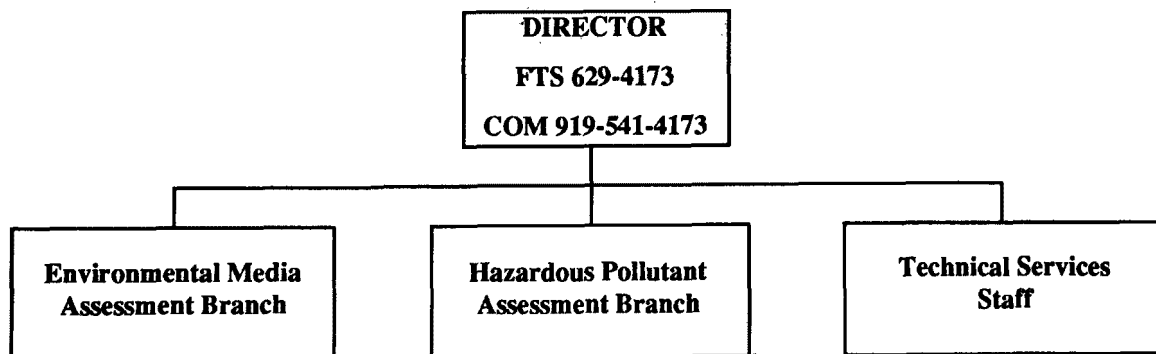
Lester D. Grant,
Director

FTS 629-4173
COM 919-541-4173
E-Mail EPA8150

Mailcode: 52
Research Triangle Park, NC 27711
FAX: FTS 629-5078

The Environmental Criteria and Assessment Office at Research Triangle Park (ECAO-RTP) is primarily responsible for preparing criteria and other assessment documents for use in Agency regulatory activities. ECAO's main activities consist of preparing and publishing (1) revised or new criteria documents when prescribed by legislation or requested by national decision makers, (2) health and environmental assessment documents that serve as a basis for decisions by the EPA Administrator regarding the regulation and control of pollutants, and (3) special health-related reports as required by various legislative authorities or technical assistance to international organizations and governments. The ECAO-RTP offers expertise in the following:

- **Environmental Media Assessment:** Broad, usually multi-disciplinary, assessments of widespread pollutants or classes of pollutants. These assessments require substantial evaluation and integration of information not only on health effects, but also on ecological or other environmental effects. Additionally, they typically include background information on sources, emissions, transport and fate, and exposure aspects. Activities include preparation of air quality criteria documents supporting development/revision of National Ambient Air Quality Standards (NAAQS), preparation or review of cross-media pollutant assessments, development of research needs statements or strategies, and participation in associated activities (Administrator briefings, Congressional testimony, public hearings, etc.)
- **Hazardous Pollutant Assessment:** The Hazardous Pollutant Assessment Branch (HPAB) provides toxicologic expertise in assessing health effects of air toxics. This expertise is extensively utilized in the derivation of inhalation reference concentrations (RfC) to protect against deleterious effects from chronic exposure to air toxics. The HPAB is also a major participant in the Air Risk Information Support Center (Air RISC) which disseminates toxicological and risk assessment information to local, State, and Regional offices by hotline requests and technical assistance and guidance projects. Research interests in HPAB include refinement of the NOAEL approach to RfCs, reduction of uncertainty in RfCs, and development of an inhalation reference concentration methodology for acute exposures.
- **Indoor Air Program Management:** Lead responsibility for management of the integrated Indoor Air Research program; preparation of related materials (e.g., Reports to Congress) and coordination of other Federal indoor air research activities. Development of risk characterization methodology as well as indoor air public awareness documents; participation in associated activities (Administrator briefings, Congressional testimony, public hearings, etc.)
- **Technical Assistance:** Scientific assessment support to Regions, States, local agencies through contributions to and review of risk assessment materials dealing with problem situations in particular geographic areas falling under various EPA Regional Offices, States, or local governmental purviews. Includes operation of the Air RISC "hotline" and provisions of expert testimony or expert assistance in preparation of legal positions or strategies in dealing with litigation situations.



Areas of Expertise

	Telephone*	
Office of the Director		
Lester D. Grant, Director	4173	Criteria air pollutants; health assessment of air pollutants; lead and other heavy metals
Michael A. Berry, Deputy Dir.	4172	Environmental legislation; indoor air pollution
Judith A. Graham, Assoc. Dir.	0349	Health assessment of toxic air pollutants; criteria air pollutants
Si Duk Lee	4477	International collaboration; health risk assessment
Environmental Media Assessment Branch		
Norman E. Childs, Chief	2229	Criteria air pollutants, indoor air pollution
Beverly M. Comfort	4165	Pesticides; indoor air pollution
Robert W. Elias	4167	Heavy metals; exposure modeling
William G. Ewald	4164	Toxicology; radiation biology
Jasper H.B. Garner	4153	Ecosystem and vegetation effects
Dennis J. Kotchmar	4158	Epidemiology and respiratory effects
Thomas B. McMullen	4150	Air quality data evaluation
James A. Raub	4157	Carbon monoxide; ozone
Beverly E. Tilton	4161	Ozone; hydrocarbons
Hazardous Pollutant Assessment Branch		
Chon R. Shoaf, Chief	4155	Inhalation toxicology; risk assessment
J. Michael Davis	4162	Neurobehavioral toxicology & teratology; lead; alternative fuels & fuel additives
Gary J. Foureman	1183	General metabolism; biological chemistry; general toxicology
Jeff S. Gift	4828	Biologic markers for non-cancer and cancer end-points; risk assessment
Mark M. Greenberg	4156	Organic chemicals; toxicology
Dan J. Guth	4930	Pulmonary toxicology; inhalation risk assessment
Annie M. Jarabek	4847	Inhalation toxicology and risk assessment; physiologically based pharmacokinetic modeling
Marsha Marsh	1314	Environmental health risk assessment
Winona W. Victory	**	Chromium; other metals; Air RISC

* FTS: 629-xxxx; COM: 919-541-xxxx

**On detail in San Francisco FTS: 484-1869; COM: 415-744-1869

Environmental Criteria and Assessment Office

Chris DeRosa,
Acting Director

FTS 684-7531
COM 513-569-7531
E-Mail EPA8140

26 W. ML King Dr., Cincinnati, OH 45268
Mailcode: 114
FAX: FTS 684-7475

The Environmental Criteria and Assessment Office in Cincinnati, Ohio (ECAO-Cin) is responsible for developing risk assessment documents, assessment methodologies, and guidelines to estimate human health effects. Primarily, the ECAO-Cin (1) prepares and publishes new or revised criteria documents when needed as input and guidance for setting environmental standards; (2) prepares and publishes scientific assessment documents/health risk assessment reports, which will serve as a basis for decisions by the EPA Administrator regarding the listing of pollutants for standards and control under various legislative authorities; (3) develops risk assessment methods, which provide guidance for evaluating potential risks to human health from exposure to environmental pollutants; and (4) actively participates in Agency-wide work groups in the planning, development and implementation of future research strategies for the Agency.

ECAO-Cin activities fall within three overarching themes:

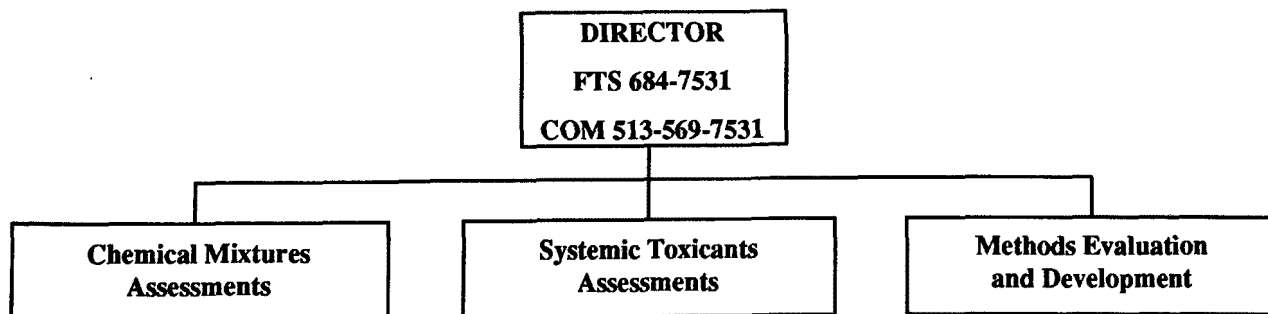
1. Direct Regulatory Support
2. Risk Assessment Research and Development
3. Technical Support and Assistance

These theme areas are addressed by three Branches:

- ***Chemical Mixtures Assessment Branch:*** Provides scientific support for the development of background documentation and technical support necessary to formulate human health risk assessment activities for Agency Program Offices as mandated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, the Superfund Amendment and Reauthorization Act (SARA), the Resource Conservation and Recovery Act (RCRA), and the Hazardous and Solid Waste Amendment (HSWA). These assessments establish the basis for regulatory activities in the Office of Solid Waste and Emergency Response

(OSWER) associated with the potential human exposure to environmental pollutants, particularly chemical mixtures.

