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TEST

Trade in Environmental Services & Technologies
Annual Report- 1993-1994

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*Trade in Environmental Services & Technologies
Annual Report- 1993-1994*

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SANDERS
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Environmental Business Development & Consulting

Trade in Environmental Services & Technologies
Annual Report- 1993-1994

Introduction

In July 1993 Sanders International (SI) assumed management responsibilities for the U.S-side execution and administration of the Trade in Environmental Services and Technologies project (TEST), replacing TEST's interim contractor IMCC. Technical Coordinator Jeff Hallett joined SI in July 1993.

TEST program implementation is on schedule or ahead of almost every goal or target outlined in the TEST project document for each of the four components:

- Technical Assistance
- Information Networks
- Promotion
- Trade & Investment Tours

The accomplishments described in this report are the result of the momentum already created by ICICI before SI joined the project and hard work by all parties since then. Given the good working relationships developed and lessons learned over the past year, SI fully expects to build upon the momentum achieved in the first year and easily surpass TEST's first year accomplishments during the second year.

I. Technical Assistance:

In accordance with strong guidance provided by ICICI's TEST Group and USAID - New Delhi Mission personnel, the initial and major focus of the TEST program in its first year has been the conclusion of financed business deals between U.S. and Indian firms. Also of high priority has been the creation and cultivation of a continually expanding "pipeline" of deals in progress to be finalized in the second and third years of the project. SI and ICICI's TEST Group agreed that the major delivery vehicle of these deals would be the Technical Assistance component of the project.

The various processes for matching businesses to businesses, businesses to technologies, technologies to technologies, all overlaid with great distances, different cultures, levels of development and language differences is complex and occasionally daunting. Nevertheless,

SI and the TEST Group have made great progress in clarifying the appropriate content and mix of technical assistance as well as in developing a progressively clearer understanding of the types of information and assistance that are useful to firms in exploring, developing and closing international business linkages.

At kick-off meetings with ICICI's TEST group in Bombay in August 1993, SI's project management team spent the bulk of the time discussing the nature of technical assistance to be provided under the project and respective roles and responsibilities. We also focussed on the TEST group's understanding of the nature of demand among Indian clients for environmental technology search information, as well as the problems and short comings of the technology search reports provided to ICICI by TEST's interim contractor.

As a result of these meetings, SI's analysis of the problem and synthesis of the TEST Group's input, SI drafted and circulated the Annex A documents Technical Assistance Workplan and "TEST Technology Searches Proposed Approach". SI circulated the "Approach" document to TEST sub-contractor firms for use as a general guide in preparing the technology search reports. SI has generally followed the outline of both the Technical Assistance Workplan and the "Approach" document with some modifications and adjustments to reflect insights gained from project implementation experience.

In practice, the different types of technical assistance as defined in the 1993 technical assistance workplan have tended to run together. In addition, we have found it necessary to conduct a more labor intensive and iterative process in defining and clarifying both the demands of the Indian clients and the qualifications/capabilities of the U.S. suppliers. Finally, ICICI has called upon SI minimally for advice and support on (Task 4) loan and grant applications

TEST Results

During the period covered by the workplan and through September 30, 1994, TEST has registered the following results:

Completed Projects:

- Licensing agreement between **Davy-McKee** of San Francisco, California and **TTG Industries** of Madras, to transfer production know-how for the manufacture of water-jacketed gas collection hoods. Financed Amount: \$300,000.
- Joint venture between **Snyder General** of Dallas, Texas, and **Kirloskar Industries** of Pune, India for the production of a variety of air pollution control equipment. Financed amount: \$1.8 million.
- Demonstration sale of an innovative U.S. technology to recover caustic soda from an existing pulp and paper mill's waste stream from. **Enders Process Equipment** of Glen

Ellyn, Illinois to **Shreyans Industries** of New Delhi. Additional sales anticipated following successful deployment of equipment and technology. Financed amount: \$1 million conditional grant.

- Transfer of flow modelling technology for gas collection equipments to **Associated Cement Companies** - New Delhi from **Research Cottrell** -Somerville, New Jersey. Financed Amount: \$.4 million.

- Joint venture between **Munradtech** of New Delhi and **Donaldson** of Minneapolis, Minnesota to produce gas turbine filters. Financed amount: \$.5 million..

- Licensing of fluidized bed boiler technology from **Tampella** - Atlanta, Georgia to **Ignifluid Boilers, Ltd.**, Madras. Financed amount: \$.9 million

Projects About to Be Financed:

- Design, construction and certification of a 120 ton per annum capacity hazardous waste incinerator by the **Cynoclean Company** and **Fuller-KCP** both of Madras with engineering design, supervision and specialized equipment provided by the **International Technology Corporation** of Knoxville, Tennessee.

- 5 year technical collaboration agreement with **Inalsa** of New Delhi for the production of gas turbine filters from **Pneumaphil** of Charlotte, North Carolina.

Other Promising Ventures

- **Premier Ziba** - New Delhi and **U.S. Biotech** - New Jersey cooperating to market the U.S. firm's bio-augmentation product for treatment of a variety of industrial wastewater streams.

- **Bio-Systems -India** of Ahmedabad and **Bio-Systems -USA** of Chicago, Illinois are cooperating on a similar project to market and eventually manufacture the U.S. firm's bio-treatment products in India.

Licensing, Distributorships & Other Business Collaborations:

- **Lean Power**, a McLean, Virginia manufacturer of auto emission control devices travelled to India in November 1993 under joint TEST and U.S.-Asia Environmental Partnership (US-AEP)/World Environment Center (WEC) sponsorship. The trip resulted in a memorandum of understanding with the Automotive Research Association of India to test and adapt its product for the Indian market. A joint venture with a major Indian auto components manufacturer is under negotiation.

■ **Ab.Sorb, Inc.** of Minnetonka, Minnesota, a small manufacturer of an innovative oil recovery system signed a memorandum of understanding with **Ferro Alloys Corporation, Ltd.** of India to conduct feasibility and market studies as a prelude to a technical tie-up.

■ As the result of a TEST/US-AEP-sponsored contact, **Smith & Loveless** of Lenexa, Kansas, a large waste water treatment equipment manufacturer signed a distributorship agreement with **PureTech Engineering**, a Madras-based engineering firm to represent the companies full product line in Southern India.

■ As a result of a TEST/US-AEP-sponsored contact and business exchange, **Modular Environmental Technologies** of The Woodlands, Texas signed a distribution agreement with **Ion Exchange India** - Bombay to market their low-cost water purification products primarily to markets in Central and South America.

■ As a result of a TEST/US-AEP-sponsored contact and business exchange, **Yankee Environmental Systems, Inc.** and its associated manufacturer, **Pacific Fluid Systems** both of Seattle, Washington are negotiating with the Indian Navy and Coast Guard for the sale of their oil-spill recovery systems.

Under the Technical Assistance component and largely as a result of efforts made under the Promotion element of the program, SI has provided some level of technical assistance to more than 250 U.S. firms. SI has provided some level of technical assistance to more than 50 Indian firms. TEST project cases have been opened on 66 Indian firms. These firms have both been introduced by ICICI's TEST Group and have approached SI directly for information and support under the the program.

Technology Searches:

Sanders International (SI) has, on behalf of ICICI's TEST Group and its Indian clients, commissioned 13 Technology Search Reports. For a full discussion and analysis of these efforts, see annex B.

Problems and Issues

1. *Lack of delivery capability in India.* During the first half of the workplan year, SI determined that the project's credibility in the U.S. was being undermined by our inability to respond with real business leads to U.S. firms that approached SI as a result of TEST promotional efforts. As a result, SI and the Mission agreed that it would be prudent to suspend most active promotion efforts in the U.S. until a relationship could be established with an Indian organization that could provide active matchmaking efforts to U.S. firms nominated for such assistance under the TEST program. Unfortunately, SI's initial efforts to conclude such a relationship with CII were unsuccessful due to contractual difficulties and disagreements with the Indian organization over compensation rates. SI is confident that current efforts to establish an appropriate relationship with Tata Risk Management to provide

these services will be online in October 1994. SI is planning to resume a full level of promotional efforts beginning in early 1995.

2. *Quality, costs and useability of TEST technology searches.* This issue is discussed fully in Annex B. However, the need to more carefully and iteratively define and refine the scope and content of the technology searches, as well as ICICI's practice of requiring client payment for these services has dramatically lengthened the amount of time it takes to develop these searches and increased the level of effort required from SI to develop these studies. Nevertheless, we are confident this process will, in the future, result in better and more useful searches which are more likely to result in business linkages.

While the practice of requiring some client contribution for technical assistance is laudable and tends to provide a good test of the seriousness of the client, the process of seeking client agreement for various forms of technical assistance has significantly slowed down SI's ability to provide these services. Due to the radically different cost structures between the U.S. and India, the Indian clients tend to suffer from "sticker shock" (i.e., disbelief that the amounts quoted are appropriate) when presented with cost estimates for U.S.-sourced technical assistance services.

3. *Communications.* Early problems with missed and incomplete communications have been largely resolved by the establishment of more reliable E-Mail links between SI and India. SI continues to press the TEST Group for more and more frequent sharing of information on the status of various cases, especially as regards the progress of deals through ICICI's loan sanctioning process.

4. *Cash Liquidity in India.* Ironically, the progress and success of the the Indian economic reforms and the consequent boom in exports and inward investment has resulted in a glut of cash in the Indian market. As a result, loan financing, even subsidized financing, is somewhat less attractive to many Indian clients. This has resulted in slower than had been anticipated drawdowns in approved TEST financing for some of the completed business transactions. In addition, the availability of financing from overseas banks and the availability of other funding from programs like the EPA's "TIES" program has caused some slowness among Indian firms in submitting financing proposals to ICICI and a noticeable degree of "shopping around" before applying for financing under the TEST program. To alleviate this unexpected problem, the TEST Group and SI have re-doubled efforts to make Indian clients more aware of the benefits of financing through the TEST program, e.g. no exchange risk, availability of other services and assistance, travel, etc. Moreover, it is likely that India's current liquidity boom is cyclical and conditions will return to a more normal state, particularly if import duties are further reduced.

TEST -Technical Assistance Element

Description	Project Deliverables (Life of Project)	First Year Accomplishments
<i>Indian firms assisted in identifying appropriate and adaptable ESTs</i>	No quantification in project document	66 TEST cases opened, 15 business linkages made, 6 deals financed
<i>Advice on potential U.S. suppliers to Indian firms</i>	Service provided to 150 Indian firms over project life	At least 52 cases where service provided
<i>Licensing agreements or joint ventures created or activated</i>	25 over project life	5 licensing deals closed, 2 joint venture created, healthy pipeline in place
<i>Procedures in place for ICICI to respond to inquiries on EST availability & sources</i>	No quantification in project document	Procedures established and improved (see narrative)
<i>SI Assistance in Reviewing loan or conditional grant applications</i>	Assistance provided to ICICI on 150 proposals	Minor assistance rendered on two proposals*

*The TEST Group has only asked for assistance (i.e. review of loan requests) on two cases and has not requested any other assistance of this type from SI.

II. Information Networks Element

The objectives of the Information Networks element of the TEST program are:

--To establish a permanent information network with a two-way flow matching Indian needs for technical information and technology imports from the U.S. with the U.S. capability to meet the needs.

--To promote a network of U.S. and Indian firms and organizations which match importers with suppliers and promote technology transfer arrangements that lead to a sustained flow of U.S. technology into India.

As is acknowledged in the TEST project document, there exists already a "nascent multi-channel network" for the collection and dissemination of commercially relevant environmental information. This network includes a three-tiered network of primary data

sources (commercial and government databases, libraries, research organizations, government agencies, NGO's etc., intermediate data sources (chambers of commerce, trade associations, consulting firms, trading companies, etc.) and ultimate users (Indian environmental manufacturers, engineering firms, other service providers).

As outlined in the project document and interpreted by SI and the TEST Group, TEST's goal is not to re-invent this network but to develop practical and achievable ways of supporting and strengthening all levels of this network while augmenting the presence and profile of U.S. environmental technology, equipment and service providers.

While the major focus of the past year's efforts has been on the development and conclusion of business linkages through technical assistance, efforts to develop TEST's information system have been a critical means to this end. In recognition of the importance of this task to both the TEST program and our firm, in December 1993, SI brought on a full-time information manager to actively plan, execute and manage activities under the information system component of the workplan.

One of the initial and most important tasks in this component has been to identify and evaluate the environmental information resources that should be included in the TEST environmental information system. Given the plethora of environmental information resources available and growing throughout the world, SI has narrowly circumscribed its efforts under this component with the following test criteria:

1. *Is it useful in transferring technology and making a deal?*
2. *Is it cost-effective?*
3. *Is it appropriate for India?*

Employing these tests, SI has screened a tremendous quantity of environment-related information. Most of these information sources have been rejected for failing one or more of above-mentioned tests. Specifically, some of the sources reviewed were relevant only to the United States' environmental situation, lacked a commercial focus or were too academic or scientific in nature, were too expensive, or too difficult to access from India. These efforts form the basis of a report containing a recommended "core set" of environmental resources that SI suggests should form the basis of the TEST Information System, as well as the basis for an environmental library or information system for any India-based organization interested in establishing such a resource. See attached report in Annex C.

SI has sent to ICICI's TEST Group a large quantity of information on environmental technologies, U.S. environmental firms, reference works, newsletters, journals, environmental databases on disk, information and instructions on accessing commercial and U.S. government on-line databases, monthly calendars of U.S. environmental events and more.

We have tested and recommended that the TEST Group acquire certain CD-ROM based information products like the **Thomas Register** and **McGraw Hill's Multimedia Encyclopedia of Science and Technology**. See annex D for a list of environmental resources transferred to ICICI and a sample environmental event calendar.

SI and the TEST Group have also met with and have begun to assess the interests, capabilities and potential of various primary and intermediate data sources, e.g. the Federation of Indian Chambers of Commerce, the Confederation of Indian Industry, the Associated Chambers of Commerce, the Indo-American Chamber of Commerce, the Indian Boiler Manufacturing Association, the National Environmental Engineering Research Institute, the Tata Energy Research Institute, the Ahmedabad Textile Industry Research Association, the Central and state pollution control boards, etc. We have also learned of and have begun the process of integrating TEST in a World Bank/Ministry of Environmental project to create a national environmental network under NEERI's management. NEERI and ICICI agreed in July 1994 to conclude a memorandum of understanding to cooperate on this and other environment-related projects.

Finally, SI has opened discussions with ICICI's information specialist about cooperating to establish an Internet node for ICICI in order to facilitate communications and information exchange between U.S. and Indian firms under the TEST and other ICICI programs. In the current year's workplan, SI is evaluating software packages that provide more user-friendly access to various communication and information tools available on the Internet. This activity will be stepped up in the 1994-95 workplan.

TEST- Information System Element

<i>Description</i>	<i>Project Deliverables (Life of Project)</i>	<i>First Year Accomplishments</i>
<i>Comprehensive List of U.S. Sources of ESTs of interest to Indian companies</i>	At least 200 U.S. sources provided	Qualifications information at least 104 firms sent, database information on 1,500 EST suppliers provided, see annex D for list of other EST information provided
<i>Strengthened information network in place for two-way flow of information to suppliers & purchases of ESTs.</i>	Reach at least 2000 Indian firms on a regular basis	See narrative on contacts with established Indian network nodal organizations and Internet plans.

<i>Feasibility of establishing newsletter to apprise U.S. EST providers of opportunities in India</i>	Report required	Research ongoing. Electronic dissemination of this information contemplated as more targeted and cost-effective (See 1994-95 workplan)
<i>Increased level of participation of U.S. EST providers in trade & technology fairs, etc. in India</i>	No quantified deliverable	Efforts underway to publicize in U.S. environment events in India. 1 U.S. delegation organized around India event November 1993. (See 1994-95 workplan)
<i>Increased number of Indian firms with knowledge of U.S. ESTs</i>	No quantified deliverable	Relationships with Indian business organizations under discussion to distribute information on U.S. EST sources and opportunities to members.

III. Promotion Element

The objective of the promotion element of the TEST program is to: increase awareness of opportunities provided by the TEST Project, and to encourage participation by Indian and American firms. An important element of this promotion is to increase awareness in the United States of the opportunities offered by the Indian market in environmental services and technologies.

One of the most important developments that affected the execution of this element was the increasing interest and awareness shown by U.S. environmental businesses about India and business opportunities there. This was largely the result of greater measurable results and momentum achieved by the Indian government in its economic reform program and the sometimes high profile response of major corporations in terms of business development and investment. Perhaps the greatest single reason for this awareness was publicity created by the large in-flow of global institutional investors into India's marginally liberalized capital and stock markets.

The result of these developments is that SI has needed to spend less time explaining why a U.S. firm should consider the Indian market and more time responding with concrete and detailed information about specific environmental opportunities in India and the TEST program's services.

Promotion Highlights Lack of Delivery Capability in India

SI aggressively promoted the TEST program in the the first half year of the program through a mass faxing to approximately 1,200 U.S. environmental firms and follow-up mailings, several articles in business and environmental journals and appearances at environmental events. The response to these efforts was quite good, with over 10 percent responding to the mass-faxing project.

However, as is described in the Section I, our inability to respond in a timely fashion to U.S. firms seeking contact with prospective Indian partners and collaborators prompted the decision (made in consultation with the Mission and the TEST Group) to greatly scale back promotional efforts until this matchmaking and information gathering capability could be put in place. The 1994-95 workplan calls for a much more aggressive promotional effort to begin in early 1995, focussing on TEST's accomplishments and "success stories" to date.

