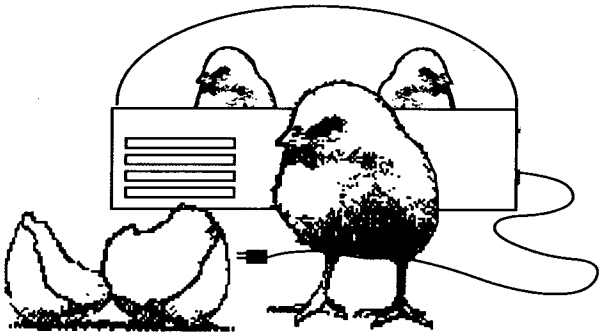
IV. TECHNOLOGY INCUBATORS AND TEST AND EVALUATION FACILITIES

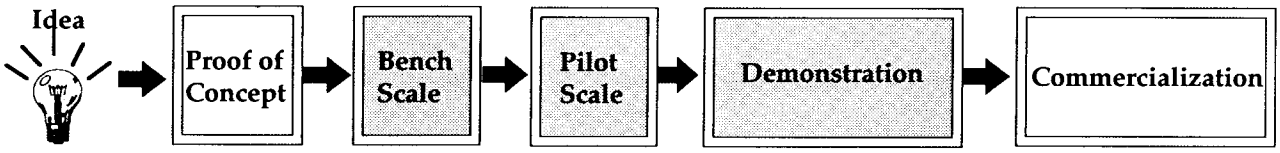


INCUBATORS

- **Business incubators provide: - Office space and equipment**
  - **Market services**
  - **Secretarial support**
  - **Business planning.**
- **Technology incubators may also provide:**
  - **Lab space and equipment**
  - **Analytical services**
  - **Permitting and regulatory assistance.**

TEST & EVALUATION FACILITIES

- **Permitted facilities and equipment for conducting technology tests or demonstrations at the lab, bench, or pilot scales.**
- **Personnel for independent technology testing and evaluation.**



BUSINESS INCUBATORS

Business incubators are playing a greater role in helping infant businesses survive and grow. Business incubators are facilities that specialize in providing small businesses with office space and shared administrative support services, identifying sources of capital, performing market analyses, and assisting in business development. The National Business Incubator Association estimates that there are over 400 incubators across the country. For more information on business incubators, contact:

Dinah Adkins
National Business Incubator Association (NBIA)
One President Street
Athens, OH 45701
(614) 593-4331

TECHNOLOGY INCUBATORS

Some business incubators specialize in encouraging the development and commercialization of innovative technologies. These technology incubators provide a wide variety of services to developers of innovative hazardous waste treatment technologies at all stages of development. Some of these facilities, such as the National Environmental Technology Applications Corporation, also serve as test and evaluation facilities. In addition to general business support services offered by most incubators, technology incubators may offer:

- Permitting and regulatory assistance
- Laboratory space
- Analytical services
- Testing and evaluation facilities and expertise
- Technical expertise in many disciplines and experience in the hazardous waste industry, especially when affiliated with university research centers.

TEST AND EVALUATION FACILITIES

Test and evaluation (T&E) facilities offer services to technology vendors at the developmental and equipment demonstration stages. Federal, State, and private facilities generally have the necessary permits to allow testing on actual hazardous wastes at lab, bench, or pilot scales. T&E facilities may have "secondary containment," controls on emissions and effluents independent of those associated with the technology being evaluated, that offer a safe environment to test the limits of the technology. In addition, facilities may have the personnel and expertise to ensure that tests are conducted in accordance with appropriate analytical protocols. The opportunity to perform tests at one of these facilities can offer a developer independent validation of the technical performance of an innovative technology. This can facilitate marketability and commercial acceptance. The profiles of the test and evaluation facilities developed for this booklet were prepared from information provided by the facilities.

TECHNOLOGY EVALUATION PROGRAMS

In addition to facilities and services, developers would benefit from information on testing procedures applicable to their technologies. EPA's Office of Research and Development has developed generic treatability study guidance and is in the process of developing treatability study protocols for individual technologies. For information on the availability of these protocols, contact Dave Smith ORD/RREL at (513) 569-7957.

FEDERAL TEST AND EVALUATION FACILITIES

Name: **U.S. EPA Incineration Research Facility**

Address: U.S. Environmental Protection Agency
26 W. Martin Luther King Drive
Cincinnati, OH 45268
Contact: Robert Thurnau
Phone: (513) 569-7692

The EPA Incineration Research Facility (IRF) is located on the grounds of the National Center for Toxicological Research in Jefferson, Arkansas. The IRF consists of a 12,000 square foot building that houses two pilot-scale incineration systems along with adjacent labs, offices, trailers, and outdoor support equipment. The pilot-scale research incinerators include a Rotary Kiln System and a Liquid Injection System. The IRF has a full RCRA Part B permit for incineration research and is authorized by the State of Arkansas to perform research with alternate air pollution control technologies.