- ***Systemic Toxicants Assessment Branch:*** Provides scientific support for the development of background documentation and technical support necessary to formulate human health risk assessment activities for Agency Program Offices as mandated by the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), and the Clean Air Act (CAA). These assessments establish the basis for regulatory activities and advisories associated with potential human exposure to environmental pollutants, particularly systemic toxicants. Additionally, the evaluation of risks associated with municipal solid wastes is undertaken. Specific areas of research include risks associated with municipal solid waste recycling, municipal waste combustion (including the assessment of indirect exposures), and comparative risk assessment of municipal waste disposal alternatives.
- ***Methods Evaluation and Development Staff:*** Initiates and coordinates the development of risk assessment methods and Agency guidelines for chemical mixtures and noncancer health effects, and reviews new methods in response to identified Agency needs. The staff also coordinates the Agency's Reference Dose (RfD) and Carcinogen Risk Assessment Verification Endeavor (CRAVE) work groups, and manages the Integrated Risk Information System (IRIS). These activities help ensure that the Agency's risk assessments remain credible and that state-of-the-art methods are continually evaluated, developed and implemented.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Christopher DeRosa, Acting Director	7531	Risk assessment; Superfund; solid waste
Debdas Mukerjee, Senior Science Advisor	7572	Cancer assessments
Michael Dourson, Acting Assoc. Director	7533	Reference doses (Rfd); IRIS; noncancer risk assessment guidelines
Cynthia Sonich-Mullin, Acting Deputy Dir.	7523	Water and hazardous air pollutant programs
Chemical Mixtures Assessment Branch		
W. Bruce Peirano, Acting Chief	7534	Pharmacokinetics; toxicology
Harlal Choudhury	7536	Land disposal bans; reference doses
Chris Cubbison	7599	Less-than-lifetime risk assessments; reportable quantities
Erma Durden	7570	Document quality control; technical information
Pei-Fung Hurst	7585	Epidemiology; Superfund Technical Support; virology
Lillian Jones	7417	Clinical chemistry
Linda Knauf	7573	Statistics
Deborah McKean	7569	Pathology; HEEDS
Moiz Mumtaz	7593	Risk characterization; pharmacology
Kenneth Poirier	7462	RfD Work Group
David Reisman	7588	CURE Data Base
Adib Tabri	7505	Chemistry
Stephen Weldert	7419	Employee safety; hazard communication
Bette Zwyer	7575	Word processing
Systemic Toxicants Assessment Branch		
Cynthia Sonich-Mullin, Chief	7523	Water and hazardous air pollutant programs
Randall Bruins	7523	Sludge disposal/reuse methodology
John Cicmanec	7481	Laboratory animal medicine
Charlotte Cottrill	7221	Technology transfer; communications
Norman Kowal	7584	Sludge disposal/reuse methodology
Patricia Murphy	7226	Epidemiology
Judith Olsen	7576	Technical information transfer
Lynn Papa	7587	Physiology/health assessment
Carolyn Smallwood	7425	Chlorinated drinking water contaminants
Eletha Tshitambwe	7662	Drinking water criteria documents; municipal solid waste recycling
Sue Velazquez	7571	Drinking water criteria documents
Methods Evaluation and Development Staff		
Rita Schoeny, Acting Chief	7544	Carcinogen Risk Assessment Endeavor (CRAVE); polycyclic aromatic hydrocarbons
Pat Daunt	7596	IRIS data base
Richard Hertzberg	7582	Biomathematical models; STARA and MIXTOX data bases; chemical mixtures guidelines
Jacqueline Patterson	7574	IRIS data base
Glenn Rice	7813	Sludge risk assessment; RfD; CRAVE
Jeff Swartout	7811	IRIS; noncancer risk assessment

IRIS User Support: FTS 684-7254; COM 513-569-7254

Superfund Technical Support Hotline: FTS 684-7300; COM 513-569-7300

*FTS: 684-xxxx; COM: 513-569-xxxx

Robert S. Kerr Environmental Research Laboratory

**Clinton W. Hall,
Director**

**FTS 743-2224
COM 405-332-8800
E-Mail EPA8441**

**P.O. Box 1198
Ada, Oklahoma 74820
FAX: FTS 743-2256**

The Robert S. Kerr Environmental Research Laboratory (RSKERL) serves as U.S. EPA's center for ground-water research, focusing its efforts on studies of the transport and fate of contaminants in the subsurface, development of methodologies for protection and restoration of ground-water quality, and evaluation of the applicability and limitations of using natural soil and subsurface processes for the treatment of hazardous wastes. The Laboratory has a long history of research responsibilities related to the use of soils and subsurface for waste treatment and to the protection of the soil, ground water and surface water. These responsibilities have included the development and demonstration of cost-effective methods for land treatment of municipal wastewaters, animal production wastes, and petroleum refining and petrochemical wastes, as well as the development of technologies for the protection of ground-water quality.

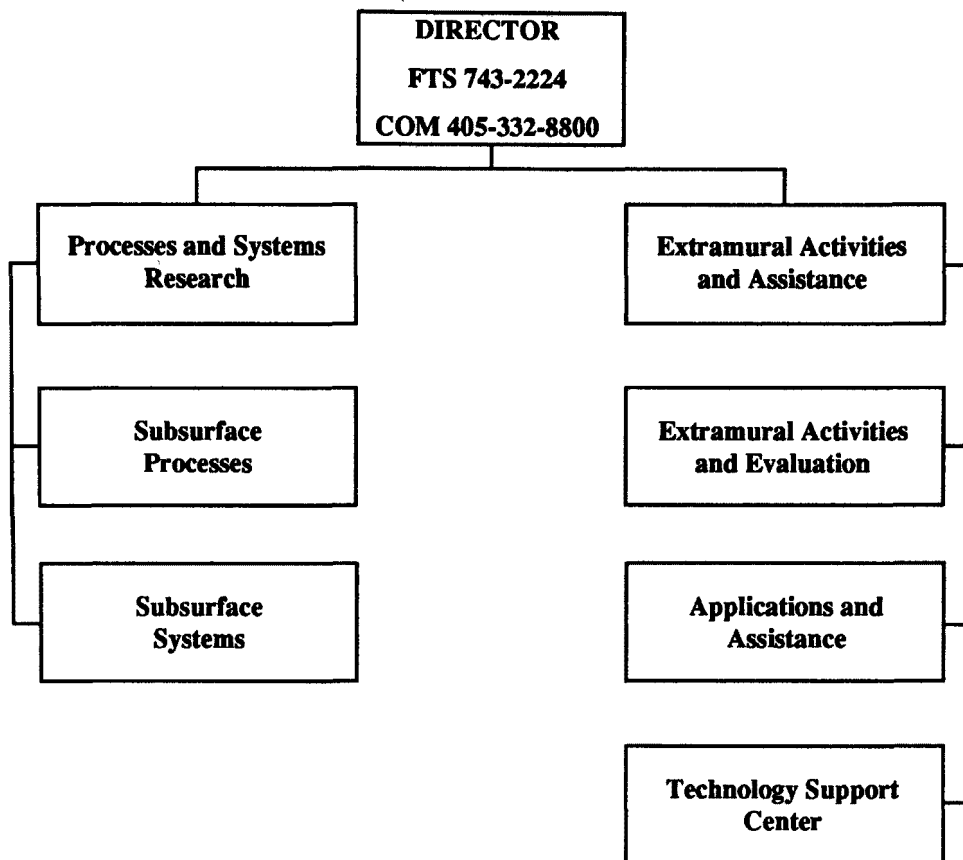
RSKERL carries out research through in-house projects and cooperative and interagency agreements with universities, national laboratories, and other research centers:

- **Drinking water:** Determination of contaminant transport and transformation mechanisms and rates in the subsurface as they relate to assimilative capacities and drinking water protection strategies of the Wellhead Protection Program and Underground Injection Control Program.
- **Hazardous Wastes:** Development and testing of a variety of mathematical models that describe and predict the hydrologic, biotic and abiotic processes that define site-characterization parameters for RCRA facility closure and corrective action decisions.
- **Superfund:** Development and demonstration of subsurface remediation technologies, especially *in situ* bioremediation, vacuum extraction and pump-and-treat. Maintenance of the RSKERL Superfund Technology Support Center which provides state-of-the-science assistance to EPA/

State decision-makers responsible for implementation of the Superfund Amendments and Reauthorization Act of 1986.

Associated activities operated and/or supported by RSKERL to provide research and technology transfer:

- **Injection Well Research and Training Facility:** Field site consisting of three research injection wells and four monitoring wells used to develop, test and demonstrate emerging technologies for determining the environmental integrity of injection wells and to train State and Federal regulatory personnel.
- **RSKERL Technology Support Center:** Consists of a core team of 13 EPA scientists and engineers supported by RSKERL in-house and extramural researchers, and an on-site technology support contractor with off-site subcontractors and consultants.
- **Center for Subsurface Modeling Support (CSMoS):** Comprised of RSKERL scientists, the International Ground Water Modeling Center at Holcomb Research Institute and a number of ground-water modeling consultants.
- **National Center for Ground Water Research:** A consortium of Oklahoma, Oklahoma State and Rice Universities provided base funding by EPA's Office of Exploratory Research, the Center develops and conducts long-range exploratory research to address new challenges in ground-water protection and restoration.
- **Subsurface Remediation Information Center:** Operated as an adjunct to the Technology Support Center, activities are conducted toward developing, collecting, evaluating, coordinating and disseminating information related to remediation of contaminated soils and ground water.