Activities Under the Promotion Element

Designed and printed single page TEST information sheet

Drafted 4-page TEST Information Sheet

*Designed and Printed color tri-fold brochure**

**see annex E*

Publications:

see annex F

Events: September 1993-94

Presentation: *Washington Environmental Industry Association, Seattle, Washington - September 1993*

Presentation: *Indo-U.S. Joint Business Council, New Delhi, India - November 1993*

Presentation/booth: *Water & Environment Federation convention, Los Angeles, California - January 1994*

Presentation: *Seattle Chamber of Commere, Seattle Washington - March 1994*

Presentation: *HAZMACON, San Jose, California - April 1994*

Presentation: Colorado Trade Development Agency, Denver, Colorado - April 1994

Presentation: Minnesota Trade Office, St. Paul, Minnesota - September 1994

TEST - Promotion Element

Description	Project Deliverables (Life of Project)	First Year Accomplishments
<i>Attractive and informative promotional materials</i>	No quantification	Done (see annex E)
<i>Preliminary Media Campaign</i>	Contact 250 U.S. Firms, 500 Indian firms	1200 U.S. Firms contacted via fax, India outreach efforts done thru TEST Group and Mission only
<i>Outreach to U.S. Firms</i>	At least 30 firms per year	Completed to 250
<i>Information provided in response to inquires</i>	90 firms per year	More than 250 firms
<i>Participation in trade fairs, conferences, etc</i>	At least 3 events	Participated in 7

IV. Trade and Investment Tours Element

The objective of the Trade and Investment Tours element is to enable Indian or American environmental service and technology firms to meet potential buyers or sellers, or possible joint venture partners.

This element has proved to be extremely important in moving businesses to conclude or to seriously contemplate an environmental business linkage under the TEST program. Particularly for smaller and medium-sized U.S. and Indian firms, the chance to receive at least some financial assistance to help defer travel expenses has motivated many firms to make India a business priority. Ironically, SI has observed that considering relative size and availability of resources, Indian firms are more likely to send their business executives to the U.S. at their companies' expense than the other way around. Doubtless this is due to the more outward and export-oriented view of Indian businesses vis-a-vis their U.S. counterparts.

SI developed a productive and mutually beneficial relationship with the U.S.-Asia Environmental Partnership's Environmental Business Exchange program which was managed by the World Environment Center. With US-AEP/WEC assistance, SI co-sponsored over 40 environmental business exchanges during SI's first year with the TEST project. In some

cases, SI provided logistical and programmatic support to business missions where no other financial support was provided. As shown on pages 2-3, many of these exchanges have already resulted in some sort of business linkage. Approximately one half of the exchanges were company to company exchanges, the other half were comprised of individuals participating on delegations.

TEST Delegations

- In November 1993 the TEST program and the US-AEP/WEC co-sponsored a delegation comprised of three U.S. environmental firms to meet with prospective Indian partners and to attend the Indo-U.S. Joint Business Council meeting and the 1993 India International Trade Fair.
- In March the TEST program and the US-AEP/WEC jointly sponsored a delegation of eleven Indian environmental business leaders, regulatory officials and financial experts for a study tour to Seattle, Washington; San Jose, California; Denver, Colorado; Washington D.C. and Baltimore, Maryland.
- In June the TEST program and the US-AEP/WEC jointly sponsored a delegation of representatives from India's boiler industry who visited U.S. firms in Pennsylvania, New Jersey, Texas, Oklahoma and North Carolina in search of state-of-the-art air pollution and environmentally clean boiler equipment and technology.

TEST - Trade & Investment Tours Element

Description	Project Deliverables (Life of Project)	First Year Accomplishments
<i>T&I tours organized and executed</i>	10 T&I tours involving at least 4 participants from U.S. or India	13 T&I tours organized, with 16 U.S. participants and 24 Indian participants
<i>Summary of outcomes, to include terms of business arrangements, value of ESTs traded and impact on pollution problems</i>	Written report	In progress

ANNEX A

8/3/93

EXPANDED TEST TECHNICAL ASSISTANCE WORKPLAN

BACKGROUND ON TECHNICAL ASSISTANCE TASKS

The Technical Assistance component is comprised of four interrelated tasks that will be tracked and managed separately. In addition, the contract provides for an "add-in" amount to cover promotion, trade and investment tours, and building a self-sustaining environmental information system. This document covers only the four technical assistance components of the RFP. The detailed workplan for the other components will be prepared once satisfactory momentum has been achieved on the four key technical assistance tasks described below:

Task 1: Information on U.S. companies. Under this task Sanders International (SI) will provide information and analysis of U.S. environmental equipment and service vendors in terms of their business capabilities (as opposed to detailed analysis of their technologies).

Task 2: Information on U.S. environmental technologies. SI will provide information on ESTs to Indian firms. In most cases additional information on the specific applications envisioned in India will be required before zeroing in on the best technologies. Thus, this task will be more labor intensive depending on the number of iterations between the U.S. and India.

Task 3: Facilitation of specific transactions. SI will work primarily with U.S. companies to help them evaluate the potential of specific business opportunities in India and to provide ongoing support to help them consummate those transactions.

Task 4: Advice to ICICI on loan and grant applications. SI will provide advice as requested by ICICI on specific applications for loans and conditional grants. The primary focus of these reviews will be to validate the claims made by the potential U.S. technology vendors or joint venture partners.

The level of SI effort for each task is likely to vary considerably from case to case, depending on the complexity of the request and the amount of similar projects already completed. For planning purposes we believe that it will be useful to segment the first two "information" tasks into several levels. This segmentation is important because ICICI will probably want to be able to tell potential Indian clients about how much each project will cost (perhaps priced on actual time spent by SI on a "not-to-exceed" basis). The proposed levels of effort for each task are described in more detail in the following section.

For the second task, each request for a separate technology is treated as a separate "project" because the search and presentation of results requires separate effort. The level of effort required to carry out each information project under tasks 1 & 2 depends critically on the number of firms for which information is sought (one versus many) and the degree of specificity with which a target technology can be identified in advance by the Indian firms (e.g., a technology to reduce a specific effluent or emission to a particular level versus a request for "water pollution technology").

The other two tasks are more likely to be characterized by a continuum of effort so have not been segmented in discrete levels of effort. The following sections provide a more detailed work breakdown for each task.

I. Task 1: Information on U.S. companies

A. Purpose: To provide Indian companies with information on potential U.S. EST vendors with the primary goal of increasing the number and quality of potential loan and grant applications for ICICI consideration and sustainable U.S. and Indian business relationships.

B. Strategy: To respond quickly to all requests for information forwarded by ICICI in the degree of detail necessary for the Indian company to decide whether it is worth proceeding to the next level of effort.

SI will attempt to build ICICI's Information Center capacity as quickly as possible to enable it to perform most of the Level 1 searches in order to save money and reduce the response time.

SI will undertake most of the Level 2 and 3 company searches with its own staff. Based on the initial visit to India, however, it appears that requests for pure company searches will be much less common than for technology searches under task 2 (in contrast to the assumption in the proposal that they would be about equally divided).

C. Assumptions: That Indian firms will specify the companies that they want information on and will provide accurate names and addresses to facilitate the initial identification and contacts. ICICI will screen all requests for assistance and forward only those that are serious. The information to be provided will primarily concern data about the companies bone fides (size, financial strength, reputation in the industry) and interest in doing business in India rather than an assessment of its technologies.

For costing purposes we are assuming that most requests will

only be for level 1 or 2 and will typically be undertaken for only a single firm as described in Sections D and F below.

D. Activities:

Level 1: Undertake Data Base Searches (i.e., no direct contact with company)

- D&B financial and company reports
- Corptech environmental data base
- Selected Buyers Guides
- SI files on individual companies

Level 2: Make Direct Contact with U.S. Company (i.e., contact the companies but do not try to independently verify claims)

- Ascertain interest in doing business in India
- Document any existing relationships in India
- Determine any exclusive or other limiting agreements
- Note any products or services they think would be of special interest in India
- Solicit information on the company for SI and ICICI files

Level 3: Undertake Independent Analysis of the Company (i.e., review literature, talk to other sources in the industry, trade associations, and follow-up on any specific questions raised by ICICI)

- Assess international capabilities and experience
- Evaluate financial strength
- Identify pending legal problems or other issues
- Other, as required

E. Deliverables: Reports to ICICI to pass on to its clients on the findings of level 1, 2, and 3 searches. Reports faxed with hard copy mailed.

F. Level of Effort: The level of effort will depend critically on the number of companies for which information is sought and the extent of search required (i.e., Level 1, 2, or 3). The level of effort will also presumably decrease significantly over time as the coordination procedures with ICICI are streamlined, ICICI assumes responsibility for more of the Level 1 searches, and information on additional companies is added to the SI and ICICI data bases.

SI will provide a "generic" level of effort estimate for each level of search but we assume that we will not be required to spend time making separate estimates for each search -- because making that estimate is in itself time consuming and

requires some initial research. (If requested Sanders will provide an accounting of time for each search in order to allow ICICI to reduce fees to actual time spent if less than the standard "not-to-exceed" estimate).

The following estimates are very preliminary and subject to substantial change as operating experience is gained. The estimates reflect our current best guess as to the "productivity" that can be achieved by about the sixth month of the project -- beyond which we would not expect significant further gains. The level of effort includes the time spent in advance communication with ICICI and the time involved in writing up the findings. In general, we will start with the first step and proceed to level 2 and 3 only if the additional information is required. The hours for each level are additive, not cumulative.

Level of Effort
(in hours per company)

	<u>single company</u>	<u>multiple co.s</u>
Level 1	2	1 x <u>x</u>
Level 2	4	3 x <u>x</u>
Level 3	8	4 x <u>x</u>

G. Costs: Costs will depend on the level of personnel allocated to the project for these tasks.

Rough costs per hour (with all overhead included) are:

Project Manager (Hallett)	\$94.04
Consultant (e.g., Harwit)	\$57.81
Research Assistant (e.g., Gizaw)	\$27.35

Until we get more operating experience, we are assuming that the time for company search will be allocated as follows: Hallett (20%); Harwit (50%); Gizaw (30%) for a weighted hourly cost of \$55.93 on a fully allocate basis.

H. Other Assistance: As mentioned, the objective will be to build the ICICI Information Center Library over the first six months so that it can provide much of the level 1 search capability. For search requests forwarded to Sanders, ICICI will attempt to gather as much information on the company (address, parent relationships, etc) as possible to facilitate the start of the search.

II. Task 2: Information on U.S. technologies

A. Purpose: To provide Indian companies with information on U.S. environmental technologies and services with the primary goal of increasing the number and quality of potential loan and grant applications for ICICI consideration and sustainable business relationships between U.S. and Indian companies.

B. Strategy: To respond quickly and effectively to all requests by Indian firms that have been forwarded to SI by ICICI. To work closely with ICICI TEST Group to develop procedures for screening and pin-pointing needs in advance in order to help us focus on the most relevant technologies.

SI staff will undertake the initial communications with ICICI in order to raise any obvious questions about the request. We will then be prepared to provide information at three levels as in Task 1. At the first level, information will be developed primarily through data bases on technologies and other secondary sources. Most of this initial work will be performed by Sanders staff.

In those cases where more detailed or technical Level 2 or 3 information is required from the firms or industry sources, SI will rely primarily on engineers from the sub-contractor team to develop this information in the format and depth specified by the SI/TEST Group team and the ICICI client firms. In some of the cases, a Level 2 or 3 effort may require the technical consultants to make a short-term trip to India.

In virtually all of these cases, we assume that the Indian companies will also want to know the names of the vendors of the technologies and this information will be collected and provided as an integral part of the package. We will not, however, provide the more detailed information on the companies themselves which is a Task 1 function.

C. Assumptions: The critical assumption is that the technologies can be specified with sufficient clarity to allow a focussed search. It is very difficult to respond to generic inquiries about broad categories such as "air" or "water pollution"; it is even difficult to respond effectively to inquiries which are more specific such as "scrubbers" or "filters" which still encompass a wide range of products and vendors. Therefore, we assume that it will be possible over the next few months to refine the preliminary "checklist" in order to more directly focus on the key issues with a minimum of iteration between SI, ICICI, and the companies.

For costing purposes we are assuming that technology searches will be considerable more labor intensive because (a) there is

likely to be need for substantial iteration in refining requests, (b) most companies will want information on the alternative technologies available for a certain purpose (i.e., evaluation of more than one technology), and (c) the data bases on technologies are much less well developed and harder to access than those on companies.

D. Activities:

Level 1: Undertake Data Base and Literature Searches (i.e., no direct contact with companies).

- EPA data bases on innovative technologies
- NETAC data base on innovative technologies
- selected on-line data bases
- SI files on technologies

Level 2: Make Direct Contact with Companies (but do not try to independently verify company claims).

- Discuss appropriateness of technology for India
- Identify any special benefits or constraints
- Determine interest in India (per Task 1)
- Get any technical information to add to files

Level 3: Undertake Independent Assessment of the Technology

- Analyze the technical literature
- Compare technology with others in systematic way
- Evaluate application problems and benefits for India
- Analyze applicability in specific cases

E. Deliverables: Reports to ICICI to pass on to its clients on the findings of Level 1, 2, and 3 searches. Reports faxed with hard copy mailed.

F. Level of Effort: The level of effort will depend critically on the degree to which the technology required can be specified in detail in advance as well as the level of search required. As in Task 1, we anticipate that the level of effort will decrease significantly for the first six months or so as we streamline the process, refine the checklist, and gain more experience with the technologies of greatest interest in India.

We recommend the same "generic" estimate of the level of effort required as in Task 1 in order not to waste a lot of time in preparing specific workplans for each search. The following estimates are very preliminary and likely to change significantly with experience. The multiple technology category refers to requests to search for alternative technologies to achieve the same goal (e.g., rotary kiln

versus fluidized bed combustors for certain categories of hazardous waste or aerated piles versus digesters for composting municipal waste).

For costing purposes, we assume that most requests will be for Level 2 searches and most for single technologies rather than for multiple similar technologies.

Level of Effort
(in hours per technology search)

	<u>single tech.</u>	<u>multiple tech's</u>
Level 1	8	5 x <u>x</u>
Level 2	12	8 x <u>x</u>
Level 3	24	16 x <u>x</u>

G. Costs: Costs will depend on the level of personnel assigned to the task. For Sanders we assume that the allocation will be approximately Hallett (30%), Harwit (50%) and Gizaw (20%). We further assume that about 70% of this task will be performed by subcontractors. The weighted cost of SI personnel is \$55.93 per hour and of subcontractors is estimated to be \$75 per hour (which is higher because of the expectation of needing to use experienced senior engineers).

H. Other Assistance: ICICI will provide rapid and clear turn-around on requests for clarification about technology searches being conducted. As noted, subcontractors will provide most of the technical engineering support required to provide useful information to Indian firms.

III. Task 3: Facilitate Specific Transactions

A. Purpose: To provide practical assistance to U.S. and Indian companies to help them consummate specific transactions. The goal of this task is to help ICICI improve the number and quality of potential loan/grant applications and to enable SI to achieve the objective in the RFP of facilitating 25 joint ventures or licensing agreements over the course of the project.

B. Strategy: The initial strategy is to target U.S. and Indian firms that are already interested in joint ventures or licensing agreements and help them move quickly to complete them and build momentum for the project. The longer term strategy is to more systematically identify those environmental problems in India where U.S. technologies and corporate capabilities can play an especially important role

and to provide assistance to the U.S. companies in evaluating the potential in India, finding partners, and making the transactions occur.

SI will work very closely with ICICI staff in providing practical information on Indian and U.S. business and government requirements in order to help the companies. We will also work closely with other U.S. Government aid programs (such as WEC exchanges under the U.S. AEP) and with Indian organizations that can play useful multiplier roles.

The strategy will draw heavily on the Technical Coordinator's prior experience in facilitating business ventures in India in providing practical advice to U.S. companies and in stimulating their interest by using his network of contacts in the United States and India. Much of the strategy will be built around a "rifle-shot" approach to target those companies with the best potential rather than a "shotgun" approach of targeting the entire U.S. environmental industry (which probably has over 5,000 firms).

C. Assumptions: The ability of ICICI to offer loans and conditional grants to Indian firms will make the project much more attractive and should significantly enhance the attractiveness of TEST services. On the other hand, India is not well known in the U.S. business community, which could easily be turned off on the potential should there be major political violence or a reversal of the open economic policies of the current government.

D. Activities: The facilitation services will cover a broad array of services which do not lend themselves into levels as in Task 1 and 2. Among the more important activities will be:

- Advising U.S. companies on environmental developments
- Helping them understand the business opportunities
- Providing advice on how to do business in India
- Assist in finding and qualifying potential partners
- Linking them to other sources of support
- Following-up to solve problems

E. Deliverables: SI will attempt to generate at least ten joint ventures or licensing agreements suitable for ICICI financing which originate in the United States. In addition it will support ICICI in at least another fifteen such ventures which originate in India.

F. Level of Effort: The level of effort will vary over time depending on targets of opportunity. The Technical Coordinator will devote the bulk of his time to this task and will be supported by other SI staff and subcontractors as appropriate.

G. Cost: Costs (including all overhead items) for the Technical Coordinator are roughly \$94.04 per hour. Other staff costs vary by level of experience.

H. Other Assistance: Substantial assistance from ICICI will be required to carry out this task. When the Technical Coordinator is in India, he will be able to provide at least some direct support to U.S. companies while they are in the area. During the rest of the time, ICICI will be called on to provide some assistance to the U.S. companies when they visit India, either directly or through other intermediaries.

IV. Task 4: Advise ICICI on Loan and Grant Applications

A. Purpose: To assist ICICI in making its loans and grants

B. Strategy: To respond quickly and thoroughly to all such requests from ICICI. Some may be in the form of requests to review completed memorandum prepared by the staff. Others may be to respond to specific questions which arise in the course of ICICI's initial reviews.

C. Assumptions: Most of the requests will be for projects for which the loan review has been completed and the memorandum prepared. For those at an earlier stage of review, the number and complexity of requests for more information will be relatively limited.

D. Activities: SI staff will look at a number of aspects of the prospective grants and loans, including:

- the technical claims in the proposals
- the credentials of the U.S. entities
- the cost realism of U.S. aspects of the venture
- the appropriateness of the technology for India
- other environmental considerations
- other specific questions from ICICI

E. Deliverables: SI will provide a summary report based on its review of the above items together with a recommendation whether to proceed based solely on the items it reviewed.

F. Level of Effort: We assume that most of the reviews will take less than one day (including reading the documents and preparing the summary report and SI recommendations). A few may be considerably more complicated and require much of the Task 1 or 2 types of inquiry.

F. Costs: Initially most of the reviews will be conducted by the Technical Coordinator or one of the SI principals (Sanders or Beauchamp) in order to assure high level attention. Other

staff will assist in any data gathering or more routine activities.