Non-incineration technology developers may also be able to use the facilities. In addition to its testing and research services, technology developers can benefit from the IRF's extensive analytical chemistry capabilities directed toward incineration and air pollution control technology. IRF also provides administrative assistance to vendors through support of the development of test plans, drafting quality assurance plans, and preparing final reports.

Name: **U.S. EPA Solid and Hazardous Waste Research Facility**

Address: 5995 Center Hill Road
Cincinnati, OH 45224
Contact: Robert Landreth
Phone: (513) 569-7871

The U.S. EPA Solid and Hazardous Waste Research Facility is designed to evaluate solid waste management technologies and hazardous waste remediation technologies at the bench and pilot-scales. The facility is operated by University of Cincinnati staff and is equipped to perform geo-technical, geo-chemical, biological, and geo-hydrological tests. The facility can accommodate technologies including but not limited to: delivery and recovery systems for in-situ site remediation, chemical stabilization and solidification, and computer-aided site characterization modeling. Hazardous waste treatment technology developers can obtain services from the Facility including: testing and evaluation for validation of developer claims, short-term and long-term leach analyses, field evaluation, and program design and implementation for field testing. The facility currently operates under a 1000kg treatability exclusion from the State of Ohio.

Name: **U.S. EPA Test and Evaluation Facility**

Address: U.S. Environmental Protection Agency
T & E Facility
Cincinnati, OH 45268
Contacts: EPA - Francis L. Evans, III
ITEP - Radha Krishnan
Phone: (513) 684-2621

The facility was constructed in 1979 to accommodate a broad spectrum of approaches for treating wastewater. However, the RCRA-permitted facility can perform research and testing for hazardous waste treatment. The facility is managed under contract by the operational support contractor - IT Environmental Programs, Inc. The facility contains a 24,000 square foot high-bay experimental area, on-site analytical chemistry laboratories, chemical storage areas, hazardous waste storage facilities, liquid pumping systems, and two 5-ton bridge cranes. The facility's research capabilities are accessible to other government agencies, as well as to private industry and developers.

Name: **Hazardous Waste Research and Development Center**

Address: U.S. Army Corps of Engineers,
Waterways Experiment Station
3909 Hall Ferry Road
Vicksburg, MS 39180
Contact: Norman Francingues
Phone: (601) 569-7692

The Hazardous Waste Research and Development Center (HWRDC) is part of the larger Waterways Experiment Station (WES). WES offers a full service testing and evaluation facility with safety equipment, a high-bay testing area, and a fully equipped analytical lab including GC/MS. In addition to extensive analytical equipment and facilities, HWRDC has technical personnel with research experience in a variety of hazardous waste treatment technology types. WES has been involved in best demonstrated available technology development work for EPA and has conducted treatability testing at Federal facility sites. In addition, WES is capable of conducting/assisting in treatability testing for other Federal agencies on a cost reimbursement basis and is currently investigating the possibility of government/industry cost sharing for testing and evaluation of hazardous waste treatment technologies. WES has a RCRA Part B permit for testing hazardous waste treatment technologies.

STATE TECHNOLOGY INCUBATOR AND TEST AND EVALUATION FACILITIES

Name: **The Illinois Institute of Technology Research Institute (IITRI)**

Address: Center for Environmental Research
Illinois Institute of Technology
Chicago, IL 60616-3799
Contact: Demetrios Moschandreas
Phone: (312) 567-4310

The Center for Environmental Research is designed to encourage cooperation among its 300 member research scientists at the main campus of the Illinois Institute of Technology and the 400 additional scientists at satellite campuses. IITRI obtained a Research, Development, and Demonstration permit from EPA Region V that is expansive in scope and allows the Institute to perform a variety of services. Specific IITRI services available to developers of hazardous waste treatment technology include professional testing and evaluation, technology development planning assistance, and services for matching innovative technologies with actual site needs. IITRI evaluates innovative technology independently under confidential conditions, and conducts professional testing to verify developer claims.

Name: **Illinois Hazardous Waste Research and Information Center**

Address: Illinois Department of Energy and Natural Resources
1 East Hazelwood Drive
Champaign, IL 61820
Contact: David Thomas
Phone: (217) 333-8940

The Hazardous Waste and Research Information Center (HWRIC) located on the University of Illinois, Urbana-Champaign campus, was created by State legislation to support research and development on hazardous waste prevention, treatment, and remediation technologies. The facility accommodates researcher and vendor work at the large bench and small pilot-scales.