Areas of Expertise

	Telephone*	Area of Expertise
Processes and Systems Research Division		
Carl G. Enfield	2210	Contaminant transport modeling
Subsurface Processes Branch		
Vacant, Chief		
Don Clark	2311	Inorganic analytical chemistry
Roger Cosby	2320	Organic analytical chemistry
Steve Hutchins	2327	Subsurface biotransformations
Don Kampbell	2358	Soil chemistry; vapor transport
Dennis Miller	2263	Immiscible flow; vapor transport
Guy Sewell	2232	Subsurface biotransformations
Garmon Smith	2316	Organic analytical chemistry
Robert Smith	2248	Biological analyses
John Wilson	2259	Subsurface biore restoration
Subsurface Systems Branch		
Stephen G. Schmelling, Chief	2434	Contaminant transport modeling, fractured media
Frank Beck	2293	Soil science
Jong Cho	2271	Contaminant transport modeling, vapor transport
Eva Davis	2346	Nonaqueous phase liquid transport (NAPLs)
Wayne Downs	2272	Contaminant transport modeling, biotransformations
Michael Jawson	2280	Soil microbiology; agricultural chemicals

(continued)

*FTS: 743-xxxx; COM: 405-332-8800

Areas of Expertise

(continued)

	Telephone*	Area of Expertise
Steve Kraemer	2315	Contaminant transport modeling, fractured media
Bob Lien	2249	Soil science
Fred Pfeffer	2305	Analytical chemistry
Susan Mravik	2434	Soil science
Robert Puls	2262	Geochemistry; metals transport
Thomas Short	2234	Contaminant transport modeling; unsaturated
Dave Walters	2261	Soils; modeling
James Weaver	2420	Contaminant transport modeling; NAPLs
Candida West	2257	Subsurface abiotic processes; NAPLs
Lynn Wood	2420	Subsurface abiotic processes; mixed solvents
Extramural Activities and Assistance Division		
M. Richard Scalf, Director	2212	Ground-water monitoring
Extramural Activities and Evaluation Branch		
James F. McNabb, Chief	2416	Microbiology; wellhead protection
Jerry N. Jones	2251	Analytical chemistry; aquifer restoration
R. Douglas Kreis,	2303	Ecological effects
Applications and Assistance Branch		
John Matthews	2308	Hazardous wastes biological processes
Don Draper (TSC Director)	2202	Hydrogeology; underground injection (UIC)
Steve Acree	2322	Hydrogeology; geophysics
Bert Bledsoe	2324	Analytical chemistry; metals transport
Dave Burden	2294	Hydrology; wellhead protection
Dom DiGiulio	2271	Hydrology; modeling; soil venting
Scott Huling	2313	Land treatment; RCRA; modeling; NAPLs
Randall Ross	2355	Hydrogeology; modeling; NAPLs
Hugh Russell	2444	Bioremediation
Jerry Thornhill	2310	Hydrogeology; underground injection (UIC)
Joe Williams	2246	Soil science; modeling
Federal Technology Transfer Act Cooperative Research Agreement		
John Wilson	2259	Coastal Remediation Company -- Bioremediation process developed to remove alkylbenzene contamination through the injection into the subsurface of a nutrient mix

*FTS: 743-xxxx; COM: 405-332-8800 (ask for extension)

Environmental Research Laboratory - Corvallis

Thomas A. Murphy,
Director

FTS 420-4601
COM 503-757-4601
E-Mail EPA8420

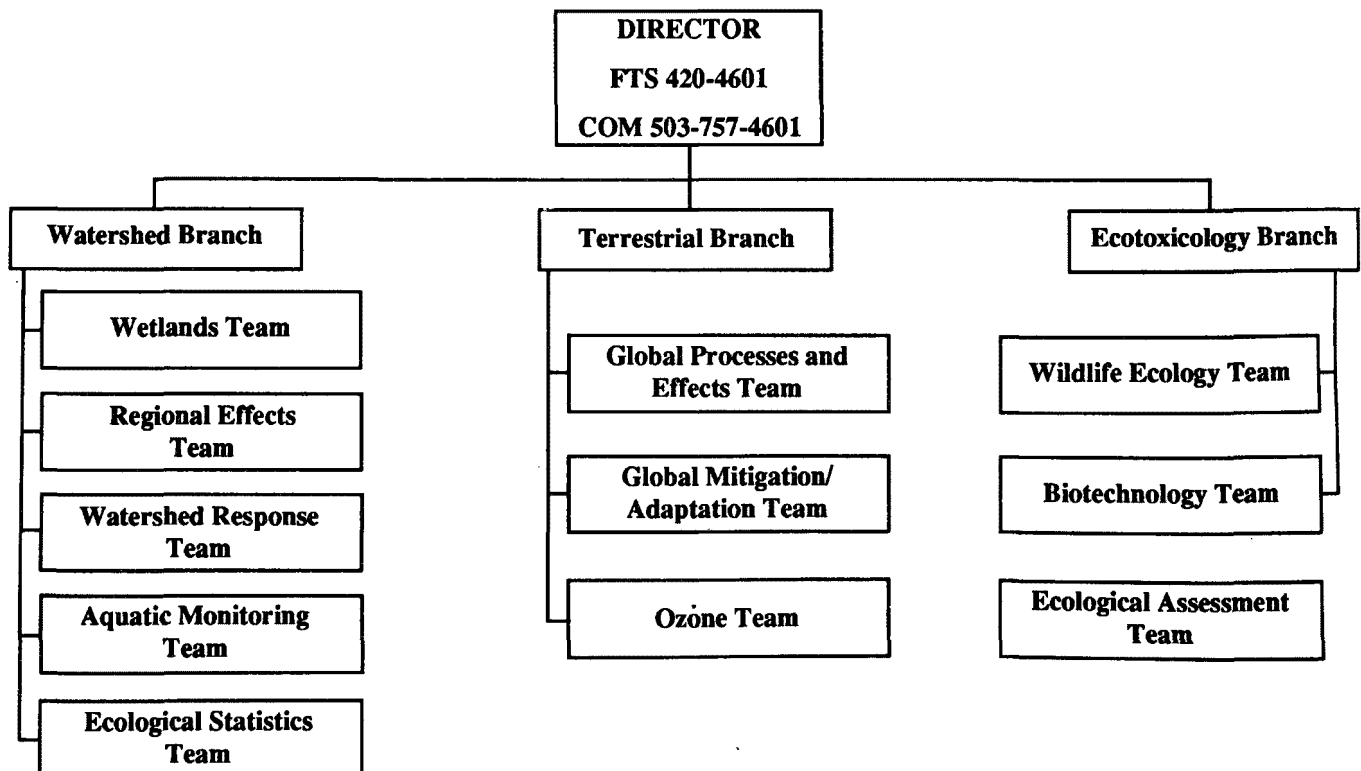
200 S.W. 35th St.
Corvallis, Oregon 97333
FAX: FTS 420-4600

The Corvallis Laboratory conducts research and assessments on the effects of pollutants and other human stresses on land-dominated ecological systems that include: forests, wetlands, wild animal and plant populations, agricultural systems, soils and microbial communities, watersheds and regional landscapes. It also develops and evaluates methods for mitigating effects on and restoring ecological systems. The Laboratory provides the Agency's primary scientific expertise in terrestrial, watershed and landscape ecology and terrestrial ecotoxicology. Research is conducted in six major areas:

- **Air Pollution Effects:** Assess the effects of atmospheric pollutants including acidic deposition on forests, crops, watersheds and surface waters.
- **Climate Change:** Assess the effects of changing climate, including temperature, precipitation and solar radiation, on ecological systems. Determine the role of ecological systems, such as forests, in controlling climate or moderating climate change. Develop and evaluate methods for managing the terrestrial biosphere to mitigate or reduce the effects of climate change.
- **Environmentally Applied Chemicals and Biologicals:** Develop and test methods to assess

the effects on terrestrial ecological systems of chemicals, such as pesticides, and biological agents, such as genetically engineering microorganisms, that are intentionally introduced into the environment.

- **Landscape Modification:** Assess the regional scale effects of physical changes to the landscape, such as habitat loss or hydrologic modification, on the ability of ecological systems to maintain desired levels of biodiversity and sustainable ecological functioning.
- **Wetlands:** Develop the scientific basis for assessing and managing risks for the nation's freshwater wetlands, including criteria for preventing wetland loss or degradation and guidelines for wetland restoration and creation. Develop guidelines for using created or natural wetlands for water quality improvement in a manner that is compatible with other ecological functions of wetlands.
- **Regional Ecological Assessment:** Develop and test methods for assessing the regional scale "health" of ecological systems, through the use of ecological indicators and environmental statistics.