H. Other Assistance: Subcontractors may be called on to review more technical aspects of applications or memorandum.

8/13/93

TEST TECHNOLOGY SEARCHES
PROPOSED APPROACH

Purpose: The purpose of the technology searches is to provide ICICI and their Indian clients with a prioritized short list of U.S vendors of environmental services and technologies to in areas of interest. In order to provide the lists, the U.S. contractor is expected to provide:

1. A brief assessment of the leading American technologies for dealing with a specific problem (e.g., removal of color from wastewater from textile manufacturing) or in applying particular technologies (e.g., reverse osmosis or ultrafiltration) to environmental problems.
2. A short qualitative assessment of the speed with which the technology is evolving in the field and the length of time that the various technologies have been commercially successful in the United States.
3. A very brief evaluation of any special advantages (e.g., low energy usage, high use of unskilled labor) or problems (e.g., dependence on reliable electric power, need for complex maintenance) that would make the technology more or less suitable for application in India.
4. A listing of the U.S. companies who are the technological leaders in the particular application of the technology, with contact points, any readily available information on the companies and their products, and a summary of the areas where an individual company may have a special comparative advantage (e.g., large versus small applications, or special applications versus low cost routine uses).
5. A summary of the degree of interest that the contacted companies have in exploring business opportunities in India plus any special factors (e.g., whether they have existing agreements or relationships which would preclude collaboration with other Indian firms).

The Challenge: The primary challenge will be to very quickly sort through the technology analysis to identify the leading companies. The Indian firms are looking for partners to tie up with or for specific technologies to license. They are not looking for academic or analytical studies. The key deliverable, therefore, will be the information developed in steps 4 and 5. The analytical work in steps 1, 2, and 3 is primarily to help zero in on those companies that would be the best potential partners for Indian firms.

Suggested Methodology: We plan to use experts with a first hand knowledge of application of the technology in U.S. industry (with knowledge of international applications a plus). We anticipate that the information in the first three steps will be based primarily on personal knowledge rather than requiring staff research.

Sanders International staff will review its data bases and provide an initial list of companies in the areas in question. The expert should identify other appropriate companies. The most promising companies will be contacted directly in order to gather product information, clarify any questions about their technologies, and to determine their interest in doing business in India.

Standard Report Format: Each search is likely to entail some special requirements, so the following format is only illustrative:

I. Background (2-3 pages)

- a. brief assessment of technology and primary alternatives.
- b. assessment of the pace and direction of the technology in United States (including how long in commercial use).
- c. special considerations affecting applications in India.

II Company Information (provide the following information for the top 5-10 prospects).

- a. company name and address.
- b. overall products and business lines (one paragraph)
- c. summary of specific products in technology area of interest (one paragraph).
- d. any comments about special benefits or problems for India (one paragraph -- optional).
- e. any information about company's international experience, interest in India, and conditions to be met by Indian firms acquiring the technology (one paragraph).
- f. name of the key contact person (with phone and fax) and any other relevant contacts made in the company.
- g. copies (at least two) of promotional or informational materials on the products or services.

Level of Effort: The level of effort for each search will depend on the complexity of the technology, the number of firms involved, and the range of alternatives to be considered. As

a guess, a simple search should take 2-3 days while a complex search might take 5-10 days. As experience is gained with similar technologies or applications, the time required should decrease.

Tasking Approach: Upon receiving a request from ICICI, Sanders International staff will contact the subcontractor with pre-listed experts in the specific area. The subcontractor will then provide a preliminary budget estimate for the task, which will be approved by Sanders. As long as the requests are within the scope of the workplan and the subcontract, work can proceed without further AID approval.

If none of the pre-approved experts are available at the time or the company is not interested in performing the task, we will inquire whether anyone else has a consultant with the necessary experience that might be added to the pre-approved list of consultants. In these cases AID will have to approve the addition of the expert to the project and some delays will be incurred.

Optional Approach: If a subcontractor has an expert who knows the technology well but either does not know the companies (unlikely) or does not want to make the calls (more likely), we are more than willing to take the Part I analysis from the subcontractor and have our staff make the phone calls and prepare the Part II portion of the report.

Table 1
TEST Technology Searches
 August 1993-August 1994

Air Pollution Control Equipment	KBN Engineering	September 1993
Reverse Osmosis Technologies	KBN Engineering	September 1993
Removal & Re-use of Chromium in Tanneries	Pollution Prevention International	September 1993
Anaerobic Sludge Digester Technologies	KBN Engineering	September 1993
Treatment of Coke Oven Wastes	Sanders International	September 1993
CNG Conversion Kits	Dyn-Corp/Meridian	September 1993
Reactor Clarifiers	KBN Engineering	September 1993
High BOD Removal Systems	KBN Engineering	September 1993
Catalytic Converter Technology	Dyn-Corp Meridian	September 1993
BOD Reduction in Distillery Wastes	Pollution Prevention International	January 1994
Metals Removal from Wastewater Streams	Sheladia	February 1994
Solid Waste from Caustic Chlorine Plants	Dyn-Corp/Meridian	July 1994
Treatment of Cyanide-Bearing Wastes with Hydrogen Peroxide	Dyn-Corp/Meridian	July 1994

ANNEX B

SANDERS
INTERNATIONAL

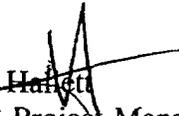
Environmental Business Development & Consulting
September 6, 1994

TO: Mr. Paul Keller
DynCorp Meridian

Ms. Jeanne Maltby
KBN Engineering

Ms. Azita Yazdani
Pollution Prevention International

Mr. Dan Bradbury
Sheladia

FROM:  Jeff Hallett
TEST Project Manager

Subject: Assessment of TEST Technology Searches and Plans for 1995

Background

Since assuming management responsibilities for the TEST program in August 1993, Sanders International (SI) has, on behalf of ICICI's TEST Group and its Indian clients, commissioned thirteen technology search reports. Twelve of these reports were drafted by Sanders International sub-contractors. Table 1 shows the subjects of the reports and the firm responsible for their preparation.

Given the high demand perceived by TEST project designers for timely and accurate information on U.S. environmental firms, their products, technologies and services, the technology search portion of TEST's technical assistance component has been recognized as one of the most important service areas the TEST program offers. From the outset of the program, this area has also been recognized by both the Indian and U.S. sides of the TEST program to contain some of the most difficult tasks. This is due to: the variety and complexity of environmental technologies, widely differing operating conditions and regulatory environments, different technical and business approaches to resolution of pollution problems, and the need to provide highly specific "street smart" information at low cost.

In August 1993 kick-off meetings with ICICI's TEST Group, Sanders project management spent the bulk of the time discussing the TEST Group's understanding of the nature of

demand among their clients for technology search data, as well as the problems and shortcomings of the technology search information provided to ICICI by TEST's interim contractor. As a result of these meetings, SI's analysis of the problem and synthesis of the TEST Group's input, SI drafted and circulated the Annex A document "TEST Technology Searches Proposed Approach" as an annex to the 1993-1994 TEST Workplan. SI circulated the "Approach" document to TEST sub-contractor firms for use as a general guide in preparing the technology search reports.

ICICI Comments on Technology Search Reports and Approach

Based on discussions with ICICI TEST Group members and a meeting with one of the Indian firms that had commissioned a technology search for automotive catalytic converter technologies, the general reaction to the TEST technology searches by ICICI's Indian clients has been that they have not been useful. While the information has been of general interest, the reports have not played a significant role in moving the Indian clients toward business linkages with U.S. firms. Both SI and the Test Group agreed it would be a top priority to review and improve the technology search procedures and output.

After considering all comments from and discussions with Indian clients, SI and the TEST Group agreed that the reports have been insufficiently focussed on the technical problems or issues of greatest concern to the Indian firms. One Indian manager stated that he believed that he could have gathered most of same information provided in the report by sending one of his employees to do research in the U.S. consulate's commercial library. While perhaps an overstatement, the observation is indicative of an inadequate accounting on TEST's part of the existing knowledge base and technological sophistication of the Indian firms.

One fundamental problem seems to be that the Indian firms' underlying questions or problems have not been sufficiently isolated and defined. For example, the firm that commissioned a report on automotive catalytic converter technology was really only interested in finding a U.S. firm that could transfer technologies for the manufacture of metal monoliths. An Indian firm that requested a report on recovery and re-use technologies for rice husk ash was really only interested in new processes for the recovery of industrial-grade silicon from the ash. Neither of these points emerged clearly until some months after the initial technical assistance request had been made. Before technology searches are commissioned, efforts must be made to draw out the Indian firms' true priorities in order to avoid wasted effort and cost and the reporting of unneeded information. This will be the responsibility of SI and the TEST Group.

A second fundamental problem is that most of the information in the technology search reports seems to have been drawn largely from generally available sources like magazines, company brochures, textbooks and association contacts, rather than the professional know-how and experience of the report drafter or contacts with expert individuals involved in the specific industry technology area. The kind and quality of "street smart" information we need in the technology search reports can, realistically and economically, can only come be provided by true industry/technology experts and not from basic research efforts or literature searches.

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Therefore, the individuals that conduct these searches must either possess the required knowledge and experience or be able to draw upon personal networks of individuals that have this expertise.

Finally, ICICI's policy of collecting a fee from their Indian client firms amounting to 25% of the U.S. costs of the searches has highlighted another problem with respect to TEST's technology search efforts. While the first dozen reports were done on a no-fee basis, since the beginning of the year, ICICI has not commissioned any reports without first having the Indian firm's commitment to pay the technical assistance fee. To date, only two Indian firms have agreed to pay the technical assistance fee out of ten pending technical assistance requests. In order to execute the technical assistance component of the TEST program, SI and the TEST Group agreed that we must not only improve the quality and utility of the technology searches, but also bring down the costs to a level that the Indian firms will be more willing to pay. This requirement underscores the need to put the technology search questions to individuals that can quickly provide information required without extensive and prolonged research efforts.

1995 Goals

By intensively focussing the questions and problems before submitting tasks to the subcontractor firms, SI and the TEST Group hope to **increase the number of technology search reports that can be done, reduce turnaround time for the reports and reduce the costs of the reports.** To put it in another way, we will not be able to do technology searches unless the Indian firms agree to pay for a portion of them. The Indian firms will not agree to pay unless the reports are cheaper and clearly of value to them. The reports will not be cheaper unless they are much more narrowly defined and able to be completed very quickly by very knowledgeable U.S. experts.

1995 Actions

1. In light of the past year's experience and the reaction of the Indian clients to our efforts, **the technology search approach in Annex A will be modified** to provide a narrower band of guidance.
2. SI and the TEST Group have agreed to **re-double efforts to better focus and clarify future technical assistance requests.** This means the TEST Group and SI will conduct a more intensive iterative effort to help the Indian client define what it is they are really seeking. In so doing, we hope to be able to offer an information product to the Indian client firm that will be of sufficient quality and value that he or she will be willing to pay the technical assistance fee, and more importantly, that the results will have a better prospect of leading to a TEST-financed commercial transaction.
3. **Future reports will be designed on a case-by-case basis consistent with the modified technology search approach.** An outline and cost estimate for each report will be prepared by SI and submitted to the TEST Group for client approval. Conference calls involving the

Indian clients, sub-contractor personnel, the TEST Group and SI will be arranged to insure full understanding by all parties about what information is required. Additional calls may be arranged, as needed. Sub-contractor costs in this project development stage will be billed separately from the technology search itself.

4. Prior to beginning work on technology search reports, SI would like a manager/supervisor from the subcontracting firm (in collaboration with SI) **to assess the clarity of the task assigned and confirm, either verbally or in writing to SI, understanding of the exact nature of the final report desired.** If additional information of any kind is required, the manager/supervisor should work with SI to secure what is needed.

5. **Technology search reports should not contain verbiage explaining deficiencies in the presentation of the task, lack of background information, or other rationale.** We will resolve such deficiencies prior to drafting of the report.

6. Subcontractor personnel who execute the technology searches must have a high level of expertise and industry knowledge in the technology areas assigned. Prior to commissioning sub-contractor reports, **SI would like subcontractors to designate the personnel nominated to do thereports and, in not on file with SI, submit their curriculum vitae.** For specialized requests that may exceed the in-house capabilities of subcontractor firms, SI may suggest technical experts to be engaged for these tasks or the subcontractor may propose experts from their own sources.

Additional guiding principles for future technology searches

1. **Future technology search reports should assume an expert-level of knowledge by the Indian client of the technology area under study.** Most of the Indian clients dealt with to date are already in business in the technology area or a related technology area under study or evaluation. We can assume they know what all the current treatment processes are and generally how they work.

2. However, the Indian clients are very **interested in details of the treatment processes that might either recommend them for or against use in India.** Ideally, individuals conducting technology searches will possess and be able to communicate detailed knowledge on the intricacies of various treatment processes.

3. The Indian clients are especially **interested in metrics that will help them compare different technological approaches.** Our efforts should be aimed at **defining differences among technological or treatment alternatives and ways of quantitatively demonstrating these differences.** Metrics include but are not limited to: acquisition, operating and maintenance costs, energy costs, treatment costs per unit, and efficiency measurements of various sorts.

4. **Cost is an issue. If it's cheaper it's better.**

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Treatment of Cyanide-Bearing Wastes with Hydrogen Peroxide	Dyn-Corp/Meridian	July 1994

ANNEX C

**ENVIRONMENTAL SERVICES AND TECHNOLOGY
INFORMATION RESOURCES**

**Report by
Sanders International
September 30, 1994**

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INTRODUCTION

An ever increasing amount of information is available from an increasing number of sources. This has created a wealth of information which becomes difficult to manage and necessitates a thorough sifting through in order to acquire the most current and authoritative information to accomplish a task effectively.

Sanders International has evaluated and identified a number of essential environmental services and technology information resources to facilitate business deals between U.S. environmental companies and Indian companies. The resources have been selected to meet the following five objectives: 1) keep abreast of domestic and international environmental issues and developments, 2) identify and evaluate appropriate environmental technologies or solutions, 3) identify U.S. companies with selected services or technologies 4) evaluate the technical and financial qualifications of identified companies, and 5) accomplish the above as time- and cost- effectively as possible.

From the range of identified publications, electronic databases, on-line information services, and government and professional sources, we have selected the ten most important and representative environmental services and technology information resources which we think are essential in conducting company/technology searches (see Appendix B - "Top Ten" Chart). We recommend that these "top ten" resources form the core basis of any environmental services and technology information system, whether based in the U.S. or in India.

A. GENERAL INFORMATION RESOURCES

Although most environmental information sources specialize in environmental regulation, compliance and management information, we have found a number of resources which provide useful information on environmental technologies, processes and related policy developments.

1. Magazines, Newsletters and Periodicals

There are a number of environmental magazines and newsletters which cost very little or are even free of charge for environmental businesses and which can provide useful information on companies and their products and services, new technologies and other relevant environmental information. We have recommended a number of these publications (such as Chemical Week, Waste Age, Environmental Pollution) for general reading, and they are being mailed on a regular basis to ICICI. (See Appendix A for a list of titles):

There also exists a whole range of industry specific newsletters (ranging anywhere from \$200 - \$600/year), which we reviewed but found too expensive at the time. They were sent to ICICI for their own evaluation (see Appendix A for list of titles).

2. The Bureau of National Affairs (BNA)

One major source of general information is the Bureau of National Affairs which offers numerous publications of interest to environmental businesses. In addition to the above mentioned magazines, we have selected two of these publications to keep up with domestic and international environmental policy and technology developments. One of these is currently being sent to ICICI.

1.1.

BNA Environment Reporter

Description:

News service on major domestic environmental policy and regulatory developments.

Evaluation:

Provides comprehensive weekly news information. Has proven paramount in tracking environmental policy and technology developments in the U.S. at the state and federal level.

Cost:

\$1,170.00 for one-year subscription.

Acquisition: ICICI is subscribed to this news service.

1.2.

BNA International Environment Reporter

Description:

News service on major international policy and regulatory developments.

Evaluation:

Provides comprehensive weekly news information. Has proven paramount in tracking international environmental and policy and technology developments.

Cost:

\$700.00 for one-year subscription.

Acquisition: Sanders International is subscribed to this news service in order to keep informed on environmental developments in India and other countries. Not necessary for ICICI to acquire.

B. TECHNOLOGY INFORMATION RESOURCES

Comprehensive information on environmental technologies, such as alternatives, cost, performance, is very difficult to find. However, there are a number of public and private resources which can serve as sources for information on environmental technologies and techniques. These generally include professional, scientific and industry related organizations; government resources, in particular the Environmental Protection Agency (EPA), federal laboratories, and the Department of Commerce; as well as a wide range of private resources. Tapping any one or a combination of these resources can lead to the right kind of experts who can potentially help identify and/or evaluate technologies. In some cases, these experts also can be helpful in identifying companies and commercial applications.

1. Professional, Scientific and Industry Organizations

Associations at times have proven to be quite useful for obtaining technology and industry-related information. Staff specialists are sometimes available to discuss environmental problems and technical processes. Brochures and pamphlets are often available (usually for a small fee) and can provide useful background information on a particular technology, industry sector, or environmental problem. If not, at least the association can usually provide a list or directory of its members (cost can range anywhere from \$10 - \$250). In any event it is often a good place to start a technology search.

Depending on the subject that needs to be researched, other professional and scientific organizations, including research institutes and universities, also can provide useful information on technologies and environmental problems. With perseverance and some luck, experts can be found who can point to commercial applications of new technologies and provide some vendor/manufacturer information. Their services are usually for free. Lists of professional, scientific and industry organizations can be obtained from a number of environmental guides and directories (see Appendix A for a list of titles).

2. Government Resources

Government agencies have a wide variety of environmental responsibilities ranging from legal enforcement of environmental laws and regulations, through environmental scientific research, to proper environmental management. Although most environmental information sources (whether government or private) focus (as mentioned above) on environmental regulation, compliance and management, there are a number of government agencies, of which the Environmental Protection Agency (EPA) is the most important one, which can serve as significant sources of technical and scientific environmental information.

2.1. Environmental Protection Agency (EPA) Bulletin Boards and other databases

We have found the following EPA bulletin boards and databases to be the most useful in getting information on technologies or environmental research and development projects. There are literally hundreds of other public bulletin boards and thousands of other private bulletin boards available at very low or no cost to the public, but only very few of them have information on environmental technologies and their commercial applications.

