United States
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Agency

Office of Radiation and
Indoor Air

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EPA

Radiation and Indoor Environments National Laboratory

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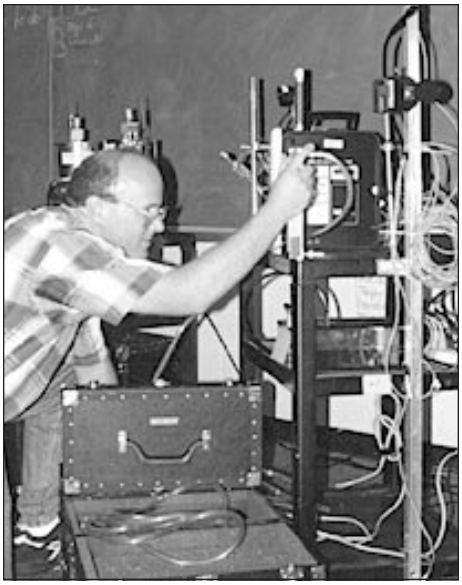


The Radiation and Indoor Environments National Laboratory (R&IE) is one of the Environmental Protection Agency's (EPA) two national Laboratories within the Office of Radiation and Indoor Air (ORIA). Our mission is to protect the public and the environment by minimizing exposure to radiation and indoor air pollution through environmental measurements, applied technologies, and education.

This Laboratory is dedicated to being a center of excellence in healthy environments by providing innovative technology and services in the areas of:

- **Indoor Environments**
- **Environmental Restoration**
- **Radioactive Waste Management**
- **Radiological Emergency Response**
- **Radioanalysis and Quality Assurance**

R&IE specializes in development, demonstration and employment of technologies in field applications. We provide scientific and technical leadership to EPA headquarters and regional programs, Federal Agencies, State and local governments, and private industries. R&IE manages multi-disciplinary teams with broad ranges of expertise in health physics, physical sciences, chemistry, environmental sciences, engineering, and administrative support. The cooperative interaction between our environmental specialists in the field and scientists in the laboratory assures thorough management from sample collection through analysis and data interpretation. These teams operate state-of-the-art fixed and mobile laboratories, monitoring vehicles, and an extensive collection of calibrated field instrumentation.

Fundamental to R&IE's mission is our commitment in developing and applying innovative, efficient, effective, and practical solutions to ensure public health and environmental quality. R&IE will work closely with you to design and deliver quality laboratory services specifically to meet your needs. For further information, please call (702) 798-2476 or FAX R&IE at (702) 798-2465.

Shown in the pictures above are: left to right, Center for Radioanalysis and Quality Assurance; Center for Environmental Restoration, Monitoring, and Emergency Response; and Center for Indoor Environments.

Center for Environmental Restoration, Monitoring and Emergency Response

The Center for Environmental Restoration, Monitoring, and Emergency Response (CERMER) measures and monitors the concentration, distribution, and environmental transport of radioactive materials. The Center's goal is to *protect public health and the environment through monitoring of environmental radiation exposure.* Teams are prepared to assess sites throughout the country using a variety of techniques. The Center works cooperatively with laboratory scientists to provide efficient and accurate analysis of radionuclides.

Environmental Restoration
CERMER can provide on-site support for site assessment and characterization. The Laboratory's unique fleet of mobile radiological laboratories and support vehicles provides sample collection, analyses, and comprehensive cleanup support activities.

Environmental scientists recommend methods for the remediation of contaminated radiation sites throughout the United States. They apply their knowledge and skill to each individual site for effective restoration. CERMER provides assistance to EPA's Superfund and RCRA programs, Department of Energy, and Department of Defense.