Areas of Expertise

	Telephone*	Areas of Expertise
Watershed Branch		
Roger Blair	4666	Forest ecology
Mary E. Kentula	4666	Wetlands ecology
Dixon H. Landers	4666	Limnology
D. Phillip Larsen	4666	Lake/stream ecology
Scott Leibowitz	4666	Landscape ecology
Anthony R. Olsen	4790	Environmental statistics
James M. Omernik	4666	Geography/cartography
Spencer A. Peterson	4666	Limnology/lake restoration
Eric Preston	4666	Wetlands ecology
Richard R. Sumner	4666	Wetlands ecology
Parker J. Wigington	4666	Hydrology/stream chemical dynamics
Terrestrial Branch		
Peter A. Beedlow	4772	Global climate change; landscape ecology
Christian P. Anderson	4605	Air pollution effects on vegetation
M. Robbins Church	4666	Limnology; watershed ecology
Robert K. Dixon	4791	Plant physiology; climate change
William E. Hogsett III	4632	Air pollution effects on vegetation
Jeffrey Lee	4666	Ecology; soils
J. Craig McFarlane	4670	Plant physiology; UVb effects
David M. Olszyk	4311	Plant physiology
Donald L. Phillips	4355	Ecology; spatial statistics
David T. Tingey	4621	Plant physiology; climate change
James A. Weber	4503	Air pollution effects on vegetation
Ecotoxicology Branch		
John L. Armstong	4718	Molecular genetics
Richard S. Bennett, Jr.	4538	Wildlife ecology/toxicology
Clarence A. Callahan	4764	Soil invertebrate ecology
Anne Fairbrother	4606	Wildlife ecology/toxicology
Charles W. Hendricks	4705	Microbiology
Bruce Lighthart	4879	Microbiology
Alan V. Nebeker	4350	Aquatic and wildlife toxicology
Christine A. Ribic	4717	Wildlife ecology
Paul T. Rygiewicz	4833	Plant and soil ecology
Gerald S. Schuytema	4764	Invertebrate taxonomy/toxicology
Ramon J. Seidler	4708	Microbial ecology/biotechnology
Mostafa A. Shirazi	4656	Systems ecology
Bill A. Williams	4679	Wildlife physiology/toxicology
Environmental Monitoring and Assessment Program		
Harold V. Kibby	4625	Ecology
Daniel H. McKenzie	4666	Ecological modeling

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Environmental Research Laboratory - Gulf Breeze

Robert E. Menzer,
Director

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COM 904-934-9208
E-Mail EPA8470

Sabine Island
Gulf Breeze, FL 32561-5299
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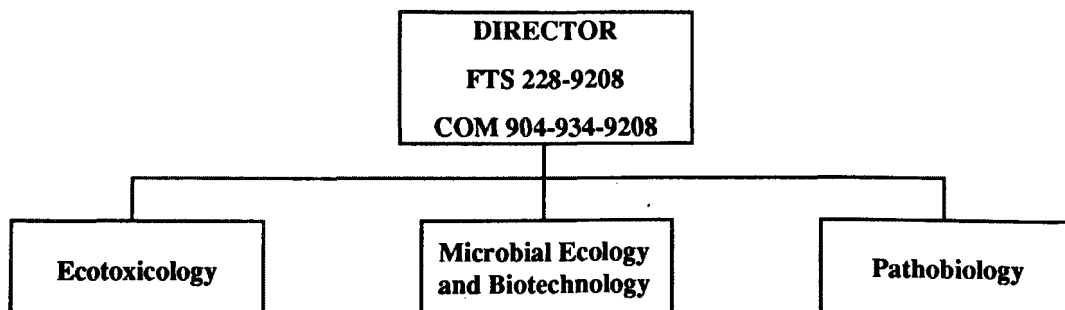
The Environmental Research Laboratory at Gulf Breeze develops and analyzes scientific data on the impact of hazardous materials released in marine and estuarine environments. Scientific investigations primarily involve chemical compounds and biological products regulated by EPA's Office of Pesticides and Toxic Substances, the Office of Water Programs, and the Office of Solid Waste and Emergency Response.

Laboratory scientists develop and evaluate test systems to (1) evaluate and define mechanisms that affect biodegradation and accumulation of toxicants in aquatic food webs; (2) define procedures and evaluate protocols for biological treatment of hazardous wastes; (3) determine effects of carcinogens, mutagens, and teratogens in aquatic species; (4) develop principles and applications of ecotoxicology, including measurement and prediction of fate and effect of chemicals and synthetics on estuarine species and environments. Methods also are under development to apply laboratory observations to field situations and to evaluate potential risks from the release of biotechnological products in the marine environment.

Information from laboratory research is used to establish guidelines, standards, and strategies for management of hazardous materials in the near-coastal marine environment, to define and predict its ecological health, and describe cause(s) of aberrant conditions or changes in its ecological status.

Research at Gulf Breeze is organized into these branches:

- **Ecotoxicology Branch:** (1) develop and test methods to determine acute and chronic effects (including bioaccumulation) of contaminants on estuarine and marine plants and animals; (2) develop culture techniques for test organisms; (3) develop and verify biological indicators for laboratory and field investigations to detect contaminant exposure and effects at the population, community, and ecosystem levels; (4) develop and validate model systems to predict resiliency (impact and recovery) of populations, communities, and ecosystems exposed to contaminants; (5) determine effects of contaminants on ecological structure and function and delineate endpoints that describe structure and function; (6) conduct field studies (i.e., verification of laboratory methodologies and results) to predict environmental response to pesticide use in potential impact areas; (7) develop and improve methods to analyze seawater and marine matrices (plants, animals, sediments) for contaminants prior to laboratory and field studies; (8) assess risks of chemicals and other contaminants by integration and interpretation of biological, chemical, and physical data in aquatic environments.
- **Microbial Ecology and Biotechnology Branch:** (1) characterize rates, mechanisms, and metabolic limitations of biodegradation processes carried out by microbial communities and assess their ability to transform organic chemicals and heavy metals into nontoxic products; (2) evaluate potential risks associated with release of genetically engineered microorganisms (biotechnology) in the environment; (3) define quantitatively environmental factors that control biodegradation and describe the potential manipulation of ecosystems and microbial communities to enhance extent and rate of biodegradation of specified single compounds and complex mixtures; (4) develop methods for bioremediation using microbial systems.
- **Pathobiology Branch:** (1) develop methods to evaluate risks of biological pesticidal agents to nontarget, aquatic species and systems, including natural and genetically altered microbial pest control agents and biochemical control agents; (2) develop aquatic species as indicators and models to assess hazards of genotoxic agents to aquatic animals and humans; and (3) elucidate mechanisms in toxicants that impair development or cause disease in aquatic species.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Robert E. Menzer, Director	9208	Pesticide toxicology
Raymond G. Wilhour, Deputy Director	9213	Plant pathology; terrestrial ecology
John A. Couch	9270	Pathology; toxic mechanisms
Andrew J. McErlean	9231	Pollution ecology
Frank G. Wilkes	9223	Aquatic ecology
Ecotoxicology Branch		
Foster L. Mayer	9380	Toxicology; aquatic ecology
James R. Clark	9248	Aquatic ecology
Geraldine Cripe	9233	Crustacean culture/toxicology
Carol Daniels	9329	Genetic toxicology
William P. Davis	9312	Ichthyology; marine ecology
David Flemer	9253	Aquatic ecology
Leroy Folmar	9207	Physiology; toxicology
Larry Goodman	9205	Aquatic toxicology
James C. Moore	9236	Analytical chemistry
Rodney Parrish	9221	Toxicology; aquatic ecology
Kevin Summers	9244	Systems ecology
Microbial Ecology and Biotechnology Branch		
Parmely H. Pritchard	9260	Microbial ecology; biodegradation
Tamar Barkay	9295	Microbial ecology
Peter Chapman	9261	Biochemistry; biodegradation
Richard Coffin	9255	Marine microbial ecology
Richard Eaton	9268	Microbial genetics; biodegradation
Fred Genthner	9342	Microorganism/invertebrate interactions
Jan Kurtz	9286	Microbial ecology
Leonard H. Mueller	9211	Analytical chemistry
Pathobiology Branch		
William Fisher	9394	Invertebrate pathology
John Fournie	9272	Pathology
Lee Courtney	9313	Electron microscopy
Charles L. McKenney	9311	Physiology
Douglas P. Middaugh	9310	Fish culture; toxicology
Wilhelm Peter Schoor	9276	Biochemistry
Federal Technology Transfer Act Cooperative Research Agreement		
Parmely H. Pritchard	9260	Southern Bioproducts, Inc. -- Develop microbial isolates to degrade toxic chemicals

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Environmental Research Laboratory - Duluth

Gilman D. Veith,
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The Environmental Research Laboratory at Duluth (ERL-D) conducts research to advance our fundamental understanding of aquatic toxicology and freshwater ecology. Its mission is to develop a scientific basis for EPA to create environmental policies concerning the use of freshwater resources. To accomplish this, ERL-D conducts the research, development, and technical assistance programs described below.