2.1.1.

EPA Online Library System (OLS)

Description:

Provides access to several related databases used to locate books, reports, articles, and information on a variety of topics. The OLS database includes among other the National Catalogue database, which includes all EPA reports distributed through the National Technical Information Service (NTIS), and the Hazardous Waste, ACCESS EPA, Clean Lakes and Regional Files databases.

Evaluation:

The OLS can be effectively used to get bibliographic information on a particular topic, and to find out which U.S. agencies, laboratories and corporations have worked on a particular subject.

Cost:

Free, except for phone connect time.

Acquisition: Available through modem.

2.1.2.

Vendor Information System for Innovative Treatment Technologies (VISITT)

Description:

Electronic database of 171 companies offering 277 innovative treatment technologies for the cleanup of soil and groundwater contaminated by hazardous waste. Contains detailed information on in-situ and ex-situ technologies in 37 areas such as bioremediation, bioventing, electrical separation, thermal desorption or vitrification. Captures information on the availability, performance, and cost of technologies provided by vendor, suppliers and manufacturers.

Evaluation:

Easy-to-use database. Allows for customized searches to identify technologies or vendors of specific projects.

Cost:

Free.

Acquisition: Disks and manual have been sent to ICICI. The database will soon be available on-line through the Attic bulletin board.

2.1.3.

Alternative Treatment Technology Information Center (ATTIC)

Description:

A bulletin board that serves as a retrieval system from a collection of hazardous waste databases. Most notably contains "Emerging Technology Bulletins" and "Engineering Bulletins". A recently added database is the Bioremediation in the Field Search System.

Evaluation:

Very user friendly. Includes highly technical and some cost information on treatment technologies, but limited to Superfund/hazardous waste related topics.

Cost:

Free, except for phone connect time.

Acquisition: Description has been sent to ICICI. Available through modem.

2.1.4

Pollution Prevention Information Clearinghouse (PPIC-PIES)

Description:

Bulletin board to access guides to pollution prevention information and list of state and federal initiatives.

Evaluation:

Mainly serves to give tips to businesses on waste reduction and pollution prevention. More like a preliminary source of information on pollution prevention programs, waste reduction and environmental protection.

Cost:

Free, except for phone connect time.

Acquisition: Description has been sent to ICICI. Available through modem.

2.1.5

National Small Flows Clearinghouse (NSFC)

Description:

Advocates and provides information on alternative technologies for wastewater treatment for small communities. Offers two bulletin boards, the Drinking Water Information Exchange Bulletin Board System (DWIE-BBS) and

the Wastewater Treatment Information Exchange (WTIE).

Evaluation:

Very responsive to requests. Provides useful contacts and referral services, literature and bibliographic information. The bulletin boards are easy to use and contain many useful files on the subject.

Cost:

Free, except for phone charges.

Publications are available for a small fee.

Acquisition: Most effectively used by U.S. users.

2.2. Federal Laboratories

Federal laboratories offer problem-solving capability, technology, and specialized equipment and facilities to U.S. industry. If tapped properly, these laboratories can lead to those experts who can potentially provide information on current R&D projects, the commercialization of new technologies, or who can suggest environmental solutions to a specific problem. Most federal laboratories have information clearing houses and technology bulletins which can be useful and are usually free of charge. These laboratories can be contacted directly or through some umbrella organizations such as the Federal Laboratory Consortium or the National Technology Transfer Center. Some of the federal laboratories offer services only to U.S. users.

2.2.1.

Federal Laboratory Consortium (FLC)

Description:

The FLC comprises all major (over 500) laboratories and centers representing 17 different U.S. departments and agencies. The FLC promotes and facilitates the transfer of research and development results from federal laboratories into applications in the private and public sectors and serves as a kind of coordinating body. Through its locator services and technical experts it can answer or field specific research and development questions and provide useful contact information.

Evaluation:

Very responsive to search requests. Results generally lead to a list of top experts at appropriate federal laboratories. Delivery time varies on difficulty of search and current demand. The FLC is an efficient way to identify the leading experts at all the laboratories which are doing R & D in a particular field of interest. The FLC publishes a directory of federal intermediaries which provide access to the federal research programs.

Cost:

Services free of charge.

\$25.00 for directory.

Acquisition: Directory has been sent to ICICI. Some services limited to US users only.

2.2.2

National Technology Transfer Center (NTTC)

Description:

Serves as a national clearinghouse for federal technology transfer linking US firms and industry with federal agencies and laboratories, much like the Federal Laboratory Consortium.

Evaluations:

Very responsive to search requests. Results generally lead to a list of top experts at the appropriate federal laboratories. Delivery time varies on difficulty of search and current demand.

Cost:

Free of charge.

Acquisition: Primarily U.S. resource.

2.2.3.

NTTC-Online

Description:

Bulletin board which provides access to Directory of Federal Laboratories, federal technology available for licensing, and SBIR solicitations, as well as a newsboard featuring current news and announcements, electronic mail, technology transfer events calendar and publications list.

Evaluation:

User-friendly interface.

Cost:

Free, except for phone connect time.

Acquisition: Available through modem. Some files may be limited to U.S. users only.

2.3. Other Agencies

We have used a number of agencies, in particular the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST), to obtain information on certain technologies and R&D projects. For technology, industry and trade related information, the Department of Commerce provides a number of useful services, including some electronic services, which we think are noteworthy:

2.3.1.

FedWorld

Description:

Comprehensive bulletin board which serves as an information outlet for the National Technical Information Service (NTIS), which is the distributor of most government publications; as an electronic mail system; and as a gateway to 135 government bulletin boards.

Evaluation:

Provides easy access to a whole range of information, but currently still being evaluated.

Cost:

Free.

Acquisition: Available through modem.

2.3.2.

National Trade Databank (NTDB)

Description:

Comprehensive source of international trade and economic information compiled from 17 federal agencies. Includes basic export information, industry-specific information, market research reports, and other. Released on CD-ROM and updated monthly (see CD-ROMs below).

Evaluation:

User-friendly database. Good for obtaining industry and trade-related information.

Cost:

\$35 for a single issue or \$360 for a year subscription.

Acquisition: ICICI should acquire in the future.

3. Private Resources

3.1. CD-ROMs

CD-ROM products are a cost-effective tool for information retrieval and search purposes. As of today, several hundred CD-ROM titles are available covering a wide range of subjects and the numbers are growing rapidly. CD-ROMs replace stacks of journals, printed encyclopedias, reference works and are regularly updated. CD-ROMs are convenient to access a large amount of information and in most cases allow for customized menu driven or command searches, downloading or printing of files. Titles that cover environmental services and technologies are still limited, but for a comprehensive collection of science and engineering information, we have found the following product to be very useful and have recommended it to ICICI (see Appendix A for other titles):

3.1.1.

McGraw-Hill Encyclopedia of Science and Technology (EST)

Description:

A comprehensive multimedia reference set on CD-ROM which contains all 20 volumes of the internationally acclaimed McGraw-Hill Encyclopedia of Science and Technology as well as the entire McGraw-Hill Science and Technology Dictionary. The disc is a state-of-the art multimedia technology that incorporates graphics, sound and animation.

Evaluation:

Very user-friendly. Valuable research tool for technical and engineering information.

Cost:

\$1,300 for the product.

Acquisition: Recommended that ICICI purchase the necessary hard-ware and the product.

3.2. Commercial On-line Services

Hundreds of services are available through on-line service providers. Some of the main providers are America Online, Compuserve, Dialog, EcoNET, and GENie -- all of which have environmental or science-related resources. However, we have found that Compuserve and Dialog cater best to the environmental business industry. Prices may include an initial fee, an annual fee and a per-minute use fee. The use fee may be a function of the speed of the modem and usually is a function of the time of day. Dialogue is by far the most expensive, but contains the broadest range and most comprehensive set of reference databases and offers great search flexibility. Given the cost, we recommend using on-line services only as a last resort, or when the search subject and criteria is clearly known and defined.

3.2.1.

Compuserve

Description:

One of the largest commercial networks of personal computer users, with more than 500,000 members worldwide and over 1200 online offerings. Offers an extensive range of services, including special interest groups and clubs, computing support, financial and stock information, and a broad range of reference databases. Its electronic mail has links to MCI mail, fax, tele and the Internet.

Evaluation:

Compuserve is particularly useful for exploring the capabilities of networks, forums, and electronic mail. Compuserve can also be used to access a range of information databases, such as IQuest, Books in Print, CENDATA/The Census Bureau Service, and the National Technical Information Service; however, an even wider range of information can be obtained from information database services such as Dialog (see below).

Cost:

- flat monthly rate of \$8.95 which includes access to unlimited connect time to basic services.
- online charges vary from (\$4.80 - \$9.60) based on the user's modem speed.
- reference and financial databases carry a premium surcharge.

Acquisition: Can be accessed internationally; more cost-effective than Dialog for most purposes.

3.2.2.

Dialog Information Service

Description:

The largest online bibliographic company in the U.S. with over 200 million items available for searching in 370 databases. Databases can be searched using keywords, phrases and boolean connectors.

Evaluation:

Dialogue is an invaluable resource, but it is extremely expensive. Some of the databases that are particularly useful for obtaining environmental and company information are Thomas Register (to be more effectively used as a CD-ROM product, see below), the Dun & Bradstreet files, ABI/Inform, Enviroline, Predicast, NTIS, FEDRIP, and Ei Compendex Plus.

Cost:

- minimal start-up fee which includes reference books, guides and updates
- online charges can go up to \$90.00 an hour (sometimes even more)
- charges for downloading or printing texts, bibliographies, financial records, etc. vary according to the database used (ranging from \$.20 - \$100.00).

Acquisition: Can be accessed internationally, invaluable for some search needs, but expensive.

3.3. Publications

Publications relating directly to environmental subjects and publications relating to the major environmentally significant industries -- agriculture, chemicals, construction, energy -- are especially valuable because they contain information about important technologies and techniques and the environmental characteristics of these technologies and techniques. We have identified a number of handbooks which we think every environmental services and technology information center should have, and some of which were already purchased and sent to ICICI. For a list of publications, including magazines, newsletter and periodicals, see Appendix A.

The following publications/resources also exclusively provide information on environmental technologies; however, the information contained does not provide a comprehensive analysis of available technologies nor provides a systematic discussion of current vendor/manufacturers. For the given price, we have thus found these of questionable value.

3.3.1.

Environmental Technology and Product Profiles

Description:

This publication is prepared by the National Environmental Technology Applications Corporation (NETAC) and is updated quarterly. It reviews emerging environmental technologies in the following areas: soil remediation,

groundwater remediation, wastewater treatment, recycling/recovery, air pollution control, solid waste handling and treatment, and instrumentation and monitoring.

Evaluation:

The profiles do not give a comprehensive overview of technological solutions and alternatives to a given environmental problem and focus more on the research and development side than the commercial status of a technology.

Cost:

\$1,990.00 for one year subscription.

Acquisition: ICICI renewed its subscription for 1994-1995.

3.3.2

McIlvaine Technical Reports

Description:

Reports consist of 100-200 pages and video and /or audiotapes and cover specific air pollution subjects such as for example incinerating hazardous waste, materials in FGD, NOx combustion modifications, remote sensing, biofiltration, and flue gas conditioning. Reports are periodically updated. Information is compiled from the McIlvaine Knowledge Networks.

Evaluation:

We evaluated the "Biofiltration" report and have found that, although a lot of useful information is provided, it is not presented in an analytical fashion. There is no overview summary of the advantages or disadvantages of alternative technologies. The 100-200 pages are essentially news-clippings, which make for interesting reading but are not really helpful when it comes to identifying and evaluating companies or technologies.

Cost:

\$375 per report.

Acquisition: Not recommended.

C. COMPANY IDENTIFICATION RESOURCES

We have successfully been using the Thomas Register of American Manufacture on CD-ROM to identify U.S. companies with environmental technologies. We also have found that using a CD-ROM database is generally the most cost- and time effective way to conduct searches.

As an alternative database to the Thomas Register, we selected the Corporate Technology Directory, which specializes in high-tech companies and includes a large number of companies with environmental technologies. Also of great value are a number of association directories, and our own electronic client contact network system (Telemagic).

There are a number of other database sources which allow to look up companies alphabetically, by SIC code or by geographic location, and in some cases by sales. Some of these databases are: Ward's Business Directory; Volume 3 of the Corporate Affiliations series; or Standard & Poor's Register. Most of these are available in print, on CD-ROM through Dialog and online through MEAD DATA or Dialog. However, the information contained in these databases is limited to directory type information and does not compare to the products and services information contained in the Thomas Register Database nor to the flexibility and ease with which the data can be handled when used on the CD-ROM.

1. Thomas Register CD-ROM

Thomas Register on CD-ROM has proven to be the most direct resource to identify companies with specific environmental services and technologies. Thomas Register is also available in print or on-line through Dialog, but we have found the CD-ROM product to be the most cost-effective and have recommended it to ICICI.

Thomas Register of American Manufacturers

Description:

Provides company and product information on over 194,000 U.S. and Canadian companies, both public and private, classified under more than 53,000 product classes and more than 115,000 brand names. Each record includes the company name, address, telephone and fax, a brief company description, and a list of the products and services with SIC codes and Tradenames. In most cases, asset rating or annual sales, number of employees, exporter status, names of parents/subsidiaries is also provided. The information is updated twice a year.

Evaluation:

Extremely user-friendly, allows for detailed menu or command driven searches, offers easy downloading or printing and report making. The Thomas Register has proven invaluable in identifying vendors, suppliers or manufacturers of environmental technologies and services.

Cost:

\$1,500.00 annual subscription.

Acquisition: Recommended that ICICI purchase necessary computer hard-ware and product.

2. Corporate Technology Information Services (CorpTech)

CorpTech Directory

Description:

CorpTech provides a number of products and services. Products include the CorpTech directory (updated yearly) which lists over 36,000 high-tech companies in the areas such as biotechnology, chemicals, energy, environment, manufacturing equipment, software or transportation. Services include customized searches with multiple output formats, such as for mailing labels or partial profiles, available in print or on diskette; or the creation of customized databases for use in one's own software.

Evaluation:

The CorpTech directory is useful in complementing the Thomas Register. The breakdown of product areas is somewhat limited, in particular when it comes to identifying specific environmental technologies, but within the larger categories, it is quite useful for identifying or looking up companies that do not appear in the Thomas Register. We have successfully incorporated a customized selection of all the environmental firms into our own database and it can be readily used for mass-mailings and searches.

Cost:

\$445.00 for the CorpTech Directory. Prices vary greatly according to services selected.

Acquisition: Directory was purchased and sent to ICICI.

3. Other Directories

There are a number of directory type publications that are helpful in identifying companies with specific services and technologies. Most of these publications come in the form of buyer's guides, association directories, commercial directories, or government/public directories. We

have used these directories mainly in addition to or to complement companies identified with the Thomas Register (see above). However, these publications are also helpful in initially setting up a search strategy. (See Appendix A for list of directory type resources.)

4. Telemagic - Sanders' Electronic Client Contact Network System

Telemagic is Sanders' growing database of U.S. companies with environmental technologies, now reaching over 600 companies. This database serves as a management system of information on companies with environmental technologies and services, and is complemented with physical files containing copies of corporate qualifications and other relevant information. Searches can be conducted to identify companies with specific technologies that have already previously indicated an interest in TEST.

D. COMPANY EVALUATION RESOURCES

There are very few resources which actually offer more than directory type information to help evaluate a company's qualifications once a company has been identified. And if they do, the information contained is often inconsistent and varies from report to report. The most prominent business source, which does provide more than directory information, is Dun & Bradstreet, a financial information service. One has to keep in mind that private companies are under no obligation to disclose their financial information, which means that records are often incomplete. Public companies on the other hand are required to file with the Securities and Exchange Commission (SEC) in a standardized format. This information is thus directly available through SEC or through companies such as Disclosure, Inc. or Moody's. However, here too, factual inaccuracies and errors easily arise.

Useful information on companies can also be gathered by reviewing credit reports which are available on-line from TRW through Compuserve, Dialog and other services.

Short of making direct phonecalls to, for example, local realtors, chambers of commerce, the company's suppliers, distributors and competitors, and searching local papers and business publications, here are the resources to evaluate companies that we have used most often:

1. General

1.1. Thomas Register

As discussed above, in addition to basic directory information, Thomas Register records include information on sales, employees, exporter status, year established, etc. This information can be useful for a preliminary evaluation of a company, but needs to be completed with further research.

1.2. Telemagic - Sanders International Electronic Management System

Also as discussed above, Telemagic can serve to determine whether Sanders holds a physical file on a given company. Files generally contain a general company brochure and/or annual report and notes on the company, depending on the nature of the contact with Sanders International, therefore providing some useful background information on identified companies.

2. Financial

2.1. Dun & Bradstreet

Dun & Bradstreet Information Services (D&B)

Description:

D&B provides business information services which range from detailed country reviews and global market information to corporate financial, payments and business profiles.

Evaluation:

D&B is currently one of the most prominent resources for financial information on a company. Reports can be obtained over the phone through D&B report services, called "DunsDial"; by subscribing to D&B on-line services directly; or indirectly through other on-line services such as Dialog or Compuserve (see above). The most useful D&B files in Dialog are files 519 and 516. Subscribing directly to the D&B on-line services may not be cost effective if there is not enough demand for getting financial information on companies. Using Dialog may thus be the best option.

Cost:

Prices depend upon services selected. D&B offers one-time services or subscription and on-line services. Reports obtained through Dialog range from \$3.25 for a full Dun's Market Identifier record, to \$106.00 for a full Duns Financial Records Plus, without the on-line cost and additional surcharges. Reports over the phone are about the same price range but have longer delivery time.

Acquisition: Recommended for future usage.

APPENDIX A - SUMMARY OVERVIEW AND INDEX OF RESOURCES

1. Paper Resources

Directories and Buyer's Guides

These directories and buyer's guides generally serve as free or low-cost resources for looking up or getting basic lists of companies within a specific industry or companies which offer specific products or services. Industry associations in particular provide useful membership lists with contact names, addresses and limited product information. These publications also can contain useful contact information.