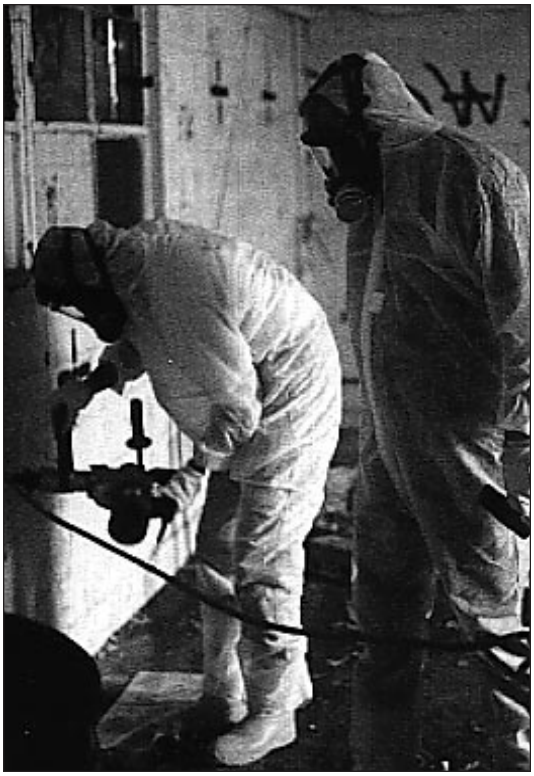
Members of the Center have provided expertise in the development of a Multi-Agency Radiation Survey and Site Investigation Manual. This manual is a federal guidance document for investigating, characterizing, and remediating radioactive material in the environment.

Environmental Monitoring
CERMER conducts air, water, vegetation, and soil surveillance studies as preventive and protective measures for public health and safety. Environmental scientists perform ambient air sampling to deep water well monitoring, managing fixed and mobile detection instruments, to assess radioactivity. Satellite communication and geographic information systems (GIS) assist center scientists in detecting radioactive pollutants.

Shown in the pictures above are: top to bottom, preparing for an emergency response exercise; collecting in-situ gamma-ray measurements; water sampling.

Emergency Preparedness and Response

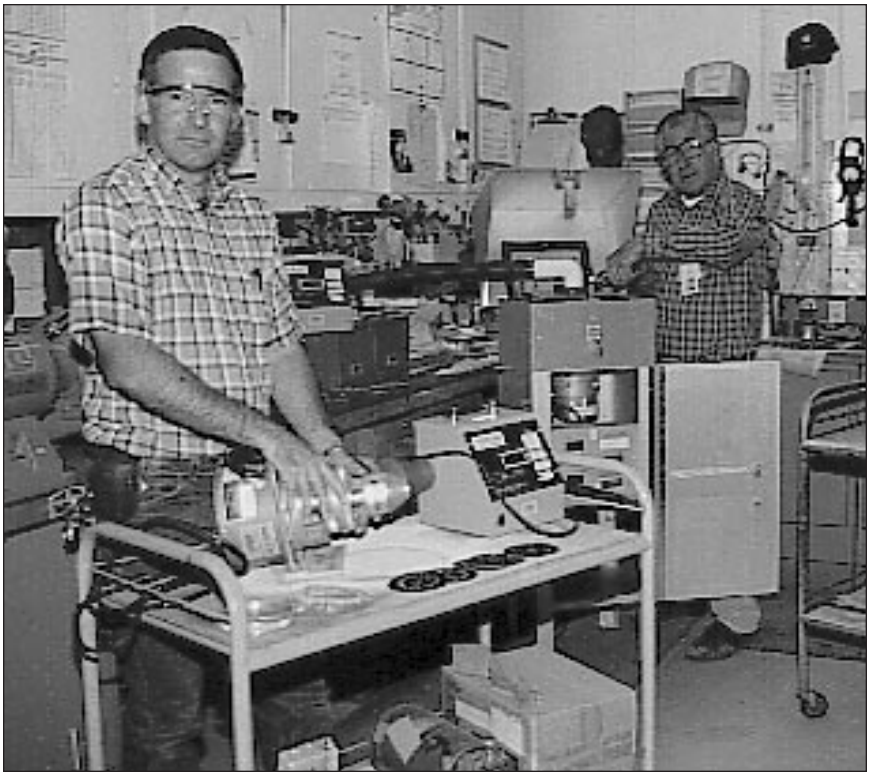
CERMER is prepared to respond to potential emergencies regarding radiation by activating a team of experienced specialists. Teams assess environmental impacts to determine the likelihood and extent of radiation exposure. They develop and practice effective strategies for dealing with potential emergency situations. The Mobile Environmental Radiation Laboratory is certified as air transportable, making it available within hours of notification of need.