The regulatory ecotoxicology branch develops and evaluates methods for identifying hazardous xenobiotics in freshwater effluents, leachates, surface waters, and sediments, defining toxicity and other adverse effects, and developing protocols that can be used as regulatory tools to help identify environmental hazards from separate industrial chemicals and their mixtures to specific freshwater aquatic life and ecosystems. Our regulatory ecotoxicologists have recently accented the lead role in the design of sediment quality criteria.

The ecosystem response group seeks to quantify dose response relationships and indirect effects of stresses on freshwaters. Specialized methods involving microcosms, mesocosms, streams, ponds, wetlands, and small lakes are used to provide the basis for models and extrapolation techniques. The knowledge has been incorporated into testing protocols for pesticides registration.

Our landscape ecology program specializes in the diagnosis of ecosystem dysfunction and developing indicators of ecosystem health. As EPA moves closer to programs for better management practices from a watershed perspective, we expect to provide much of the guidance to protect and improve water quality.

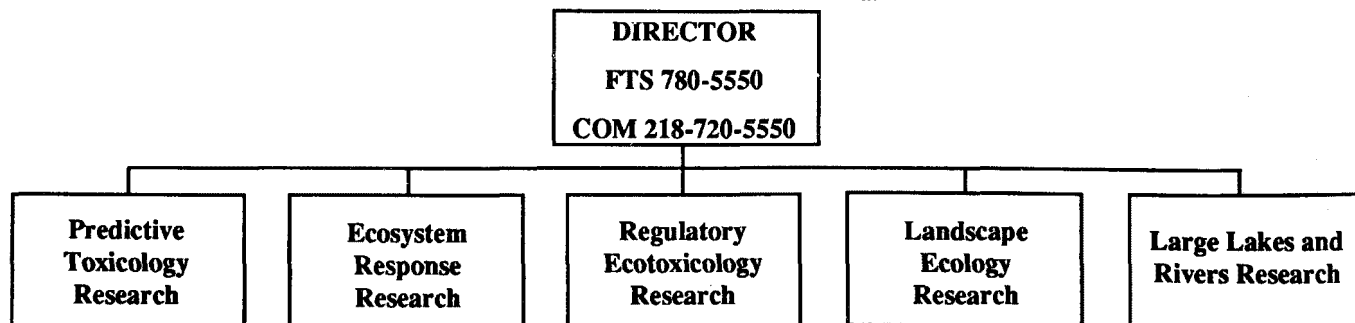
The Great Lakes Research Program managed by ERL-D has turned completely to science for lake-wide management planning. Research is conducted in cooperation with the other U.S. and Canadian agencies including local governments as well as many college and universities. Specific projects include assessment and remediation of contaminated sediments, mass balance study of Green Bay, WI, biomonitoring of potential

leakage of contaminants from a confined disposal facility, impact of exotic species, and development of a geographic information system that will support spatial analysis and mapping of environmental data from the Great Lakes.

Chemical safety evaluations in the form of risk assessment remains the focus of our predictive toxicology program. A complete array of computerized models for structure-toxicity relationships, pharmacokinetic extrapolations, dynamic toxic effects, and mixture toxicity are being developed. Studies to determine the ecological significance and adequacy of existing laboratory-derived hazard assessments for protecting aquatic life are being conducted. A new thrust seeks to validate low-cost fish models in the classification of chemical carcinogens.

ERL-Duluth research is concentrated in the following areas of development, evaluation, and surveillance:

- Develop a sound chemical, physical, and biological understanding to determine concentrations of pesticides, toxic substances and hazardous wastes nonharmful to freshwater aquatic life; share this expertise and data resource with EPA program offices, other agencies and scientists, and community leaders.
- Develop common denominators, quantitative structure-activity relationships and models that can be used to predict or assess the impact of chemical and physical pollutants on aquatic and aquatic-related organisms.
- Evaluate the ability of laboratory test methods and models to predict the fate and effects of contaminants under field conditions through use of ecological studies.
- Develop criteria for individual physical and chemical contaminants and complex mixtures for the protection of aquatic organisms and consumers of aquatic organisms; conduct related site-specific studies to support and assess agency use of the criteria.



Areas of Expertise

	Telephone*	Area of Expertise
Office of the Director		
Gilman D. Veith, Director	5550	Toxicity data bases; structure activity; predictive toxicology
Steven Hedtke, Associate Director	5610	EMAP, freshwater ecology
Nelson A. Thomas	5702	National programs; complex effluents; technology transfer
Philip M. Cook	5553	Dioxins, bioavailability, risk assessment
Douglas W. Kuehl	5511	Trace organics in tissue and water; mass spectrometry
Robert A. Drummond	5733	Scientific outreach; behavioral toxicology
Landscape Ecology		
Water Quality Research Branch		
Anthony R. Carlson	5523	Site-specific water quality; toxicity testing-field response
William Sanville	5723	Wetlands; ecological effects
Robert Spehar	5564	Chronic bioassays, criteria guidelines
John Arthur	5565	Watersheds; ecological effects
John G. Eaton	5557	Global climate change, acid rain, lake ecology
J.D. Yount	5752	Exotic species; stream classification
Ecosystem Response		
Research Branch		
Richard Siefert	5552	Pesticide bioassays; fish and fish food taxonomy
Richard L. Anderson	5616	Invertebrates; toxicity testing chemical/microbial pesticides
Alfred W. Jarvinen	5561	Pesticide bioassays
Regulatory Ecotoxicology		
Research Branch		
Steven Broderius	5574	Toxic mechanisms; mixture toxicity
Gerald Ankley	5603	Toxicology; sediment toxicity; bioassays
Lawrence Burkhard	5554	Effluent assessment; chemistry
Russell J. Erickson	5534	Ecological Risk Modeling
Charles E. Stephan	5510	Water quality criteria documents
Predictive Toxicology		
Research Branch		
James McKim (acting)	5567	Comparative dose-response; toxicology; pharmacodynamics
Steven Bradbury	5527	Toxicokinetics; mechanisms of toxic action; metabolism
Rodney Johnson	5731	Cell biology; pathology; carcinogen assay; Medaka
Large Lakes and Rivers		
Research Branch		
William L. Richardson	7600**	Great Lakes; ecosystem modeling waste load allocation; eutrophication
Russel Kreis	7600**	Ecosystem-chemical effects; effects assessment
Doug Endicott	7600**	Modeling theory; ecosystem modeling

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Environmental Research Laboratory - Athens

Rosemarie C. Russo,
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The Environmental Research Laboratory at Athens conducts and manages fundamental and applied research to predict, and assess and reduce the human and environmental exposures and risks associated with the release of pollutants in freshwater, marine, and terrestrial ecosystems. The research focus is predictive ecological science.

This research identifies and characterizes the natural biological and chemical processes that affect the environmental fate and effects of specific toxic substances, such as pesticides or metals. The results are applied in state-of-the-art mathematical models for assessing and managing environmental pollution problems.

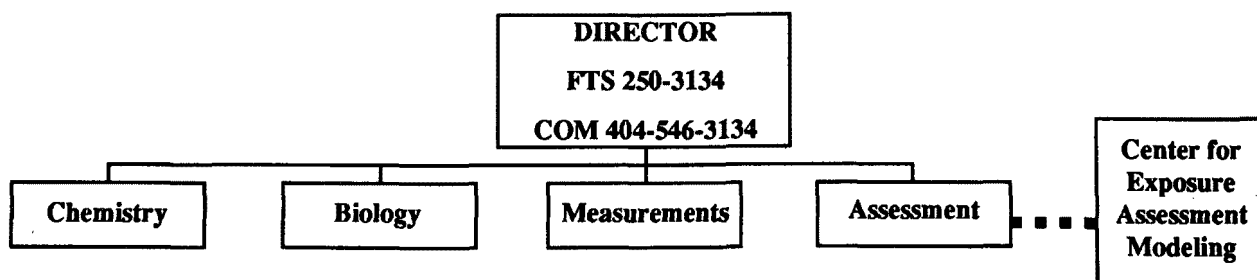
EPA's Center for Exposure Assessment Modeling (CEAM), an internationally known center of modeling expertise located at the Athens Lab, provides models, training, and support in multimedia exposure evaluation and ecological risk assessment. CEAM assists the Agency and States in environmental risk-based decisions concerning the protection of freshwater, marine water, soil, ground water and air.

Lab-developed data and assessment techniques support EPA's regulation and enforcement activities. Major research areas include global climate change, ecological risk assessment, sediment quality evaluation, artificial intelligence-expert systems for predicting chemical reactivity, bioremediation, chemical remediation, and wellhead protection. Risk-based research categories include:

- **Predictive Pollutant Fate:** Identify chemical processes that transport or transform organics and inorganics (especially metals) in soil, sediment, and water; establish the kinetics of microbial degradation of hazardous chemicals in the environment; develop mathematical models (with appropriate expert systems) to predict environmental fate and effects of chemicals and to describe chemical and biological processes for assessing human and ecological exposure and risk; develop structure-reactivity relationships and property-reactivity correlations for predicting hydrolysis, photolysis, and other reactivity parameters vital

to pollutant fate modeling; identify transformation mechanisms and products for environmentally important chemicals; identify problem chemicals and source constituents through multi-spectral techniques; describe and predict the multimedia transport of pollutants; and establish methodologies for estimating uncertainty in model predictions.