General:

CorpTech Directory
Export Yellow Pages (includes Green Pages)

Industry Specific:

Air&Waste Management Association Directory and Resource Book
Waste Age Industry Buyer's Guides
The Association for Manufacturing Technology Directory
Groundwater Monitoring & Remediation Annual Buyer's Guide
Environmental Protection Buyer's Guide
Water and Wastes Digest Buyer's Guide
National Petroleum News Buyer's Guide
Chemical Week Buyer's Guide

State/Government:

California Environmental Technologies and Services Directory
California Energy Technology Export Directory
Massachusetts International EnvirTech Directory
Montana International Directory
Louisiana Chemical Industry

Magazines and Other

A multitude of magazines, newsletters, information bulletins, etc, are dedicated to serving environmental businesses. They range from being free to costing over \$1,000/year, and the quality and usefulness of the information disseminated varies greatly from publication to publication. However, there are a number of publications which do provide relevant information on environmental technologies and policy related issues.

Air Issues Review
Air and Waste Management Association, Journal of
The American Enterprise
BioCycle, Journal of Composting and Recycling
Biodiesel Alert
BNA Environment Reporter
BNA International Reporter
Chemical & Engineering News
Chemical Week

Climate Watch
Environet
Environment Today
Environmental Business Journal
Environmental Protection
Environmental Science and Technology
Environmental Solutions
Fuel Reformulation
Global Efficiency Monitor
Groundwater Monitoring Review
Hazmat World
Newslink
Pollution Engineering
Pollution Equipment News
Resources for the Future
Small Flows
Sandia Technology Bulletin
Tech Transfer Tidbits
Tomorrow: Global Environment Business
Waste Age
Water Environment Technology
Water World Review

Newsletters (expensive)

Air/Water Pollution Report
Coal & Synfuels Technology
Coal Tech International
Energy Report, The
EI Digest
Inside R&D
Oil Daily, The
Oxy-Fuel News
Natural Gas Week
Solid Waste Report
World Environment Report

Handbooks

*These handbooks or textbooks are essential reference resources for technical background information.
Books vary greatly in price.*

Almanac of Renewable Energy, The
Applications for Coal-Use Residues
Bioremediation
Cool Energy
Hazardous Waste Incineration
Industrial and Hazardous Waste Treatment
In Situ Bioremediation
McGraw-Hill Recycling Handbook, The
NETAC Environmental Technology Profiles

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Perry's Chemical Engineers' Handbook
Process Engineering and Design for Air Pollution Control
Solid Waste Handbook
Standard Handbook for Civil Engineers
Standard Handbook of Engineering Calculations
Standard Handbook of Environmental Engineering
Standard Handbook of Hazardous Waste Treatment and Disposal
Wastewater Engineering
Water Quality and Treatment

Export, Trade and Industry Information

Although these are export and trade related resources, they do address issues of interest to environmental businesses.

Dun & Bradstreet Export Encyclopedia
US Industrial Outlook

Main Publishers/Distributors

These publishers/distributors generally have large collections of environmental publications or products, although they primarily address environmental management, compliance and regulation issues, and rarely focus on environmental technology information.

American Petroleum Institute
Bureau of National Affairs
Business Publishers, Inc.
Delphos International (The Green Pages)
Environmental Protection Agency (EPA)
European Bank of Reconstruction and Development (EBRD)
European Union (EU)
Executive Enterprises
Future Technology Survey's, Inc
Gale Environmental Library
Government Institutes
IEA Coal Research Institute
International Center for Economic Growth
Island Press
McGraw-Hill Publishers
McIlvaine Publisher
National Academy Press
National Small Flows Clearinghouse
National Solid Wastes Management Association
National Technical Information Service (NTIS)
Oceana Publications
Organization for Economic Cooperation and Development (OECD)
Thomson Publishing Group
United Nations (UN)
U.S Government Printing Office
Water Environment Federation

World Bank (IBRD)
World Resources Institute

2. Electronic Resources

CD-ROMs

CD-ROM products are a cost-effective tool for information retrieval purposes. As of today, several hundred CD-ROM titles are available covering a wide range of subjects. CD-ROMs replace stacks of journals, printed encyclopedias, reference works and are regularly updated. CD-ROMs are convenient to access a large amount of information and allow for customized menu driven or command searches, downloading or printing of files. However, only a few actually contain environmental science and technology information, as of today.

Selected Products

Thomas Register
McGraw-Hill Encyclopedia of Science and Technology
Environment Abstract (to be evaluated)

Main Publishers/Distributors

Counterpoint Publishing
Dialog OnDisc
Providence Imaging Products, Inc
West Publishing Corporation

Bulletin Boards and Databases

Numerous computerized bulletin boards (BBs) and public databases (DBs) have been developed in recent years, many of which are excellent sources of useful information on a particular topic. These BBs and DBs are mostly free of charge except for phone connect time.

EPA AIR P2 Database (still to be reviewed)
EPA ATTIC (BB)
EPA BFSS (DB)
EPA OLS (BB)
EPA PIES (BB)
EPA VISITT (DB)
FedWorld (BB)
National Technology Transfer Center (NTTC)
National Small Flows (BB and Clearinghouse)

Commercial On-line Services

Commercial on-line services are extremely expensive and should be used with great caution, even though they provide networking capabilities as well as access to an enormous amount of information. Some services are more business oriented than others.

Multiple Data Services

America On-line
CompuServe
Dialog
EcoNet
GEnie
MEAD Data Central
Prodigy
STN International

Individual Data Services

Corporate Affiliations
Corporation Technology Information Services (CorpTech)
Dow Jones News/Retrieval
Dun & Bradstreet
Standard & Poor's Register - Corporate
Ward's Business Directory

[Internet]

Internet is an electronic network of computers that includes nearly every university, government, and research facility in the world plus many commercial sites. Its resources and capabilities for facilitating environmental technology business linkages are still being assessed by Sanders International.

3. Guides to Additional Environmental Information Sources:

These guides provide lists of additional environmental information resources.

Directory of Environmental Information Sources, Government Institutes, Inc.
ECO-DATA: Using Your PC to Obtain Free Environmental Information, Government Institutes
ECOLINKING: Everyone's Guide to Online Environmental Information, Don Ritter
Environmental Software Directory, Donley Technology
Environmental Management Sourcebook, Environment Today
ACCESS EPA, Environmental Protection Agency
Tapping Federal Technology, Federal Laboratory Consortium

APPENDIX B - TOP TEN ENVIRONMENTAL INFORMATION RESOURCES

TITLE	DESCRIPTION	EVALUATION	COST	SI USAGE/ ICICI ACQUISITION STATUS
Thomas Register CD-ROM	Provides company and product information on over 194,000 U.S. and Canadian companies, both public and private, classified under more than 53,000 product classes and more than 115,000 brand names. Each records includes the company name, address, telephone and fax, a brief company description, and a list of the products and services with SIC codes and Tradenames. In most cases, asset rating or annual sales, number of employees, exporter status, names of parents/subsidiaries is also provided. The information is updated twice a year.	Extremely user-friendly, allows for detailed menu or command driven searches, offers easy downloading or printing and report making. The Thomas Register has proven invaluable in identifying vendors, suppliers or manufacturers of environmental technologies and services.	\$1,500.00 for annual subscription	In use by SI. Recommended that ICICI purchase the CD-ROM product as well as the necessary computer hardware (CD-ROM drive).
Compuserve On-line Service	One of the largest commercial networks of personal computer users, with more than 500,000 members worldwide and over 1200 online offerings. Offers an extensive range of services, including special interest groups and clubs, computing support, financial and stock information, and a broad range of reference databases. Its electronic mail has links to MCI mail, fax, telec and the Internet.	Compuserve is particularly useful for exploring the capabilities of networks, forums, and electronic mail. Compuserve can also be used to access a range of information databases, such as IQuest, Books in Print, CENDATA/The Census Bureau Service, and the National Technical Information Service.	- flat monthly rate of \$8.95 which includes access to unlimited connect time to basic services - online charges vary from (\$4.80 - \$9.60) based on the user's modem speed - reference and financial databases carry a premium surcharge	Used by SI. ICICI already subscribed to services?
Dialog Information Service	The largest online bibliographic company in the US with over 200 million items available for searching in 370 databases. Databases can be searched using keywords, phrases and boolean connectors.	Dialogue is an invaluable resource, but it is extremely expensive. Some of the databases that are particularly useful for obtaining environmental and company information are Thomas Register (to be more effectively used as a CD-ROM product), the Dun & Bradstreet files, ABI/Inform, Enviroline, Predicast, and NTIS.	- minimal start-up fee which includes reference books, guides and updates - online charges can go up to \$90.00 an hour (sometimes even more) - charges for downloading or printing texts, bibliographies, financial records, etc. vary according to the database used (ranging from \$.20 -\$100.00)	Used occasionally by SI. Recommend that ICICI subscribe to the services, but only use occasionally.
BNA Environment Reporter	News service on major domestic environmental policy and regulatory developments	Provides comprehensive weekly news information. Has proven essential in tracking domestic environmental policy and technology developments.	\$1,170.00 for one-year subscription	Read by SI. Subscription forwarded to ICICI.

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McGraw Hill Encyclopedia of Science and Technology (EST) CD-ROM	A comprehensive multimedia reference set on CD-ROM which contains all 20 volumes of the internationally acclaimed McGraw-Hill Encyclopedia of Science and Technology as well as the entire McGraw-Hill Science and Technology Dictionary. The disc is a state-of-the art multimedia technology that incorporates graphics, sound and animation.	Extremely valuable research tool, in particular for providing science and engineering information.	\$1,300.00 for subscription	Used by SI. Recommended that ICICI purchase product in future, after acquisition of computer hardware (CD-drive)
Federal Laboratory Consortium (FLC)	The FLC comprises all major (over 500) laboratories and centers representing 17 different U.S. departments and agencies. The FLC promotes and facilitates the transfer of research and development results from federal laboratories into applications in the private and public sectors and serves as a kind of coordinating body. Through its locator services and technical experts it can answer or field specific research and development questions that might lead to the identification of commercial applications.	Very responsive to search requests. Results generally lead to a list of top experts at appropriate federal labs. Delivery time varies on difficulty of search and current demand. The FLC is an efficient way to identify the leading experts at all the labs which are doing R & D in a particular field of interest. The FLC publishes a directory of federal intermediaries which provide access to the federal research programs.	Services free of charge; \$25.00 for directory	Used by SI. Directory mailed to ICICI.
National Trade Databank (NTDB)	Comprehensive source of international trade and economic information compiled from 17 federal agencies. Includes basic export information, industry-specific information, market research reports, and other. Released on CD-ROM and updated monthly.	User-friendly database. Good for obtaining industry and trade-related information.	\$35 for a single issue or \$360 for a year subscription	Used by SI. Recommendation that ICICI purchase the product.
Vendor Information System for Innovative Treatment Technologies (VISITT)	Electronic database of 171 companies offering 277 innovative treatment technologies for the cleanup of soil and groundwater contaminated by hazardous waste. Contains detailed information on in-situ and ex-situ technologies in 37 areas such as bioremediation, bioventing, electrical separation, thermal desorption or vitrification. Captures information on the availability, performance, and cost of technologies provided by vendor, suppliers and manufacturers.	Easy-to-use database. Allows for customized searches to identify technologies or vendors of specific projects.	Free	Used by SI. Computer disks and manual forwarded to ICICI.

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Dun & Bradstreet Information Service	D&B provides business information services which range from detailed country reviews and global market information to corporate financial, payments and business profiles.	D&B is one of the most prominent resources for financial information on a company. Reports can be obtained over the phone through D&B report services, called "DunsDial"; by subscribing to D&B on-line services directly; or indirectly through other on-line services such as Dialog or CompuServe. The most useful D&B files in Dialog are files 519 and 516. Subscribing to the D&B on-line services may not be cost effective if there is not enough demand for getting financial information on companies. Using Dialog may thus be best option.	Prices depend upon services selected Services Reports can cost up to \$107.00	Used only through Dialog by SI. Recommendation that ICICI use the services in the future.
Environmental Management Sourcebook	Published by Environment Today. Annual guide to company products, systems, services, R&D facilities and professional, scientific and industry resources.	Functions as the "environmental yellow pages" to products and services. One of the more comprehensive guides to environmental information sources.	Free with one year subscription to Environment Today (\$66.00)	Used by SI. Forwarded to ICICI.

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Updated August 8, 1994

**T.E.S.T. CALENDAR OF U.S. ENVIRONMENTAL TRADE EVENTS,
CONFERENCES and COURSES**

* New additions since last update

● *Italics* ● Major events

TITLE/ORGANIZER/TELEPHONE

LOCATION/DATE

AUGUST:

AICHE Environmental & Safety Education
American Institute of Chemical Engineers
Tel. (212) 705-7526

Ongoing Courses
Denver, Aug.
Pittsburgh, Sept.
San Francisco, Oct/Nov.

AICHE 1994 Summer Meeting
American Institute of Chemical Engineers
Fax/ (212) 705-8400

Denver, CO
Aug. 14-17, 1994

8th Annual Environmental Management Roundtable
Government Institutes
Tel. (301) 921-2345

Hilton Head, SC
Aug. 15-16, 1994

AICHE 1st International Particle Technology Forum
American Institute of Chemical Engineers
Fax. (212) 705-8400

Denver, CO
Aug. 17-19, 1994

Seminar on Site Remediation and Hazardous Waste Treatment
American Academy of Environmental Engineers
Tel. (410) 266-3311

San Francisco, CA
Aug. 18-19, 1994
Dallas, TX
Sept. 8-9, 1994

The Environmental Technology Institute
Government Institutes
Tel. (301) 921-2345

Hilton Head, SC
Aug. 22-26, 1994

SEPTEMBER:

Hazardous Materials Chemistry

Professional Environmental Trainers Assoc.
Tel. (419) 897-2603

Around the Country
Ongoing Courses

**Privatization and Consolidation Opportunities
in the Water Industry**

AIC Conferences
Tel. (212) 952-1899

San Francisco, CA
Sept. 8-9, 1994

Sewers of the Future

Water Environment Federation
Tel. (703) 684-2400

Houston, TX
Sept. 10-13, 1994

User and Fabric Filtration Equipment VII

Air and Waste Management Association
Tel. (412) -232-3444, ext. 3142

Toronto, Ontario
Sept. 12-14, 1994

**11th Annual Intl Pittsburgh Coal Conference
Coal - Energy and the Environment**

University of Pittsburgh
Tel. (412) 624-7440

Pittsburgh, PA
Sept. 12-16

***Site Characterization Innovative Technology**

Environment Week
Tel: (202) 662-9710, Sherry Sellner

Washington, DC
Sept. 15-16, 1994

***12th Natural Gas Vehicle Conference and Exhibition**

The American Gas Association
Tel. (703) 841-8444

Atlanta, GA
Sept. 18-21, 1994

Remediation Technologies

Executive Enterprises, Inc.
Tel: 1-800-831-8333

Chicago, IL
September 19-20, 1994

Mixed Waste

Executive Enterprises
Fax. (212) 645-8689

Washington, DC
Sept. 19-20, 1994
Seattle, WA
Sept. 27-28, 1994

- 8th National Conference on Contaminated Soils**
 University of Massachusetts
 Tel. (413) 545-2934
 Amherst, MA
 Sept. 20-23, 1994
- ASME Conference on Mass Burn and Recycling**
 Robert LaBua, Tel. 516-364-9880
 Charleston,
 Sept. 21-23, 1994
- *Cleanup & Redevelopment Market: Restoration, Technology,
 Development, Reuse**
 Federal Facility Cleanup Conference
 Tel: (203) 852-0500
 Washington, DC
 Sept. 21-23, 1994
- *Scrap Tire Business Development Conference**
 Scrap Tire Management Council
 Tel. (202) 682-4882
 Tacoma, WA
 Sept. 22-23, 1994
- *American Coke and Coal Chemicals Institute 50th Anniversary**
 American Coke and Coal Chemicals Institute
 Tel. (202) 452-1140
 White Sulphur
 Springs, W. VA
 Sept. 24-27, 1994
- ***First North American Conference and Exhibition: ●
 Emerging Clean Air Technologies and Business
 Opportunities***
Organizer: EPA and other Canadian and Mexican org.
 Tel: 919/ 541-7504
 Toronto, Ontario
 Sept. 26-30, 1994
- *10th Annual Mobile Sources/Clean Air Conference**
 NCVECS Colorado State University
 Tel. (303) 491-7767
 Estes Park, CO
 Sept. 27-29, 1994

OCTOBER:

- BIOENERGY '94: 6th National Bioenergy Conference**
 Western Regional Biomass Energy Program
 Tel: (303) 275-1704
 Reno/Spraks, NV
 Oct. 2-6, 1994
- *A&WMA Florida Environmental Expo Trade Show
 and Training Course**
 Air & Waste Management Association
 Tel. (813) 725-8202
 Tampa, FL
 Oct. 10-14, 1994

- **67th Annual Conference and Exposition** ●
 Water Environment Federation
 Tel: (703) 684-2464

Chicago, IL
 Oct. 16-20, 1994

- The 3rd Annual Independent Energy Forum**
 Independent Energy Magazine/IBF
 Tel. (212) 279-2525, Fax (212) 279-9307

New York, NY
 Oct. 17-18, 1994

- Trading Pollution Credits: How to Use Market-Based Incentives Effectively**

Washington, DC
 Oct. 17-18, 1994

- *Lead Tech '94 Conference and Exhibition**
 IAQ Publications
 Tel. (301) 913-0115

Washington, DC
 Oct. 17-19, 1994

- American Chemical Industries Week Conference and Exhibition**
 Chem-Safe, Chem-Distribution, Chem-Spill, and Industrial Fire Safety
 Pennsylvania Convention Center
 Philadelphia, PA
 Tel: (713) 621-8833

Philadelphia, PA
 Oct. 18-20, 1994

- *Fundamentals of Cogeneration and On-Site Generation**
 The Cogeneration & Competitive Power Institute
 Tel: (404) 925-9633

Chicago, IL
 Oct. 19-20, 1994
 Seattle, WA
 Nov. 30-Dec. 1, 1994

NOVEMBER

- *Intl Symposium to Address Optical Sensing for Environmental and Process Monitoring**
 Air & Waste Management Association
 Tel. (412) 232-3445

Washington, DC
 Nov. 7-10, 1994

- Technology 2004**
 National Aeronautics and Space Administration
 Research Triangle Institute
 Tel. (202) 728-2080