The Mobile Environmental Radiation Laboratory and the support vehicles offer:

- **State-of-the-art radiation monitoring and analytical equipment**
- **Air transportable certification**
- **Fast deployment**

CERMER is dedicated to protect and inform the public of possible migration of radionuclides by providing prompt cost-effective services. For further information please call (702) 798-2469.



Shown in the pictures above are: top right, core sampling; bottom left, performing maintenance on field equipment; bottom right, calibrating a beta instrument in the calibration laboratory.

Center for Indoor Environments

The Center for Indoor Environments (CIE) promotes human comfort and productivity through management of air quality in indoor environments. Its goal is to *ensure safe, healthy, and productive indoor environments.*

Indoor Environments

CIE specializes in conducting assessments of indoor environments and building systems using EPA's Building Assessment Survey and Evaluation (BASE) protocols. The Center's scientists work with state-of-the-art equipment and mobile technology to monitor indoor environments and to promote air quality improvements. For example, CIE works in partnership with private industry to retrofit schools with energy efficient ventilation upgrades at low or no cost. CIE also provides technical support to several EPA national programs that study baseline indoor air quality of large buildings and schools.

CIE capabilities include the ability to detect and measure the following:

INDOOR POLLUTANTS

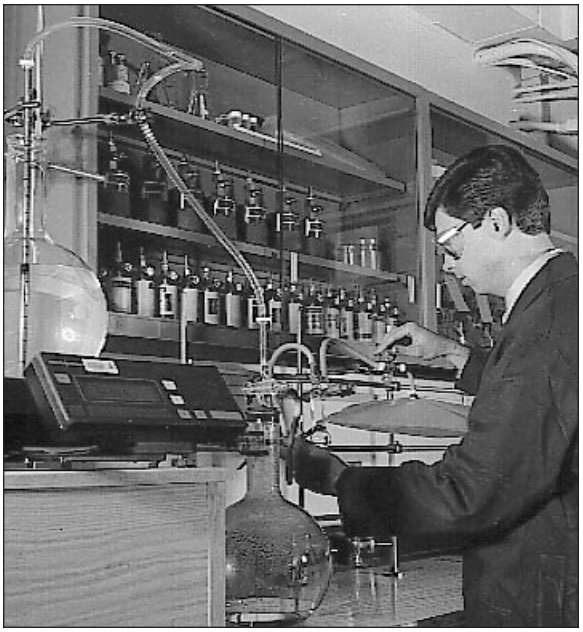
- ❖ **Radon**
- ❖ **Carbon Monoxide**
- ❖ **Formaldehyde**
- ❖ **Bioaerosols**
- ❖ **Respirable Particulates**
- ❖ **Volatile Organic Compounds**

COMFORT FACTORS

- ❖ **Temperature**
- ❖ **Relative Humidity**
- ❖ **Ventilation Rates**
- ❖ **Carbon Dioxide**
- ❖ **Sound & Light**

CIE members work together with teachers and students to foster healthy learning environments by promoting proper school classroom ventilation. Such studies as carbon dioxide measurements and measurements of indoor temperatures are conducted to assess classroom indoor air quality.

Shown in the pictures above are: top to bottom, setting up a portable meteorological station; monitoring air quality in a classroom; radon analysis of charcoal canisters.