- **Predictive Exposure Assessment:** Provide accurate data, methods, and models for predicting exposures and reconstructing past exposures to pollutants affecting aquatic and terrestrial ecosystems; develop and validate process-oriented models that predict the dynamics of the bioaccumulation and internal distribution in fish and other aquatic organisms of organic chemicals and metals.
- **Predictive Ecological Risk Assessment and Ecoresource Management:** Develop multi-level (from species-population through landscape-regional) risk assessment framework, methodology, and decision support system for aquatic and terrestrial environments; develop quantitative uncertainty analysis methods for assessment and reduction of ecological risk factors; develop framework for analyzing regional, landscape, and ecosystem monitoring data; test methods to identify impacts of industrial society on the ecosphere.
- **Technology Transfer and Technical Support:** Provide models, training, and support in exposure evaluation and ecological risk assessment through EPA's Center for Exposure Assessment Modeling (CEAM); assist the Agency and States in environmental risk-based decisions concerning the protection of water, soil, ground water and air (through, for example, the Agency's Technical Support Center for Ecological Risk Assessment); provide database of physical, chemical and microbial rate and equilibrium constants for mathematical modeling.



Areas of Expertise

Office of the Director	Telephone*	Area of Expertise
Rosemarie C. Russo, Director	3134	Ammonia/nitrite toxicity to aquatic organisms
Lee A. Mulkey	3358	Landfill permitting/site selection; hazardous waste management; climate change
Robert R. Swank, Jr.	3128	Multimedia models; industrial sources; control technology
Chemistry Branch		
Arthur W. Garrison	3145	Organic chemical analysis
Leo V. Azarraga	3453	Molecular spectroscopy; metal-humic interactions
George W. Bailey	3307	Metal sorption; soil chemistry
Chad T. Jafvert	3186	Organic sorption processes
Samuel W. Karickhoff	3149	Structure-activity relationships (chemical)
Nicholas T. Loux	3174	Inorganic analysis; metal adsorption/speciation
Eric J. Weber	3198	Fate of organic pollutants
N. Lee Wolfe	3429	Hydrolysis/redox reactions in water
Richard G. Zepp	3428	Environmental photochemistry; global climate change
Biology Branch		
William C. Steen	3103	Microbial kinetic constant measurement
M. Craig Barber	3147	Chemical bioaccumulation modeling
George L. Baughman	3103	Dye chemistry
Donald L. Brockway	3422	Aquatic biology; fish toxicology
Lawrence A. Burns	3511	Exposure-effects modeling; ecology
W. Jack Jones	3228	Anaerobic microbiology
Ray R. Lassiter	3208	Exposure-effects modeling; ecology
David L. Lewis	3358	Microbial biotransformation processes
John E. Rogers	3128	Microbial kinetics; biochemistry; ecology; bioremediation
Luis A. Suarez	2301	Pharmacokinetics of biological systems
Thomas E. Waddell	3358	Ecological risk assessment
Measurements Branch		
William T. Donaldson	3183	Multispectral analysis; transformation rate constants
Timothy W. Collette	3525	Molecular spectroscopy; organic ID
J. Jackson Ellington	3197	Chemical kinetic constant measurement
Heinz P. Kolig	3770	Fate constant database; reliability evaluation
John M. McGuire	3185	Mass spectrometry; organic ID
Assessment Branch		
David S. Brown	3546	Metals speciation; terrestrial exposure
Robert B. Ambrose, Jr.	3130	Exposure and risk assessment modeling
Thomas O. Barnwell, Jr.	3210	Water quality modeling; decision support/expert systems
Robert F. Carsel	3476	Pesticide and groundwater leachate modeling
Fred K. Fong	3330	Numerical analysis, mass transport phenomena
Steve C. McCutcheon	3301	Sediment transport; hydrodynamics; sorption modeling
Charles N. Smith	3175	Pesticide dynamics; field sampling methods
William W. Sutton	3370	Environmental monitoring; exposure assessment; physiology
Regional/State Contact		
Robert C. Ryans	3306	
Center for Exposure Assessment Modeling		
Robert B. Ambrose, Jr.	3130	

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Environmental Research Laboratory - Narragansett

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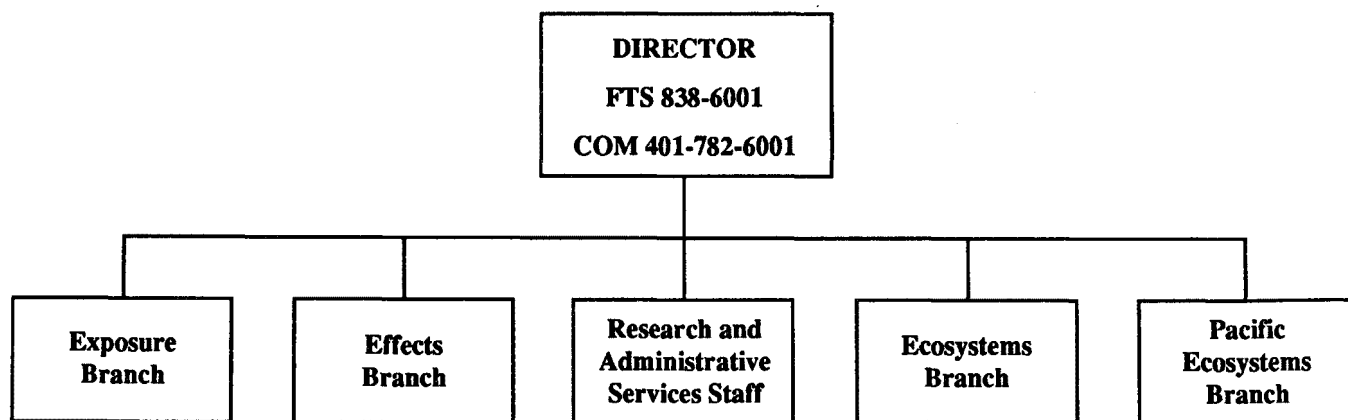
The Environmental Research Laboratory at Narragansett, RI, along with its Pacific Coast Laboratory in Newport, OR, was established congressionally as The National Marine Water Quality Laboratory and has been given expanded roles in sediment quality and monitoring. The Laboratory's research and monitoring efforts support primarily the EPA office of Water, Office of Emergency and Remedial Response, Office of Air and Radiation, and EPA Regional Offices. The Laboratory's efforts respond mainly to legislative requirements of the Clean Water Act, the Marine Protection, Research Sanctuaries Act, the Clean Air Act, and the Superfund Amendments and Reauthorization Act. Major emphasis is placed on providing the scientific base for environmental criteria, evaluating waste disposal practices, environmental analysis, and assessments of marine and estuarine regulatory activities for responsible offices.

The principal research and monitoring themes of the laboratory reflect its major strengths and are designed to support the Ecological Risk Assessment Program of the Agency. The major themes focus on identifying, diagnosing, and predicting the ecological impact of various stresses on habitat quality (i.e. water column quality, sediment quality and vegetative cover) on major ecological processes and on living resources of the marine ecosystem.

The Laboratory's main themes are:

- 1) Predictive Biological Test Method Development;
- 2) Ecological Processes and Significance;
- 3) Environmental Exposure and Chemistry; and
- 4) Ecological Indicators and Monitoring.

The laboratory is responsible for the following research and monitoring program areas: 1) marine/estuarine disposal, discharge of complex wastes, dredged material, and other wastes; 2) water use designation and derivation of criteria for marine or estuarine water and sediment; 3) environmental assessment of ocean disposal and discharges of wastes and wastewaters; 4) research support for evaluating remediation options at proposed and designated marine and estuarine Superfund sites; 5) research on the effects of global warming and depletion of stratospheric ozone on marine systems; and 6) ecological monitoring for Near Coastal Ecosystems (EMAP). Technical assistance, technology transfer, and investigations of an emergency nature, e.g. toxic materials spills, are also provided to aid EPA offices in evaluating environmental threats posed by toxicants, other pollutants, and physical modifications along our nation's coasts. Technical assistance is also provided to other federal agencies, states, municipalities, and industry.