Washington, DC
 Nov. 8-10, 1994

LaserTech '94

National Aeronautics and Space Administration
Tel. (202) 728-2080

Washington, DC
Nov. 9, 1994

Superfund XV

Hazardous Materials Control Resources Institute
Tel. (301) 251-1900

Washington, DC
Nov.29-Dec.1, 1994

DECEMBER:

The Environmental Technology Expo

Association of Energy Engineers
Tel. (312) 868-6960

Atlanta, GA
Dec. 7-9, 1994

1995

***Waste Tech '95**

National Solid Wastes Management Association
Tel: (202) 244-4700

New Orleans, LA
Jan. 23-25, 1994

Petro-Safe '95 Conference and Exhibition

Environmental, Safety and Health for
Oil, Gas and Petrochemical Industries
Tel. (713) 621-8833, Michelle Chappell

Houston, TX
Jan. 31-Feb. 2, 1995

Pacific Recyclers Expo 1995

Ass'n of Bay Area Governments
P.O. Box 2050, Oakland, CA 94604-2050
Tel: (510) 464-7960

San Jose, CA
Apr. 5-6, 1995

1994 TRADE FAIRS & EXHIBITS OUTSIDE THE U.S.

- | | |
|--|--|
| Brno International Engineering Fair
Dan Chambers
Tel: (703) 549-9797 | Brno, Czech Republic
Sept. 14-20, 1994 |
| Second International Symposium and Exhibition on Environmental Contamination in CEE
Hungarian Ministry for Environment & Regional Policy/
The Technical University of Budapest
Budapest, Hungary
Fax: (36/1) 1853-230 | Budapest, Hungary
Sept. 20-23, 1994 |
| Plovdiv Fall Fair
EEBIC
Tel:(202) 482-2645 | Plovdiv, Bulgaria
Sept. 26-Oct. 2, 1994 |
| Housebuilding '94 International House Building and Home Equipment Fair
Zofia Samsel
Tel:(48-58) 52-49-32 | Gdansk, Poland
Sept. 28- Oct.1, 1994 |
| Reinigungstechnik, International Trade Fair with Congress. | Berlin, Germany
Sept. 28-30, 1994 |
| Polagra International Agro-Industrial Fair
Tel:(48-61) 692-592 | Poznan, Poland
Sept. 29-Oct. 4, 1994 |
| MEFA '94- Medical Equipment and Pharmaceutical Trade Fair
Jiri Frantal
American Embassy Prague
Tel:(42-2) 2421-9844 | Brno, Czech Republic
Oct. 2-5, 1994 |
| Compfair '94 - Computer Related International Exhibit
Andrew Stevens
Tel: (310) 278-4900 | Budapest, Hungary
Oct. 11-14, 1994 |
| Foodapest '94
HungExpo Company
Tel:(36-1) 263-6075 | Budapest, Hungary
Nov. 23-26, 1994 |

1995 TRADE FAIRS & EXHIBITS OUTSIDE THE U.S.

16th Federal Convention Sydney 1995

Australian Water and Wastewater Association
(61) 2 413 1288

Sydney, Australia

April 2-6, 1995

**Fifth Intl Conf on Radioactive Waste Management
and Environmental Remediation (ICEM)**

American Society of Mechanical Engineers
Tel. (212) 705-7788

Berlin, Germany

Sept. 3-9, 1995

ANNEX D

ICICI INFORMATION SYSTEM STATUS REPORT, January-August 1994

A. Resources - Mailings

The following resources were mailed to ICICI:

*Note: March 11 mailing was sent in 5 separate packages
April 25 mailing was sent in 2 separate packages*

<u>Title</u>	<u>Date Mailed</u>
Directories:	
Environmental Software Directory	Jan 19
Environmental Management Sourcebook	Jan 19
Tapping Federal Laboratory Technology	Jan 19
The Export Yellow Pages	Jan 19
EPA Access	Mar 11
Directoru of Short-Term Environmental Courses	Mar 11
California Environmental Technologies and Services	Apr 25
Directory of Environmental Information Sources	Jul 19
National Academy Press Catalogs, Spring/Summer/Fall, '94	Jul 19
Books:	
Applications for Coal-Use Residues	Mar 11
Agriculture, the Environment and Trade	Mar 11
Fueling Development: Energy Technologies	Apr 25
Environmental Strategies for Industry	Jul 19
Solid Waste Handbook	Jul 19
Cool energy	Jul 19
Standard Handbook of Haz. Waste Treatment and Disposal	Jul 19
In Situ Bioremediation	Jul 19
Buyer's Guides:	
Environmental Protection Buyer's Guide 1993	Mar 11
Textile Technology Source Book	Apr 25
National Small Flows Clearinghouse Product Guide	Apr 25
New Pig, May	Jun 7
Hazmat World 1994 Literature Guide	Jun 7

EPA and Technology Bulletins:

EPA/Global Market for Environmental Technologies	Jan 19
EPA/Pollution Prevention News	
back issues	Jan 19
Jan-Feb	Apr 25
Mar-May	Jul 19
EPA/Contaminated Sediment News	
Feb issue	Jan 19
May issue	Jun 7
Energy and Environment, October 1993	Mar 11
Manufacturing Technology, August & December 1993	Mar 11
Various brochures on wetlands, lead, water, and air pollution	Mar 11
Innovative Treatment Technologies	Apr 25
Medical Waste	Apr 25
EPA Journal	Apr 25
Sandia Technology Bulletin, March 1994	Jun 7
Accessing Federal Data Bases for Contaminated Site Clean-Up Technologies	Jul 19

Newsletters and Magazines:

Air Issues Review	
- back issues	Jan 19
- Feb issue	Apr 25
- May issue	Jul 19
Air & Waste	
- March issue	Apr 25
- April issue	Jun 7
- Jun-Jul issues	Jul 19
Biodiesel Alert	
- back issue	Jan 19
- Feb issue	Mar 19
- Mar issue	Apr 25
- Apr-May issues	Jun 7
- Jun-Jul issues	Jul 19
BNA Environment Reporter	
- sample issues	Mar 11
- issues from Feb - April, and binders	Apr 25
- Apr 22 - May 20 issues	Jun 7
- May 27 - Jul 20	Jul 19

Chemical Week

- Mar 16 - Apr 20 issues Apr 25
- Apr 27 - Jun 8 issues Jun 7
- Jun 15 - Jul 20 issues Jul 19

Environmental Protection

- back issues Jan 19
- Jan-Feb issues Mar 11
- Mar-Apr issues Apr 25
- Jun issue Jul 19

Environmental Solutions

- Jun issue Jul 19

Hazmat World

- back issue Jan 19
- Mar issue Apr 25
- Apr issue Jun 7
- May issue Jul 19

Pollution Engineering

- Apr-May issues Jun 7
- Jun-Jul issues Jul 19

Pollution Equipment News

- Mar issue Apr 25
- Apr issue Jun 7
- Jun issue Jul 19

Small Flows

- back issues Jan 19

Waste Age

- Mar-Apr issues Apr 25
- May issue Jun 7
- Jun-Jul issues Jul 19

Water World Review

- Mar/Apr issue Apr 25
- May/Jun issue Jun 7

Miscellaneous:

- Folder with sample of newsletters Mar 11
- Cities International Newsletter Mar 11
- Environment Business Journal Mar 11

PC Product Update	Mar 11
Power-Gen News	Apr 25
USERBEP Update	Apr 25
Resources for the Future, No. 115	Jun 7
Earth Enterprises, May 1994	Jun 7

Database Information and Software:

Information sheet on EPA/ATTIC	Jan 19
Information sheet on EPA/PIES	Jan 19
Dialogue Database Catalogue and	Jan 19
Dialogue ABI/Inform Titles list	Jan 19
Catalogue of Dialogue on Disc products	Mar 11
1994 Corptech Directory	Mar 11
Predicast Newsletter Database Source Guide	Mar 11
EPA VISITT 2.0 Diskettes and Manual	Apr 25
Corptech Growth Forecaster, April	Jun 7

OTHER:

Recommendation to purchase Thomas Register CD-ROM	Feb 24
Subscription Renewal of NETAC Technology Profiles	Aug 8
Recommendation to purchase McGraw Hill EST CD-ROM	Aug 12

B. US Company Qualifications - Mailings

A total of 104 company qualifications were sent to ICICI:

1993 - 51 sets of company qualifications

January 1994 - 25 sets

April 27, 1994 - 6 sets

May 27, 1994 - 7 sets

September 13, 1995 - 5 sets

C. Telemagic Update

264 U.S. company contacts for TEST were entered into the Sanders Telemagic database.

47 Indian companies have been entered into the Sanders Telemagic database.

See attached list of company names and addresses.

D. Monthly Calendar of US Environmental Conferences and Exhibitions:

The calendar was faxed to ICICI on the following dates:

February 2, 1994

March 4, 1994

April 4, 1994

May 5, 1994

June 7, 1994

July 14, 1994

August 9, 1994

September 7, 1994

ANNEX E

SANDERS
INTERNATIONAL

Environmental Business Development & Consulting

• *Assessing
Technological
Needs*

• *Finding
Partners*

• *Financing
Projects*

TRADE IN ENVIRONMENTAL SERVICES & TECHNOLOGY



**INDIA:
AN EMERGING
ENVIRONMENTAL
MEGA-MARKET**

TEST : Mission Statement

To improve environmental protection in India while increasing the productivity of Indian industry on a sustainable basis, and to encourage and facilitate profitable business linkages between U.S. and Indian firms in the environmental sector.

The United States government, through the U.S. Agency for International Development (USAID), has begun a new and innovative economic development program, the Trade in Environmental Services & Technologies (TEST) program. TEST is aimed at assisting India to address its increasingly serious industrial pollution problems by encouraging and facilitating sustainable and profitable business linkages between Indian firms and U.S. environmental equipment and service providers. TEST supplements other U.S. export and environmental trade promotion programs with a focussed set of services and resources for Indian and U.S. firms to draw upon in pursuit of environmental transactions and business linkages.

TEST Provides:

- * Evaluation of a firm's environmental/pollution control product, technology or service against opportunities and needs in India.

- * Assistance in locating and contacting interested, qualified and capable Indian companies with whom you can do business.
- * Assistance in meeting with prospective Indian clients or partners, understanding the Indian market, business practices and the Indian environmental sector.
- * Financial assistance in the form of advantageous loans or conditional grants to qualified projects.

The TEST program is implemented in India by the Industrial Credit and Investment Corporation of India, Ltd., India's top development finance institution. USAID has provided a grant of \$25 million to ICICI under the TEST program to help stimulate and finance joint ventures and other projects between U.S. and Indian firms that increase environmental protection and enhance the productivity of Indian industry on a sustainable basis.

India is Open for Environmental Business

Since independence in 1947, India has pursued a development strategy based on rapid industrialization, with resulting rapid urbanization. Today India possesses a large and diversified industrial base in metals,



mining, petrochemicals, textiles and in almost every other sector. Like most developing countries, until recently India has been unable to place much emphasis on pollution control or environmental conservation. The result is that today India's three major cities, Delhi, Bombay and Calcutta rank among the ten most polluted cities in the world. Other parts of India are equally threatened by industrial pollutants and untreated municipal waste.

India is also the world's largest democracy. Driven by the demands of the Indian people, including a growing middle class numbering as many as 300 million, for improved and healthier standards of living, the Indian government (including its state and local governments) has enacted and begun to enforce pollution control and other environmental protection laws and regulations. While much more remains to be done, the trend is clear that the Indian people are committed to achieving a cleaner environment through government action and through the deployment of cleaner and more efficient technologies throughout India's rapidly modernizing economy.

India's two-year-old economic reform program is re-making the Indian economy, opening unprecedented opportunities for U.S. firms to share in the untapped potential of

the Indian market. The United States is India's largest trading partner, its largest source of foreign investment and Indian business is eager to expand Indo-U.S. ties. The TEST program was created to help American business help Indian industry deal with its staggering environmental problems while creating sustainable and mutually beneficial business linkages and technology transfers.

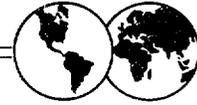
TEST: Building Long-term Business Linkages

Loans:

ICICI will provide loans to Indian firms for:

- * Purchase of U.S. sourced environmental services and technologies.
- * Indo-U.S. joint ventures for the manufacture of pollution control or abatement equipment or the establishment of analytical and testing facilities.
- * Indo-U.S. joint ventures to establish new, or to enhance the capabilities of existing Indian environmental engineering or service firms.
- * Other approved Indo-U.S. environment-related projects and ventures.

Loan assistance available for up to 65% of the project cost at favorable rates.



Repayment terms up to 8 years, including a two-year grace period.

Conditional Grants:

TEST will provide conditional grants up to 50% of the project cost, on a case-by-case basis, and where the prospective U.S. technology transfer has significant commercial potential in the Indian market, but needs adaptation, further development or re-design to meet Indian market requirements. Grants will be repaid to ICICI from an agreed percentage of the venture's sales, up to 200% of the grant amount.

Technical Assistance:

U.S. and Indian firms participating in the TEST program can receive valuable assistance, counselling and other services from the U.S. based TEST coordinator, Sanders International. Technical Assistance includes:

- * Identification of technologies that are competitive and appropriate for the Indian market.
- * Selection of best market opportunities for U.S. environmental firms.
- * Assistance in locating and qualifying potential partners.
- * Support for promotional activities to inform Indian companies about U.S. environmental technologies.

TEST: Priority Areas

The TEST Program has been designed to identify and close technology gaps — areas where India's indigenous technological capability is insufficient — in India's current environmental protection and pollution control/abatement industries. These technology gaps include:

- * Removal/reduction of dissolved solids from waste water streams.
- * Recovery and reuse of resources from waste water streams, atmospheric emissions and solid wastes.
- * Introduction of systems for removal of special pollutants from waste water, atmospheric emissions and manufactured products.
- * Better and more efficient handling and management of hazardous wastes.
- * Reduction of color, odor and biochemical/chemical oxygen demand load in waste water.
- * Reduction of particulates, sulfur dioxide and oxides of nitrogen emitted to the atmosphere from industrial processes.
- * Enhanced availability and quality of air and water pollution monitoring and analytical instrumentation.



Implemented in India by:
**The Industrial Credit &
Investment Corporation
of India Limited**



Funded by the:
**United States Agency
for International
Development (USAID)**

Technical assistance provided by:
**Sanders International,
Washington D.C.**

For more information contact:

In the United States:

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TEST Project Manager
Sanders International
1616 P Street NW, Suite 410
Washington D.C. 20036
Tel: (202) 939-3486
Fax: (202) 939-3487

In India:

K. Harinathan
TEST Group Manager
The ICICI Limited
Scindia House, 5th Floor
N.M. Marg, Ballard Estate,
Bombay, India - 400 038-50
Tel: 91-22-261-8251 or
91-22-266-1371
Fax: 91-22-262-5444

Designed & Printed By KAN ADS/BOM

INDIA: AN EMERGING ENVIRONMENTAL MEGA-MARKET

TRADE IN ENVIRONMENTAL SERVICES & TECHNOLOGIES (TEST)

The United States government has begun an innovative new development aid program, the Trade in Environmental Services and Technologies (TEST) Program, aimed at forging market-oriented solutions to India's increasingly serious industrial pollution problems. Funded by the U.S. Agency for International Development (USAID), TEST supplements other U.S. export and environmental trade promotion programs with a focussed set of services and resources for Indian and U.S. firms to draw upon in pursuit of environmental transactions and sustainable business linkages

TEST is implemented in India by the Industrial Credit and Investment Corporation of India (ICICI), India's premier development finance institution. USAID has provided ICICI with \$20 million for loans, grants and other assistance to qualified Indo-U.S. environmental ventures. TEST's U.S.-based project managers from Sanders International, a Washington, D.C. environmental business development firm, are working with a growing number of excellent commercial leads from leading Indian corporations for U.S.-sourced pollution control equipment, technologies and services. TEST programs offer valuable assistance to U.S. firms interested in exploring this growing market. TEST will:

- Help your firm locate and contact interested, qualified and capable Indian companies with which you can do business.

- Assist you in meeting with prospective clients and partners, both here and in India, and to understand the Indian business climate and the Indian environmental sector.

- Provide ongoing, in-depth assistance to conclude transactions and develop long-term business relationships with Indian environmental firms.

- Through the US-Asia Environmental Partnership help facilitate and fund professional exchanges by U.S. environmental firms to India and vice-versa.

- Through ICICI, offer loans and conditional grants for selected environmental projects.

For more information, please contact:

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TEST General Manager
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Scindia House, 5th floor
N.M. Marg, Ballard Estate
Bombay, India 400 038-50
Tel: 91-22-261-8251
Fax: 91-22-262-54442

**Trade in Environmental Services and Technologies (TEST)
Status Report - June 1994**

Completed Projects:

- Through the Industrial Credit and Investment Corporation (ICICI), the TEST program has financed a licensing agreement between **Davy-McKee** of San Francisco, California and **TTG Industries** of Madras, to transfer production know-how for the manufacture of water-jacketed gas collection hoods.
- Through the ICICI, the TEST program has financed a multi-million dollar joint venture between **Snyder General** of Dallas, Texas, and **Kirloskar Industries** of Pune, India for the production of a variety of air pollution control equipment.
- ICICI has approved a one million dollar conditional grant to **Shreyans Industries** of New Delhi for a demonstration project to install an innovative U.S. technology to recover caustic soda from an existing pulp and paper mill's waste stream. Specialized equipment, engineering design and know-how will be supplied by a **Enders Process Equipment** of Glen Ellyn, Illinois.

Projects About to Be Financed:

- ICICI expects to give final approval for a financing package for a 120 ton capacity hazardous waste incinerator to be erected in Madras. This will be the first facility of its type and size in India. Design, supervision and specialized equipment is to be provided by the **International Technology Corporation** of Knoxville, Tennessee.
- Under TEST sponsorship, **Pneumaphil** of Charlotte, North Carolina, a major U.S. manufacturer of industrial air filters has signed a 5 year technical collaboration agreement with **Inalsa** of New Delhi for the production of gas turbine filters. ICICI is in the final stages of evaluating a financing proposal from Inalsa.
- **Munradtech** of New Delhi and **Donaldson** of Minneapolis, Minnesota have also applied to ICICI for financing of their joint venture to produce gas turbine filters.
- A leading Indian boiler manufacturer has entered into a technical collaboration with a Georgia manufacturer to transfer and develop circulating fluidized bed boiler technology for the Indian market. This venture is likely to receive TEST financing in August.