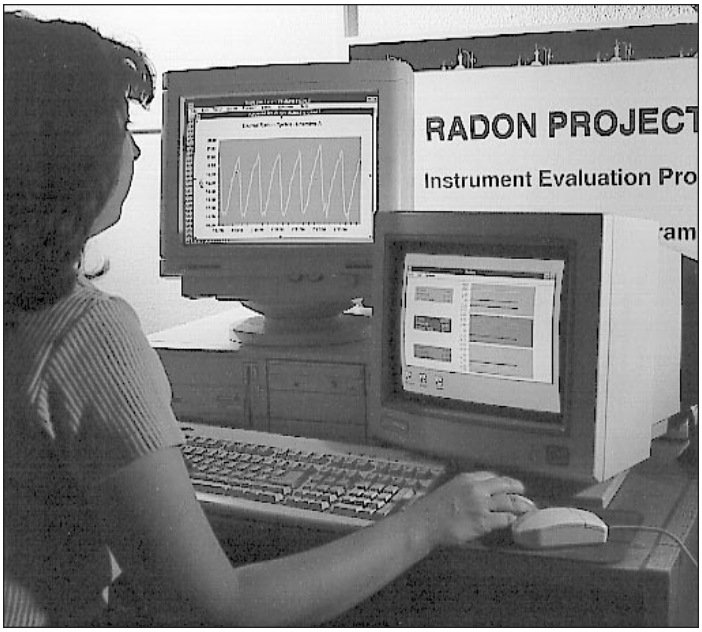
Radon

CIE works with EPA's National Radon Program to educate and help protect the public from radon, a naturally occuring radioactive gas. CIE maintains an internationally recognized radon laboratory that provides technical support and quality assurance to Regions, States, cooperative partners and the radon industry as well as serving as a technical support laboratory for the International Atomic Energy Agency's Radon Metrology Program. The CIE Radon Laboratory operates three state-of-the-art radon calibration chambers capable of providing static environmental conditions or variable "real world" conditions. In addition, CIE has a charcoal canister and electret-ion chamber counting laboratory for radon measurement. CIE's Radon Laboratory maintains traceability to the National Institute of Standards and Technology (NIST).

Computer Support

The Center also includes a team of computer specialists on staff to provide software support in database design, programming, and management. CIE computer scientists are continually designing and enhancing computer capabilities to support R&IE's field and laboratory expertise of assessing radioactive localities and concentrations.

CIE is dedicated to developing and demonstrating affordable, effective, energy efficient, and technologically sound services to improve air quality. For further information, please call (702) 798-2340.



Shown in the pictures above are: top left, performing radon gas calibration; bottom left, programming computer-controlled environmental chambers; bottom right, bioaerosol sampling in a classroom.

Center for Radioanalysis and Quality Assurance

The Center for Radioanalysis and Quality Assurance (CRQA) performs analysis of monitoring and sampling data. The Center's mission is *to provide accurate analysis of radionuclides in environmental surveillance samples and demonstrate safe management of waste disposal.*

Radioanalysis
CRQA offers laboratory assistance in the detection of low-level radiation. CRQA scientists thoroughly investigate environmental collection samples such as water, soil, sediments, air filters, ashed biological materials, and vegetation. The Center's scientists activate an array of samplers and counters to analyze environmental samples either on-site within our mobile radiological sample preparation laboratories or in our fixed analytical laboratory.

CRQA operates a comprehensive analytical laboratory specializing in:

- ❖ **Low-level radiochemistry**
- ❖ **High resolution alpha and gamma spectroscopy**
- ❖ **Liquid scintillation analysis**
- ❖ **Thermoluminescent dosimetry**

Strictest quality assurance standards are applied to all analyses in the laboratory. CRQA maintains a close relationship with field monitoring personnel for rapid, carefully controlled processing of samples from collection through analysis and documentation. CRQA applies advanced computer support in sample tracking and data management to ensure complete and concise radiation data.

CRQA is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) as a processor of personnel thermoluminesent dosimetry. CRQA participates in external quality assurance intercomparison programs such as the EPA Radiation Quality Assurance Program (RADQA). All radioanalytical instrument calibration standards are traceable to the National Institute of Standards and Technology (NIST) to ensure that all analytical equipment functions with accuracy.

Shown in the pictures above are: top to bottom, performing microwave digestion of environmental samples; loading samples for tritium analysis; reading thermoluminescent dosimeters.

Quality Assurance and Waste Management

CRQA shares ORIA's responsibility for regulating many of Department of Energy (DOE) nuclear waste activities such as the Waste Isolation Pilot Plant in New Mexico. CRQA performs oversight of DOE's waste characterization data to assess completeness and compliance with applicable quality assurance requirements. CRQA works cooperatively with its customers to protect present and future generations from the risks posed by radioactive waste.

With thorough knowledge of waste management, center experts can review and verify:

- **Repository design and site characterization**
- **Safe waste storage and management**
- **Controlled migration of radionuclides**

CRQA is dedicated to providing accurate identification and quantification of environmental pollutants and assisting customers in meeting current and anticipated radioanalytical and waste management requirements. For further information please call (702) 798-2151.

Shown in the pictures above are: top right, processing field samples as they arrive at the laboratory; bottom left, preparing samples for gamma analysis; bottom right, performing sample preparation in the mobile laboratory.