Research - The center awards approximately one million dollars annually to sponsor five categories of research. These categories include waste characterization and assessment; waste reduction and pollution prevention; waste treatment, disposal, and remediation; environmental processes and effects; and risk assessment and policy analysis. Proposals are solicited on an annual cycle and are due at the end of December of each year. Funding for research projects that are selected averages approximately $75,000 per year.

Industry and Technical Assistance Program - (Discussed in Section III of this booklet.)

Lab Services Program - The 22,000 square feet HWRIC contains high-hazard laboratories, two treatability laboratories, and a pilot-scale laboratory for working with industry and technology developers. It can accommodate technologies up to approximately tractor trailer size. Developers are currently authorized to conduct up to 1000kg treatability studies. The program uses $100,000 of the Center's research funds to provide testing assistance to developers and industry.

NON-PROFIT AND PRIVATE TECHNOLOGY INCUBATOR AND TEST AND EVALUATION FACILTIES

Name: **National Environmental Technology Applications Corporation**

Address: University of Pittsburgh Applied Research Center
615 William Pitt Way
Pittsburgh, PA 15238
Contact: Jack Adams
Phone: (412) 826-5511

The National Environmental Technology Applications Corporation (NETAC) was created in 1988 through a Cooperative Agreement with EPA as a subsidiary of the University of Pittsburgh Trust. It utilizes the resources and experience of industry, government, and academia to assist clients in the development and commercialization of innovative technologies. NETAC staff are engineers, scientists, and businessmen trained to assist in the development of more affordable and effective environmental technologies. NETAC services include: financial assessments; technology assessments; market analyses; testing and evaluation; permitting, regulatory, and legal assistance; and commercialization assistance.

Name: **Western New York Technology Development Center**

Address: Baird Research Park
1576 Sweet Home Road
Amherst, NY 14228
Contacts: Robert J. Martin; Kenyon A. Riches
Phone: (716) 636-3626

The mission of the Western New York Technology Development Center (TDC) is to promote business development, primarily for the five western counties of New York. The TDC, located adjacent to the State University of New York at Buffalo (SUNY), has established a working relationship, especially for technical assistance, with the New York Center for Hazardous Waste Management. Two TDC-managed business incubators provide both physical space and essential start-up services for new technical business ventures. The center has 24,000 and 40,000 square foot facilities, both of which can accommodate activities requiring up to 2,500 square feet of space. Both facilities are outfitted with wet laboratories and central services including: compressed air, vacuum natural gas, and distilled water. In addition, the center provides a full range of services, including capital resources. Environmental health and safety services are also provided through SUNY. Prospective developers may be required to submit a business plan and a research plan.

Name: **OHM Remediation Services Corp.**

Address: 2950 Bushkirk Avenue
Suite 315
Walnut Creek, CA 94596
Contact: Ann Kuffner
Phone: (415) 256-7187

OHM Remediation Services Corporation offers testing and evaluation and research services to developers of innovative treatment technology. Possible arrangements with OHM include: professional tests and evaluations, collaborative research efforts by OHM and developers, and joint agreements whereby OHM and developers can team to license a technology and promote its commercialization. OHM emphasizes biological and thermal treatment processes. In addition, OHM is currently experimenting with soil washing and other treatment technologies. OHM also performs treatability studies and analytical research at its laboratory facilities in Findley, Ohio where it has a full RCRA Part B permit. OHM is staffed with technology research experts and performs on-site remediation testing.

Name: **The Tennessee Innovation Center**

Address: 701 Scarboro Road
Oak Ridge, TN 37830
Contact: Tom Valunas
Phone: (615) 482-2440

The Tennessee Innovation Center (TIC) is a wholly-owned subsidiary of Martin Marietta Corporation. It was established to encourage industrial development in the Oak Ridge, Tennessee area through equity investment in start-up companies. In addition to providing equity capital, TIC maintains a staff of professionals who are available to assist their client companies' management.

Name: **International Technology Corporation**

Address: Technology Development Lab
304 Directors Drive
Knoxville, TN 37923
Contacts: Bob Fox; Ed Alperin
Phone: (615) 690-3211

International Technology (IT) Corporation offers services to treatment technology developers to assist them in promoting the development and commercialization of their products.

IT's facilities include two 16,000 square foot laboratories. IT's lab in Knoxville, Tennessee is designed primarily for bench scale testing and IT has facilities to perform high-hazard testing involving dioxins and other hazardous substances. Special analytical capabilities are available to support treatability testing activities. Pilot-scale testing is performed by IT at its laboratory in Oak Ridge, Tennessee. The Oak Ridge lab handles a variety of technology tests and evaluations including soil washing and extraction, low temperature thermal stripping, and air and steam stripping. After evaluations are performed, IT has the technical and professional capabilities to improve technology processes based on analytical findings. IT also offers office space to developers for administrative tasks associated with technology development.