Areas of Expertise

Name	Area of Expertise
S. M. Baksi	Biomarkers; physiological response
G. A. Chapman*	Water quality criteria/toxicity methods
E. H. Dettmann	Exposure assessment; water quality modeling
J. H. Garber	Eutrophication; nutrient biogeochemistry
G. R. Gardner	Marine pathology; histological responses
J. H. Gentile	Risk characterization; ecological toxicity
R. J. Haebler	Marine mammalian pathology; histological responses
D. J. Hansen	Marine water and sediment quality criteria
E. H. Jackim	Biomarkers; DNA adducts
N. A. Jaworski	Water quality modeling
D. J. Keith	Dredged material disposal
J. L. Lake	Environmental chemistry; bioaccumulation
R. W. Latimer	Environmental engineering
H. Lee II*	Bioaccumulation processes; stratospheric ozone
A. R. Malcolm	Biomarkers; physiological responses
D. C. Miller	Dissolved oxygen; environmental criteria
G. E. Morrison	Complex effluent; toxicity testing
W. G. Nelson	Biomonitoring; NPDES and near coastal; Superfund
J. F. Paul	Environmental Monitoring and Assessment Plan (EMAP)
K. T. Perez	Ecological risk assessment; ecosystem analysis
G. G. Pesch	Genetic toxicology; biological oceanography
D. K. Phelps	Biomonitoring
R. J. Pruell	Environmental and analytical chemistry
N. I. Rubinstein	Dredging; bioaccumulation
S. C. Schimmel	EMAP near coastal, Virginian Province
R. L. Steele*	Biological effects; algae
R. C. Swartz*	Benthic toxicity testing; sediment criteria
H. A. Walker	Global climate change; ocean disposal
D. R. Young*	Trophic transfer; ocean outfalls
G. E. Zarogian	Biochemistry

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Expertise Index

A

Academic Research Center 14
 Acid aerosols 4
 Acid deposition 18, 40
 Acid precipitation 18
 Acid rain 57
 Activated carbon adsorption 28
 Aerosols 18, 40, 41
 Agricultural chemicals 4, 50
 Agricultural ecology 18
 Agricultural engineering 11
 Air 21
 Air monitoring 41
 Air pollution 23, 26
 Air pollution effects on vegetation 53
 Air quality data evaluation 46
 Air RISC 46
 Air toxics 4, 23
 Alaska bioremediation project 23
 Algae 61
 Alternative fuels 46
 Alternative treatment technologies 24
 Alternative treatment technology information center 24
 Ammonia/nitrite toxicity to aquatic organisms 59
 Anaerobic microbiology 59
 Analytical chemistry 37, 51, 55
 Analytical environmental chemistry 37
 Aquatic and wildlife toxicology 53
 Aquatic biology 34, 59
 Aquatic ecology 55
 Aquatic toxicology 55
 Aquifer restoration 51
 Arctic ecology 18
 Asbestos 23, 28, 41
 Atmospheric chemistry 18
 Atmospheric processes 40
 Atmospheric studies 40
 Atmospheric transport and dispersion 18

B

Bacteriology 34
 Behavioral toxicology 44, 57
 Benthic toxicity testing 61

Bioaccumulation 61
 Bioanalytical chemistry 37
 Bioassays 57
 Biochemistry 9, 55, 59, 61
 Biodegradation 55
 Biodiversity 18
 Bioeffects of radiofrequency radiation 44
 Biologic markers for cancer/noncancer endpoints 46
 Biological analyses 50
 Biological effects 61
 Biological oceanography 61
 Biology 11
 Biomarkers 18, 61
 Biomathematical models 48
 Biomedical engineering 11
 Biomonitoring 61
 Bioremediation 18, 23, 26, 51, 59
 Biostatistics 9
 Biotechnology 9, 18, 28

C

Cancer assessments 48
 Cancer risk assessment 9
 Carbon monoxide 46
 Carcinogen assay 57
 Carcinogen Risk Assessment Endeavor (CRAVE) 48
 Cell biology 57
 Center for Exposure Assessment Modeling 59
 CFCs 4, 32
 CFC/Halon recycling and destruction approaches 32
 Chemical accident prevention 4
 Chemical analysis 40
 Chemical bioaccumulation modeling 59
 Chemical carcinogenesis 9, 44
 Chemical engineering 10, 11
 Chemical fate and transport 11
 Chemical kinetic constant measurement 59
 Chemical methods 34
 Chemical mixtures guidelines 48
 Chemistry 10, 48
 Chemometrics 40
 Chlorinated drinking water contaminants 48
 Chromium 46
 Chronic bioassays 57

- Civil engineering 10
- Clean Air Act amendments 4
- Climate change 53, 59
- Clinical chemistry 48
- Coke oven controls 32
- Computer simulation 9
- Combustion 29
- Combustion, incineration, furnace injection for SOx 31
- Combustion modification control technology 31
- Comparative dose-response 57
- Complex effluents 57, 61
- Computer science 44
- Computer systems 26, 41
- Conservation biology 18
- Constructed wetlands 23
- Containment technology - plume management 28
- Contaminant transport modeling 50, 51
- Control Technology Center (CTC Hotline) 32
- Control technology 59
- Corrosion 28
- Criteria air pollutants 46
- Crustacean culture/toxicology 55
- CURE Data Base 48

D

- Data networking 24
- Data quality objectives 21
- Data validation 38
- Decision support/expert systems 59
- Dermal absorption 11
- Dermal exposure 11
- Dioxins 4, 11, 40, 57
- Dioxins/furans sources and disposal 24
- Disinfection byproducts 28
- Dispersion model development 41
- Dissolved oxygen 61
- DNA adducts 61
- DOE/DOD coordination 24
- Dredging 61
- Drinking water and wastewater treatment 26
- Drinking water field evaluations 28
- Drinking water inorganics control 28
- Drinking water management 28
- Drinking water microbiological treatment 28
- Drinking water treatment 24, 28
- Dye chemistry 59

E

- Eco-toxics 4
- Ecological assessments 11, 37
- Ecological effects 51, 57

- Ecological modeling 53
- Ecological risk assessment 11, 18, 59, 61
- Ecological risk modeling 57
- Ecological studies 40
- Ecological toxicity 61
- Ecology 18, 53, 59
- Ecorisk 18
- Ecosystem analysis 61
- Ecosystem and vegetation effects 46
- Ecosystem modeling 57
- Ecosystem modeling waste load allocation 57
- Ecosystem-chemical effects 57
- Ecotoxicology 18
- Effluent assessment 57
- Electron microscopy 55
- EMAP near coastal 61
- Emissions inventory and modeling 18, 32
- Emissions characterization and mitigation 32
- Endangered species 4
- Energy 23
- Engineering research grants 14
- Environmental Chamber Facility 41
- Environmental biology research grants 14
- Environmental chemistry 37, 61
- Environmental criteria 61
- Environmental engineering 10, 18, 61
- Environmental health policy 9
- Environmental health research grants 14
- Environmental monitoring 37, 59
- Environmental Monitoring and Assessment Plan (EMAP) 21, 37, 57, 61
- Environmental photochemistry 59
- Environmental science 11
- Environmental statistics 53
- Environmental sustainability 18
- Epidemiology 9, 48
- EPSCoR 14
- Equivalent methods 41
- Eutrophication 57, 61
- Exotic species 57
- Experimental design 9
- Expert systems 26
- Exposure scenarios 10
- Exposure and risk assessment modeling 59
- Exposure assessment 10, 41, 59, 61
- Exposure modeling 46
- Exposure monitoring 37
- Exposure research 21
- Exposure software 11
- Exposure-effects modeling 59

F

- Fate modeling 11
- Fate and treatability of toxics 28

Fate constant database 59
 Fate of organic pollutants 59
 FCCSET 4
 Federal Technology Transfer Act 4
 Field sampling methods 59
 Field screening 37
 FIFRA 4
 Filtration 28
 Fish and fish food taxonomy 57
 Fish culture 55
 Fish ingestion 10
 Fish toxicology 59
 Flue gas cleaning technologies 32
 Fluid modeling 41
 Food safety 4
 Forest ecology 53
 Freshwater ecology 57
 Fuel additives 46
 Fugitive dust control 28
 Fundamental sorbent reactivity/kinetics studies 32
 Fundamental hazardous waste
 incineration research 31

G

Gamma spectrometry 38
 Gas kinetics 40
 Genetic risk assessment 9
 Genetic toxicology 44, 55, 61
 Geochemistry 51
 Geographical information systems 38
 Geography/cartography 53
 Geophysics 51
 Global climate 4, 21, 23, 24
 Global climate biogeochemical cycles 18
 Global climate change 18, 41, 53, 57, 59
 Granular activated carbon 28
 Great Lakes 57
 Greenhouse gases 32
 Ground water 4, 18, 26
 Groundwater model validation 18
 Groundwater monitoring technologies 37, 38, 51
 Groundwater investigation and remediation 11

H

Hazard communication 48
 Hazardous materials risk reduction 26
 Hazardous Substance Research Center Program 14
 Hazardous waste 4, 18, 21, 23, 24
 Hazardous waste alternative technologies 28
 Hazardous wastes biological processes 51

Hazardous waste management 28, 59
 Hazardous waste research 28
 HCFCs 32
 Health assessment of air pollutants 46
 Health effects of environmental pollutants 44
 Health physics 38
 Health risk assessment 46
 Heavy metals 46
 HEEDS 48
 Heterogeneous chemistry 40
 Histological responses 61
 Human exposure 40
 Human inhalation toxicology 44
 Human physiology 9
 Hydrocarbons 46
 Hydrodynamics 59
 Hydrogeology 11, 38, 51
 Hydrology 10, 51
 Hydrology/stream chemical dynamics 53
 Hydrolysis/redox reactions in water 59