Licensing, Distributorships & Other Business Collaborations:

- A small Virginia manufacturer of auto emission control devices travelled to India in November 1993 under joint TEST and U.S.-Asia Environmental Partnership (USAEP)/World Environment Center (WEC) sponsorship. The trip resulted in a memorandum of understanding with the Automotive Research Association of India to test and adapt its product for the Indian market. A joint venture with a major Indian auto components manufacturer is under active negotiation.
- In January, **Ab.Sorb, Inc.** of Minnetonka, Minnesota, a small manufacturer of an innovative oil recovery system signed a memorandum of understanding with **Ferro Alloys Corporation, Ltd.** of India to conduct feasibility and market studies as a prelude to a technical tie-up.
- In June, **Premier Ziba**, a Delhi-based manufacturer signed a distribution agreement with **U.S. Bio-tech**, a New Jersey-based environmental firm to import its bio-treatment products into India. A multi-phased project is planned to use the U.S. firm's products in India to deal with the serious pollution problems caused by small scale distillery and pulp and paper effluents. This will be the first time that imported biological treatment technologies will be tested in India.
- As the result of a TEST-sponsored contact, **Smith & Loveless** of Lenexa, Kansas, a large waste water treatment equipment manufacturer signed a distributorship agreement with **PureTech Engineering**, a Madras-based engineering firm to represent the companies full product line in Southern India.

TEST Delegations

- In November 1993 the TEST program and the USAEP/WEC co-sponsored a delegation comprised of three U.S. environmental firms to meet with prospective Indian partners and to attend the Indo-U.S. Joint Business Council meeting and the 1993 India International Trade Fair.
- In March the TEST program and the USAEP/WEC jointly sponsored a delegation of eleven Indian environmental business leaders, regulatory officials and financial experts for a study tour to Seattle, Washington; San Jose, California; Denver, Colorado; Washington D.C. and Baltimore, Maryland.
- In June the TEST program and the USAEP/WEC jointly sponsored a delegation of representatives from India's boiler industry who visited U.S. firms in Pennsylvania, New Jersey, Texas, Oklahoma and North Carolina in search of state-of-the-art air pollution and environmentally clean boiler equipment and technology.

ANNEX F



RAISING FINANCE

Financing environmental protection & productivity enhancing activities

The USAID has provided a grant of \$25 million to the ICICI to finance activities that aim at increasing environmental protection and enhancing productivity on a sustainable basis, under the Trade in Environmental Services and Technology (TEST) programme. ICICI is the coordinating agency for implementation of the TEST programme in India. The objectives of the TEST programme are to improve environmental protection and productivity of Indian industry, through better linkages between Indian and US firms.

The salient features of the programme are:

- a) Bridging the technology gaps in the areas of pollution prevention and abatement; and
- b) Access to services and latest information available with specialised agencies and various databases.

The major technology gaps that will be addressed under the TEST programme include:

- i) Removal/reduction of dissolved solids from waste water streams.
- ii) Recovery and reuse of resources from waste water streams, atmospheric emissions and manufactured products.
- iii) System for removing special pollutants from waste water, atmospheric emissions and manufactured products.
- iv) Handling and management of hazardous wastes.
- v) Reduction of colour, odour and biochemical/chemical oxygen demand load in waste water.
- vi) Availability of adequate instrumentation for monitoring and analysis, in control of both water and air pollution.

The eligibility criteria for aid under the TEST programme are:

- Indian manufacturing companies importing US environmental technologies and services for their own use.
- Indian companies acquiring equipment or procuring services aimed at pollution abatement, from Indian firms with US linkages.
- Indian companies, both existing and new, which propose to manufacture environmental protection equipment, under licensing or joint venture arrangements with US firms, and
- Indian companies offering consultancy services in the area of pollution abatement/control, in collaboration with US firms.

The TEST programme will provide assistance in the following nature:

I. Loans

- These will be provided to: industrial firms for the purchase of US environmental services and technologies, establishment of

facilities in India for manufacture of pollution control, or abatement equipment & analytical and testing facilities with US collaboration, enhance the capabilities of consultancy firms offering services in the field of environment with US linkage.

- The promoter's contribution will be a minimum of 35% of the project cost. Funding for the balance is available through this scheme.

- The indicative interest rate is 15.5% pa.

- The assets financed through this scheme will be the security for the loan.

- The repayment period will be maximum 8 years, this includes a two year moratorium.

II. Conditional grant assistance:

- a) TEST will provide conditional grants on a case-to-case basis where the available US technology has significant commercial potential, but needs adaptation to suit the Indian environment.

- b) The promoter's contribution should be at least 50% of the project cost. The balance can be funded under this scheme.

- c) The mode of repayment under the scheme is a fixed percentage to sales, which is to be returned to ICICI in rupees, on a

periodic basis until such time as a maximum of 200% of the amount of grant has been received.

III. Technical assistance

A) Technical assistance can be given under the TEST programme with the help of a US-based technical coordinator, for promoting

business ventures between Indian and US firms through the following services:

1. Identification of competitive and appropriate technologies.
2. Advise on selection of technology and equipment to solve the technical problems of the existing unit.
3. The development of a business cycle plan for the efficient reuse, recovery, recycle of by-products/effluents.
4. Arranging trade and investment tours for Indian and US firms.

B) The promoter's contribution is a minimum 25% of the total technical assistance cost or a lump sum to be decided in consultation with ICICI. The balance will be by way of a grant.

It will be noted that this scheme ties the assistance provided, to promotion of US trade. The scheme can also be used as a cheap source of financing.

The objectives of the TEST programme are to improve environmental protection and productivity of Indian industry, through better linkages between Indian and US firms.

*Kishore Nair, Director
Eastern Sofina Services Ltd.*

machinery factory in the PRC (approved by the local city government and allotted initial capital) to set-up such a joint venture. The goal of this joint venture is to build two aeration wastewater treatment plants in 1995 capable of treating 99,000 cubic meters of wastewater daily. Six such plants are planned for 1996 and ten more annually starting in 1997. (Details of this project are listed on the table.)

Other environmental priorities in Guangdong include reducing sources of industrial contamination. Several power generation plants in Guangdong operate on coal. A new plant producing 600 Kilowatts will be a source of further pollution. All new plants will need to complete an "environmental package" to satisfy compliance codes in daily operations and emergency situations. New steel and ethylene plants are also slated for construction. The cement industry is very large in Guangdong and more than 90% of cement plants need environmental improvement.

Solid waste issues are also priorities. Historically, landfills have received all municipal wastes. Current landfills in Guangdong will last five more years and already the government feels that too much land is being used for waste disposal. Mr. Chen and his agency want to make use of incineration technology. He notes that medical waste, pharmaceutical, and chemical wastes are not disposed of properly. Stopping leakage from landfills and ways of compacting solid waste are specific priorities.

Mr. Chen offers a few words of advice to American companies wanting to do business in China. First, be patient. Business is conducted more efficiently in Guangdong than in other areas, but "it's still China," he notes with a smile. Second, find a good partner. There is a broad scale of Chinese firms in terms of efficiency and business ethics. Mr. Chen recommends establishing a seminar in China to meet with environmental officials. He cites a case where Canadian firms and government officials met with Mr. Chen's agency and over 70 private Chinese firms. Three Canadian firms immediately signed contracts and other projects are being discussed. When dealing with the government, seek someone with decision-making authority such as Mr. Chen. Every province has its own environmental protection agency that examines projects and feasibility studies.

He adds that attending trade exhibi-

tions can be helpful, but one should seek the best events. Factors to bear in mind include the location of the exhibition. Are there potential projects in the region? What are the economic capabilities of that area? Also important are the capabilities of the conference organizers. While some foreign firms will place advertisements in the Chinese news media for greater exposure, Mr. Chen advises that such a tactic will generally only help large firms. A better method is to submit complete news releases to the Chinese business news media.

Firms which have pre-arranged financing through the World Bank, Asian Development Bank, or private capital will be given preference when bidding for government projects. If financing has been arranged by a bidding firm, that firm will win the contract over other bidders, even if it has a higher bid. Because the work is being done with the government, funds will be guaranteed by the Chinese central bank.

Contact Bill Donovan, U.S. ETEC Business Development Coordinator, at (619) 456-1861, fax (619) 456-2527 for more information.

Environmental Trade Opportunities In India

by Alan N. Scarsella, Director, International Business Development, Wahlco Environmental Systems

India is competing for U.S. environmental technology business and investments. U.S. AID's \$20 million Test program will assist India.

During a speech in July, 1993 to the World Affairs Council of Orange County, California, Ambassador to the U.S., Siddhartha Shankar Ray described how India faces environmental problems ranging from floods to poverty. Toward environmental solutions, cooperative efforts between the U.S. and Indian governments are underway. The Trade in Environmental Services and Technologies (TEST) program is a U.S. Agency for International Development (AID) sponsored project to assist Indian industries to adopt environmentally sound practices while promoting sustainable linkages between Indian and U.S. firms. The project will offer four major types of assistance:

- 1. Loans and grants to Indian firms through a \$20 million program to be administered by the Industrial Credit and Investment Corporation of India (ICICI);
- 2. Technical assistance to firms and individuals;
- 3. Grants and technical assistance to individuals;
- 4. Support for ICICI.

Sanders International, based in Washington, DC, is the prime contractor for AID. The project manager is Jeff Hallett, former Executive Director of the U.S.-India Business Council of the U.S. Chamber of Commerce. An advisory council will provide strategic guidance for the project to enhance the

local environmental infrastructure, environmental business development, and to promote closer ties between the U.S. and India.

ETEC members may find resources for ancillary business development through other public and private sector sources such as National Association of State Development Association (NASDA) grants, the United Nations Global Environment Facility fund, and the Asian Development Bank.

On July 29, in Los Angeles, California, a delegation of Indian visitors met with U.S. ETEC staff member Bill Donovan and Chris Segura, International Business Development Coordinator, Wahlco Environmental Systems, a U.S. ETEC member. Organized by the State of California's Energy Commission with U.S. ETEC and the State of California's Environmental Protection Agency in supporting roles, the visitors were key executives from the State Electricity Boards of Andhra Pradesh, Karnataka, and Tamil Nadu. They represented joint venture partner prospects, banks, and financing organizations. Linda Joy DeBoard and Patricia Santana of the California Energy Commission and Joanne Shaikh, international consultant to the State of California and City of Los Angeles, coordinated the visit.

For more information on India, including industry and finance information, please contact Bill Donovan at (619) 456-1861. The information from India includes: National Conservation Strategy and Policy Statement on Environment and Development, Policy Statement for Abatement of Pollution, and The National Environment Tribunal Bill, 1992.



The "Air Pollution Management" Newsletter

CONFERENCES

January 1994
No. 188

Italian Technology on Display

Italian air pollution technology was displayed and discussed in a program sponsored by the Italian Trade Commission in Chicago. Low-NO_x burners and pulse energization systems for precipitators were captured on videotape by McIlvaine cameras. There were some lively panel discussions featuring many familiar names, such as Bill De Priest of Sargent & Lundy and David Kee of U.S. EPA Region 5. Kee emphasized the importance of mercury deposition in the Great Lakes Region and indicated this will have a long-term effect on clean air policies. Jack Siegel, Acting Assistant Secretary of Fossil Energy of the DOE, talked about particulate control ramifications. This was followed by several presentations by ENEL and the University of Padova on the development of pulse energization which is being successfully applied in Italy. The high-voltage power supplier manufacturer is Passoni and Villa. There was particularly lively discussion from the floor relative to NO_x issues. Bob Smock of Power Engineering, Jason Makansi of Power, Nalco Fuel Tech and others joined in with their respective points of view. You can now order audio tapes as an alternative to seeing this discussion, and in fact you can phone us and listen to any part of the audio discussion by phone.

The entire program included not only energy and the environment, but various other Italian technologies which are available for the U.S. market (1).

U.S. ETEC Optimistic on Exports

Opportunities, particularly in the Latin American pollution control market, were extensively addressed at the November U.S. Environmental Technology Export fall conference. McIlvaine has complete video and audio coverage of this two-day session which featured top level government and industry people. One of the luncheon keynote speakers was Adalberto Gabaldón, who is Minister for the Environment in Venezuela. He outlined and expanded market, not only in Venezuela, but throughout Latin America.

Although the emphasis was on other areas, there was a good session on Asia. Ed Sanders of Sanders International, pointed out that India is now among the top ten nations in industrial output. It has a middle class of 100-200 million people and has a real commitment to environmental improvement. This could be partly influenced by the Bhopal incident. He indicated that industrial companies are taking the lead and that there is substantial U.S. government funding for environmental initiatives in India. He cited \$3 million made available for an enterprise to produce pollution control equipment in India. He indicated the \$3 million went to a U.S. company to aid them in an enterprise to start an air pollution control equipment company in India.

There were some excellent panels including one on market development in Mexico (2).

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COMPANIES AND MARKETS

ICICI, USAID package on cleaner technology

Raju Kane
BOMBAY

Bangalore-based Kirloskar Synder General plans to introduce state-of-the-art electrostatic precipitators by the year-end.

The precipitators are used in power plants, steel mills and cement units and capable of withstanding temperature upto 150 degree Celsius. Their installation would lead to a reduction in emission from these units.

The Kirloskar project is financed under an innovative support package worked out by the Industrial Credit & Investment Corporation of India in collaboration with USAID.

The package — called Trade in Environmental Services and Technologies (TEST) — aims to bridge the gap between cleaner technologies in India and the US.

Conceived last year, the programme has received funding from USAID worth \$25 million (Rs 75 crore). Of this, \$20 million has been earmarked for financial assistance while the balance will facilitate exchange of information and technical services.

Among the other projects supported by the package, one involves Madras-based TTG Industries.

TTG would soon introduce state-of-the-art anti-pollution technology to be used in metallurgical industries. The technology would help solve the pollution problems faced by Hindustan Copper, for which TTG is a contractor.

The idea of the TEST package is to promote environment-friendly technology at three levels — to help Indian companies carry out basic changes in their production processes, to provide end-of-pipe and top-of-the-stack technology for specific polluting industries and to facilitate technical collaborations/joint ventures for manufacture of anti-pollution equipment.

A J Advani, ICICI's general manager in charge of the technology group, said seven areas have been identified as top priority ones.

These include technology related to removal/reduction of dissolved solids; recovery of chemical resources from waste water, handling and management of hazardous waste and reduction of particles and other pollutants from air.

The industries sought as thrust areas are those identified by the Union environment ministry as the most polluting sectors. Tanneries, dyestuffs, petrochemicals, paper, pesticides, thermal power plants and steel mills have already been blacklisted by the Centre.

Advani said in certain cases where the US technology needs to substantially altered to suit Indian conditions, the programme has a conditional grant component tied in which would be considered on a case by case basis.

Technical assistance for pre-offer feasibility studies, identification of competitive technologies and development of business plan for efficient re-use and re-cycling is also being offered, Advani said.

The promoters have to contribute upto 35 per cent of the project cost, the rest being provided by TEST at an interest of 15.5 per cent. The loan has to be repaid in eight years.

Taking advantage of the programme, Mysore Kirloskar has tied up with US-based Synder General, which specialises in anti-pollution equipment.

Both firms have equal stake in the joint

venture and hopes to make, apart from precipitators, other top-of-the-stack equipment.

TTG Industries have also joined hands with American company Davy McKey, to upgrade the pollution abatement technology it has on offer.

Apart from these two, 10 other applications for funding under the programme are being processed, Advani said.

An important part of the programme is the information exchange that it seeks to facilitate. ICICI is soon starting a technology information centre which would make available on-line data on the latest environmental technologies available in the US.

It has tied up with National Chemical Laboratories, National Environmental Engineering Research Institute and Confederation of Indian Industry for the purpose.

Advani said NCL and NEERI would be evaluating the technical aspects of the information available on these databases while CII would evaluate them for legal purposes.

Access to the database would be open to all industries on payment of a nominal fee for reproduction and telephone charges, he added.

ant shift away from reliance on synthetic pesticides," said Showler, "though some approved pesticides are still required until alternative options become available."

The AELGA project also produced 15 African country-specific environmental assessments. The successful removal of old dieldrin stocks from Niger initially was instigated by such an assessment. Now several other countries are following this example.

Locust outbreaks, recorded throughout history, will continue to be a problem for African and Asian farmers for years to come. But with continued prevention by USAID and others, the outbreaks may not evolve into long-lasting, financially draining and environmentally disruptive plagues. ■

—by Alan Schroeder, pest management specialist in the South Region (AAO) under Regional and Coordination Office



A farmer sprays pesticides to fight locusts preying on sorghum in North Wello, Ethiopia.



TEST improves India's environment, bolsters U.S. economy

One look at the swirling gray mists of smog that permeate New Delhi or the slow moving sludge in India's rivers quickly convinces the observer that action must be taken now to reverse the degradation of India's environment. Tons of greenhouse gases, sulfur dioxide, particulates and untreated industrial waste pollute India's environment, squandering its resources and creating critical health problems. USAID/India's Trade in Environmental Services and Technologies (TEST) is a \$25 million project that addresses environmental degradation in India, while creating markets, business opportunities and jobs for the U.S. environmental technology and service community.

"TEST encourages the U.S. and Indian private sectors to take advantage of opportunities created by India's economic policy reforms by facilitating business relationships, such as licensing and joint ventures. USAID transfers knowledge and

expertise to build India's capacity to improve its environment while strengthening the U.S. economy at the same time. It's a win-win situation," said Dick Goldman, director of USAID/India's Office of Technology Development and Enterprise.

Projects that address air and water pollution by transferring prevention and mitigation technologies are a high priority for TEST. At the same time, U.S. air pollution and wastewater technology companies offer the most competitive, innovative and low-cost technologies in the world to solve air- and water-related environmental problems. TEST brings this demand and supply together to achieve market-based, sustainable business partnerships that will have a measurable impact on environment and health in India.