I

Ichthyology 55
 Immiscible flow 50
 Immunotoxicology 44
 In-situ treatment of soils 29
 Incineration 4
 Indoor air 4, 23, 31, 41
 Indoor Air Chamber 38
 Indoor air pollutant source/emissions
 characterization 31
 Indoor air pollution 46
 Industrial wastewater pretreatment 26
 Industrial pollution control 18
 Industrial pollution prevention 29
 Industrial sources 59
 Industrial wastewater 23
 Industrial wastewater treatment 28
 Infrared spectroscopy 37
 Inhalation dosimetry 44
 Inhalation risk assessment 46
 Inhalation toxicology 46
 Innovative technology evaluation 23, 28
 Inorganic analysis 59
 Inorganic analytical chemistry 50
 Inorganic methods 34
 Inorganics analysis 40
 International cleaner production 24
 International collaboration 46
 International organizations 26
 Invertebrates 53, 55, 57
 Ion chromatography 40
 IRIS 48

K

Karst geology 11

L

Laboratory animal medicine 48
Lake ecology 57
Lake restoration 53
Lake/stream ecology 53
Land disposal bans 48
Land treatment 51
Landfill design and operation 10, 29
Landfill permitting/site selection 59
Landscape ecology 53
Lead 4, 46
Legislation 46
Less-than-lifetime risk assessments 48
LIMB development 32
Limnology 53
Low NOx burners 32

M

Mammalian mutagenesis 44
Marine ecology 18, 55
Marine mammal physiology 18
Marine mammalian pathology 61
Marine microbial ecology 55
Marine pathology 61
Marine water and sediment quality criteria 61
Mass spectrometry 37, 57, 59
Mass transport phenomena 59
Mathematical modelling 9
Mathematical statistics 38
Medaka 57
Medical problems in manned space flight 9
Medical waste 4, 23
Membrane technology 28
Metabolism pathology 9
Metal adsorption/speciation 59
Metal sorption 59
Metal-humic interactions 59
Metals transport 51
Meteorological modeling 41
Methods standardization 34
Microbial biotransformation processes 59
Microbial ecology/biotechnology 53, 55
Microbial genetics 55
Microbial kinetic constant measurement 59
Microbial kinetics 59
Microbiology 34, 37, 51, 53
Microorganism/invertebrate interactions 55
Mining waste 4

Minority institution assistance 14
Minority student fellowships 14
Minority summer internships 14
Mixed solvents 51
MIXTOX 48
Mixture toxicity 57
Mobile sources 4, 40
Model selection 11
Model evaluation/applications 41
Modeling epidemiology 9
Modeling theory 57
Molecular and cellular biology 9
Molecular biology 44
Molecular genetics 53
Molecular spectroscopy 59
Monitoring design 41
Monitoring methods development 40
Multimedia models 59
Multimedia pollutant transport and fate modeling 18
Multispectral analysis 59
Municipal wastewater treatment 24
Municipal solid waste 23, 24, 29
Municipal solid waste recycling 48
Municipal waste 4
Municipal waste combustion 31
Municipal wastewater 23
Municipal wastewater toxics control 28
Municipal wastewater treatment 26, 28
Mutagenesis and carcinogenesis 9

N

NAPLs 50, 51
Neurodevelopmental toxicology 9
Neurobehavioral toxicology 46
Neurophysiological toxicology 44
Neurotoxicology 44
Non-point sources 4, 18, 26
Nonaqueous phase liquid transport (NAPLs) 50, 51
Noncancer risk assessment 4, 48
NOx selective catalytic reduction 32
NPDES and near coastal 61
Numerical analysis 59
Nutrient biogeochemistry 61

O

Ocean disposal 61
Ocean outfalls 61
Ocean pollution 18
Oil spills 24, 26
ORD Electronic Bulletin Board System 26
Organic analytical chemistry 37, 50
Organic chemical analysis 40, 59

Organic ID 59
Organic methods 34
Organic sorption processes 59
Organics control 28
Ozone 4, 28, 32, 40, 46

P

Paperboard wastes 24
Parasitology 26, 34
Particles 4
Pathology 48, 55, 57
PCB 11
Pesticide and groundwater leachate modeling 59
Pesticide bioassays 57
Pesticide dynamics 59
Pesticide exposure 11
Pesticide review 4
Pesticide risk/registration 4
Pesticide toxicology 55
Pesticides 18, 21, 23, 46
Pesticides disposal methods 24
Pesticides monitoring 41
Pharmacodynamics 57
Pharmacokinetics 9, 11, 44, 48, 59
Pharmacology 9, 48
Photochemistry 40
Physics research grants 14
Physiologically based pharmacokinetic modeling 46
Physiology 55, 59
Physiology/health assessment 48
Pilot plants 28
Plant and soil ecology 53
Plant pathology 55
Plant physiology 18, 53
Plant uptake 11
Plastics 4
Pollution ecology 55
Pollution prevention 4, 23, 24, 26, 28
Polycyclic aromatic hydrocarbons 48
Predictive toxicology 57
Preventive medicine 9
Public health practice 9
Pulmonary toxicology 44, 46

Q

Quality assurance 21, 34, 37, 40, 41
Quality control - technical systems 21

R

Radiation 4, 9, 21
Radiation biology 46
Radiation emergency response 38
Radiochemistry 38
Radionuclides 28
Radon 23, 31
Radon mitigation 32
RCRA 51
RCRA Implementation 4
Reburning 31
Reference dose (RfD) activities 4, 48
Regional Scientist Program 4
Regulation development 4
Reliability evaluation 59
Remote sensing 38
Reportable quantities 48
Reproductive and developmental toxicology 9
Reproductive physiology 44
Reproductive toxicology 44
Research associateships 14
Research committee activities 4
Residuals management 26
Respiratory effects 46
RfD 4, 48
RfD Work Group 48
RIHRA program 44
Risk assessment 4, 9, 46, 48
Risk characterization 48, 61

S

Safety 48
Sediment criteria 61
Sediment toxicity 57
Sediment transport 59
Sediment transport 59
SENCAR Mouse Assay 44
Senior Environmental Employment Program 14
Sewage sludge 4
Showering exposures 10
Sludge disposal/reuse methodology 48
Sludge risk assessment 48
Small Business Innovation Research 14
Small community environmental issues 26
Software development 26
Soil chemistry 50, 59
Soil ingestion 11
Soil invertebrate ecology 53
Soil microbiology 50
Soil science 11, 50, 51, 53
Soil venting 51
Solid waste 4, 48
Solidification 26

Sorption modeling 59
 Source apportionment 40
 Source methods 41
 Spatial statistics 53
 Spectroscopy 9
 Stabilization 26, 29
 STARA 48
 Statistics 11, 48
 Statistics and design 41
 Stormwater and combined sewer overflow 23
 Stratospheric ozone 18, 21, 23, 24, 61
 Stream classification 57
 Structure activity 57
 Structure-activity relationships (chemical) 59
 Subsurface abiotic processes 51
 Subsurface bioremediation 50
 Subsurface biotransformations 50
 Superfund 4, 18, 21, 24, 48, 61
 Superfund alternative treatment technologies 23
 Superfund containment technology 28
 Superfund engineering technology 28
 Superfund on-site technology 28
 Superfund reasonable maximum exposure (RME) 11
 Superfund releases control 28
 Superfund research centers 14
 Superfund technical assistance 28
 Superfund Technical Liaison Program 4
 Superfund Technical Support 48
 Systems ecology 53, 55

T

Technology transfer 4, 48, 57
 Teratology 46
 Terrestrial ecology 55
 Terrestrial exposure 59
 Thermal destruction 29
 Thermal destruction of hazardous materials 29
 Thermal treatment/destruction 28
 Toxic investigation 4
 Toxic mechanisms 55, 57
 Toxic substances 23
 Toxicity data bases 57
 Toxicity testing 61
 Toxicity testing-field response 57
 Toxicokinetics 57

Toxicology 44, 46, 48, 55, 57
 Toxics 18, 21
 Toxics control 28
 Trace level environmental contaminant analysis 37
 Trace organics in tissue and water 57
 Traceability protocols 41
 Transformation rate constants 59
 Trophic transfer 61

U

Underground injection (UIC) 51
 Underground storage tanks 23
 UVb effects 53

V

Vapor transport 50
 Virology 34, 48
 Visibility 40
 Vitrification 26
 Volatile organic compounds (VOCs) 32

W

Waste minimization, destruction and disposal 28
 Wastewater and water quality monitoring 26
 Water and hazardous air pollutant programs 48
 Water quality 18
 Water quality criteria 18
 Water quality criteria documents 57
 Water quality criteria/toxicity methods 61
 Water quality modeling 59, 61
 Water treatment 10
 Waterborne outbreaks 28
 Watershed ecology 53, 57
 Wellhead protection 18, 51
 Wetlands 11, 18, 53, 57
 Wildlife ecology 11, 18
 Wildlife ecology/toxicology 53
 Wildlife physiology 53
 Woodstoves 32