TEST fosters market-oriented solutions to India's increasingly serious industrial pollution problems. USAID funds the Industrial Credit and Investment Corpora-

tion of India (ICICI), India's premier development finance institution, with \$20 million for loans, conditional grants and other assistance to qualified Indo-U.S. environmental ventures. Sanders International Inc., a Washington-based environmental business development consulting firm, provides the technical assistance to Indian and U.S. firms interested in pursuing environmental opportunities in India.

Although the project has been in operation for only a few months, several transactions already have been negotiated and approved. Under TEST, ICICI financed a multimillion-dollar joint venture between Snyder General, a Texas firm, and Kirloskar Industries of Bangalore, India, to produce air pollution control equipment. This equipment has diverse applicability in cement, steel, power and chemical industries, with an estimated \$60 million market

(continued on page 6)

Environment

(From page 5)

TEST also supported another joint venture between Davy Meckee of California and TTG Industries of Madras, India, to introduce improved convertor systems to prevent air pollution by collecting sulphur dioxide and other toxic substances. The

By identifying and creating Indian demand for sustainable environmental solutions . . . , USAID effectively leverages private resources to achieve a safer, cleaner environment.

estimated market for this technology in the copper and steel industries is approximately million.

TEST is considering a joint venture agreement between an Indian engineering firm and a major U.S. environmental equipment producer for the design and construction of India's first hazardous waste incineration facility, which would generate exports of U.S. equipment and technological know-how. In addition, ICICI is also considering a project for an innovative wastewater treatment process to be supplied by a small U.S. Midwestern engineering and environmental equipment firm to an Indian pulp and paper mill.

Last month, a small Virginia manufacturer of auto emission control devices traveled to India under TEST sponsorship and returned with an agreement from the Automotive Research Association of India to test its product for the Indian market and a potential deal with a major Indian auto components manufacturer.

TEST collaborates closely with other programs, such as the U.S.-Asia Environmental Partnership, the World Environment Center and the National Association of State Development Agencies.

TEST encourages private development for environmental technology cooperation through technical assistance and provides financial support through loans and conditional grants. By identifying and creating Indian demand for sustainable environmental solutions and reducing the risks and difficulties of doing business in developing countries, USAID effectively leverages private resources to achieve a safer, cleaner environment.

"TEST does not merely finance procurement of U.S. environmental services and technologies, but creates a self-sustaining information network connecting

dynamic Indian and U.S. companies working together to protect the environment," David Hess, USAID/India's environmental and energy officer, said.

For more information, contact Edward Sanders, president, Sanders International, at (202) 939-3486 or fax (202) 939-3487. ■

—By Cecilia Ciepiela, senior business specialist at USAID's Center for Trade & Investment Services

Agency forms new partnerships to meet environmental challenges

USAID's new environmental strategy builds on its existing environment program, according to Glenn Prickett, chief environmental adviser in the Bureau for Policy and Program Coordination. However, five important differences distinguish the new strategy:

- a stronger focus on global environmental issues, specifically biodiversity and climate change;
- a more comprehensive and integrated effort to identify environmental priorities at the country level;
- stronger systems for measuring and managing the ultimate impact of USAID assistance;
- greater involvement of local communities and non-governmental organizations in all of USAID's activities; and,
- a focus on leveraging support from other federal agencies, multilateral banks and the private sector.

Funding for the environment should be balanced between "green" (natural resources) and "brown" (urban and industrial) concerns, Prickett said. In the past, funding favored green issues. However, today there is a growing concern about urban pollution and its very real costs in cities such as Mexico City and Bangkok. Under the new guidelines for environmental programming, missions will conduct a comprehensive, integrated assessment of each country's environmental risks and how those risks affect the country's health, ecosystems and economy. Based on those assessments, USAID will determine allocation of resources.

Because USAID's resources will be limited, the agency has formed new partnerships to meet these challenges. Good examples of this collaboration include the G-7 pilot project to protect the Brazilian Amazon, the U.S./Japan Common Agenda, and a project described on the next page, the Natural Resources Management on Tribal Lands. ■

—By John Michael Kramer, assistant director of USAID's Environment and Natural Resources Information Center

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UPDATE

A Weekly Bulletin for Partners of the United States-Asia Environmental Partnership

June 27, 1994

Lessons well learned... **Takiara Pamela Ingram**, chief executive of the General Licensing Authority of the Cook Islands who attended USETT's Coastal Zone Management course, indicated that exposure to environmental impact assessment was unprecedented for the Cook Island Government. The government would work to apply the lessons learned, Ingram noted. **David Schaller**, Solid Waste Section Chief of EPA's Region VII (Denver) delivered the Environmental Impact Assessment Training Module. Schaller's Cook Island involvement began four months ago with a US-AEP-sponsored TAF Fellowship.

Proposed Sector Fund will Promote India/US Coal Preparation Projects... Coal washing can reduce air pollution, minimize unsafe ash disposal practices and increase thermal efficiencies which reduces harmful carbon dioxide emissions. US-AEP, US Department of Energy, USAID/India and USAID's Office of Energy and Infrastructure have developed a program to increase US participation in coal preparation projects for the power sector in India. On June 21, US-AEP met with a group of public and private sector representatives to discuss the creation of a sector fund to make equity investments in private US-India coal washing ventures. **Carl Bell**, consultant to US-AEP, outlined the concept. US-AEP Director **General Lew Reade** emphasized US-AEP's commitment as part of USAID's larger Coal Preparation Program for India. The program, which will be launched this summer, will undertake a study to assess the environmental impact of coal washing in India; forgo a US-India framework for sharing coal data and developing a data bank; provide technical assistance to the Indian Government in areas such as developing model contracts for private coal washing ventures; and support US-India business exchanges and the Environmental Enterprise Development Initiative, a US-AEP/OPIC fund established to provide pre-investment assistance, according to **Ken Langer**, US-AEP Environmental and Energy Infrastructure manager. US-AEP's Infrastructure Finance Advisory Service (IFAS) is prepared to help sponsors line up financing for potential coal washing ventures.

Clean Water in Korea... A delegation from the Pusan City Government toured US-designed wastewater treatment facilities last week on an environmental business exchange supported by the US-AEP/World Environment Center. US-AEP Korea Technology Representatives **Chi-Sun Lee** and **Sang-Baek Lee** played an instrumental role in meeting with Pusan officials to determine the most appropriate type of business exchange. After the site tour, the delegation visited IFAS, where **Karim Beg** briefed officials on how IFAS can assist US companies in structuring a financing package for a wastewater treatment facility.

Explorations as to how electric vehicles can alleviate Hong Kong's severe air pollution problems are seeing results. Decision makers from China Light & Power traveled to southern California last week to meet with the **Electric Power Research Institute (EPRI)**, **Advanced Electric Car Technology** (also working on the Thai electric tuk-tuks) and the **Electric Car Co.** following US-AEP/Hong Kong Director of Technology Cooperation **Gerald Sanders** efforts to encourage the development of viable electric powered vehicles for Hong Kong's commercial sector. Gerald has worked closely with EPRI's **David Porter** during the past few months to set the wheels in motion.

USAID's India Trade in Environmental Services and Technologies (TEST) program worked in close cooperation with the **World Environment Center** to send the seven-person delegation from the **Indian Boilers Manufacturers Association** now in the US to meet with their US counterparts for an introduction to fuel-efficient "green boiler" technologies. TEST has collaborated closely with WEC to facilitate over 40 India-US environmental business exchanges.

HazMat '94 Conference and Trade Show Review:

"The Asian market is not one, but many markets, consisting of different cultures and ways of doing business, different economics with different mixes of industries, and governments that are at different places in terms of environmental regulation and enforcement," US-AEP Director of Business Partnering **John Mapes** told participants in a session at HazMat '94 in

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US-AEP

United States-Asia
Environmental Partnership

UPDATE

A Weekly Bulletin for Partners of the United States-Asia Environmental Partnership

July 18, 1994

Department of Energy (DOE)/US-AEP Announce Indo-US Coal Preparation Program Secretary of Energy Hazel O'Leary and US-AEP Director General Lew Reade this week announced an innovative program to promote private coal washing facilities in India. The announcement was part of a larger Protocol of Intent to cooperate in deploying clean coal technologies signed between DOE and India's Ministries of Coal and Power. The Indo-US Coal Preparation Program will be an inter-agency effort among DOE, US-AEP, USAID Office of Energy and Infrastructure, and USAID/India. Establishing an Indo-US Coal Preparation Advisory Group with representatives from US and Indian government agencies, the private sector and research institutes, co-chaired by DOE's Assistant Secretary for Fossil Energy and the Indian Secretary of Coal, is part of the plan.

During the next two years, four to six coal preparation projects, totalling \$50 million, should reach the financing stage. Another 12 projects, totalling \$100 million, will move through the pre-financing pipeline. To achieve these targets, six activities must be developed and implemented: 1) business promotion exchanges, 2) data sharing of coal profiles, 3) placing a Energy Technology Representative in India, 4) a comprehensive study on the benefits of washed coal, 5) technical assistance on key financial issues, and 6) utilizing USG resources for funding feasibility studies and other pre-investment studies.

Sustainable development fits right into the Indonesian national philosophy... In a recent speech at the inauguration of Indonesia's first-ever hazardous and toxic waste treatment center (constructed, owned and operated by P.T. Waste Management Indonesia), President Suharto talked of his country's commitment to "development based on sustainability." Indonesia's objective of development, Suharto stated, "is not only to achieve growth and welfare in the physical and material sense. In our development, we would like to create the Indonesian citizen that is complete and developing the entire Indonesian nation. We would like to develop a *Pancasila* (the national philosophy) whose people are in balance and harmony with one another, between man and the society, between man and the environment, between man and God Almighty." Waste Management International has worked closely with US-AEP environmental training programs conducted in Indonesia by the United States Environmental Training Institute.

The Office of Technology Cooperation in Singapore has booth space in *Pumps and Valves Asia* this week. Through US-AEP's Environmental Technology Network for Asia, over 200 US companies which produce appropriate technologies have been asked to send posters and professional brochures directly to the Singapore office. If this approach to organizing a catalogue exhibition is successful, it can be tried for other events. As *UPDATE* goes to fax, at least one company has responded. Stay tuned.

And in the Philippines... *Envirotech USA*, sponsored by the Office of Technology Cooperation/Manila, was one of the highlights of the National Convention of the Technical Association of the Pulp and Paper Industry of the Philippines, according to Rene Saludes, director of the office. A catalogue show featuring the products and services from more than 50 US companies and US EPA publications on pollution prevention and control, its primary aim is to identify major environmental concerns among pulp and paper producers. After the convention on July 8, the show was on view at the US Commercial Library, Manila July 11-15. It then proceeds south to the American Consulate, Cebu, July 21-22, and to Davao, July 25-25.

Partnership and leverage in action ... US-AEP's Environmental Business Exchanges have worked in partnership with TEST (Trade in Environmental Services & Technology) in India. The Exchanges, managed by the World

UPDATE p. 2

Environment Center, have provided the necessary travel that has made demonstrations and face-to-face interactions possible. Examples of these TEST/US-AEP/WEC win-win ventures:

► Through the Industrial Credit and Investment Corporation India (ICICI), the TEST program has approved a one million dollar conditional grant to Shreyania Industries of New Delhi for a demonstration project to install an innovative US technology to recover caustic soda from an existing pulp and paper mill's waste stream. Specialized equipment, engineering design and know-how will be supplied by Enders Process Equipment of Glen Ellyn, Illinois.

► A trip to India by a Maryland manufacturer of auto emission control devices last November has resulted in a memorandum of understanding with the Automotive Research Association (ARAI) of India to test and adapt its product for the Indian market.

► Ab.Sorb Inc. of Minnetonka, Minnesota, a small manufacturer of an innovative oil recovery system signed a memorandum of understanding with Ferro Alloys Corporation, Ltd. of India to conduct feasibility and market studies as a prelude to a technical tie-up.

► Smith & Lovelace of Lenexa, Kansas, a large waste water treatment equipment manufacturer signed a distributorship agreement with PureTech Engineering, a madras-based engineering firm, to represent the companies full product line in South India.

More on partnership in action... Bryan Van Deum of the Banker's Association for Foreign Trade will be explaining AXCAP (Access to Export Capital) and the opportunities that trade finance database offers to US environmental businesses as a part of the Eximbank's regular four-day seminar. Both BAFT and Exim are optimistic that this effort to promote both institution's programs will increase exporter (and bank) usage of AXCAP.

The inter-agency National Science and Technology Council's working group on the international dimensions of Biodiversity and Ecosystem Dynamics is being chaired by Dr. Pat Foster-Turley, the American Association for the Advancement of Science Fellow attached to US-AEP. The end result of their efforts may well help shape the United States Government's future actions, budgets and the like for bio-diversity matters.

To contact Wanida Srichai, newly-appointed Urban Infrastructure Representative, in Bangkok:
US-Thai Development Partnership, 2nd Floor, Zone D, Room 201/2, Queen Sirikit National Convention Center, 60 New Rachadapisek Road, Klongtoey, Bangkok, 10110.
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Send your submissions to **UPDATE** by COB each Thursday by fax (1-202-835-0366) or E-mail, TRDW/321-134@MCIMAIL.COM. Attention: Elise Giebel Rand. Or contact us through Internet: CARLPETE@ACCESS.DIGEX.NET

ANNEX G

TEST CASE TRACKING SHEET

DATE	COMPANY	PRODUCT/TECH	PARTNER	STATUS	ACTION REQUIRED	CONTACT
	A.R.F. Engineering Pvt. Ltd.			Pending	ICICI Action	
Aug. 93	Agro Pulping Machinery Ltd.	Water Poll Equipment	Enders Process Equipment	Loan approved 8/94	No action	Joe Enders
	Akar, Impex, Noida UP	Water Poll Equipment		Pending, awaiting checklist	No action	R.J. Vaidya
Spring 94	Andrew Yule & Co.	Water Poll Equipment	Kinetic Recovery is possible partner	Sent info. to Andrew Yule regarding Kinetic Recovery, waiting for response from India as to using this co. as an advisory/design firm	Waiting for response from Andrew Yule	Mr. G. Ganguli, Gen'l Manager, Dr. Reinhardt, Kinetic Recovery
	Aqua Bird Water Treatment Co.	Membrane/ ultrafiltration, electro dialysis systems		Waiting approval for subcontractor report		Parkar Ahmed
	Balmer Lawrie & Co., Ltd.	CETP		Pending	ICICI action	
Fall 93	Batliboi Int'l Ltd./HGE			Sludge digester report delivered	ICICI follow-up	A.V. Rao
July 94	Biosystems India	Distribution of bio-augmentation product, eventual investment planned	Biosystems U.S.A.	Submitting Proposal for ICICI	ICICI Action	Dr. P. Mehta
	Biotech Envirocare Systems Pvt., Ltd.	Floating aerators WWT equipment		Pending	ICICI action	
	Cadilla Laboratories, Ltd.			Pending	ICICI action	
	Cethar Vessels Ltd.			Pending	ICICI action	
Aug. 93	Cyno Clean	Hazardous waste treatment plant	International Technology Corp. & Fuller KCP	MOU signed between all parties for the building of a \$20 million plant. Waiting ICICI approval for approx. \$2 million loan. To be decided in fall ICICI meeting.	Waiting feedback from ICICI. Pending additional loan info. supplied by Cyno Clean in Aug. 1994.	Contact at IT Corp: Alan Baker or Prakash Acharya. Contact at Fuller KCP: Brian Field. Contact at CynoClean: Mr. Ravi.
	Delta Paper Mills Ltd.	Effluent gasification	MTCI/Thermochem	TA provided; awaiting proposal to ICICI	No action	Mr. Durai-Swamy

TEST CASE TRACKING SHEET

DATE	COMPANY	PRODUCT/TECH	PARTNER	STATUS	ACTION REQUIRED	CONTACT
	Din & Gray Consultants Pvt. Ltd.	Training for EIA & EA		Waiting for info. from ICICI	ICICI action	Girish P. Dingre
Nov. 93	Dyna-K Automotive Catalytic Stampings	Metal monoliths for catalytic converters	Talking to W.R. Grace; United Auto Emissions; Metal Methods; Johnson Matthey	SI spoke with U.S. companies at end of June/July. W.R. Grace & United Auto Emissions too busy at the moment. J. Matthey interested for spring 1995.	Awaiting Dias & ICICI okay for U.S. visit	Dyna-K: C.F. Dias
	Econ Pollution Control Pvt. Ltd.	EIA HW Consult		Pending	ICICI action	
	E.I.D. Parry (India) Ltd.			Closed July 94		
Jan. 94	Enkem Engineers Pvt. Ltd.	Seeking partner-ship with U.S. firm to help build low-cost WWT facilities	Talking to Barrett Consulting; Barrett has expressed interest & has sent bid materials to bid on an Indian plant. Enkem has not yet responded to bids.	Waiting to hear from Enkem	ICICI will follow up	Barrett Consulting: Marcos Lopez or Frank Barrett; Enkem Engineering: Mr. Subramani
	Enviro Clean Systems Ltd.			Pending	ICICI action	Venkata Naryanan
Spring 94	F. Harley & Co., Pvt. Ltd.	Air pollution control equipment	E.E.R. Energy & Environmental Research	Dr. Sastry (F. Harley) was in U.S. in July to meet with E.E.R., Born Environmental and others. F. Harley is putting together proposal to ICICI.	SI follow-up with E.E.R.; Request ICICI follow up w/ F. Harley	F. Harley; Dr. Sastry; E.E.R.: Dr. Sanyal
	Fine Hydrochem Pvt. Ltd.			Pending	ICICI action	
	Grindwell Norton Ltd.			Pending	ICICI action	
	H.B. Consultants & Engineers Pvt. Ltd.			Pending	ICICI action	Mr. Ramarathnam
July 94	Hindustan Organic Chemicals Ltd.	Water pollution equipment		SI has asked subcontractors for bid on TEST search report	SI has sent estimate to ICICI for approval before starting report	
	Humphreys & Glasgow Consultants Pvt. Ltd.	Gen. engineering consultants		Pending	SI follow up with U.S. parent company	

TEST CASE TRACKING SHEET

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DATE	COMPANY	PRODUCT/TECH	PARTNER	STATUS	ACTION REQUIRED	CONTACT
Spring 94	Ignifluid Boilers India Ltd.	Air pollution control equipment	Tampella Power Corp.; Detroit Stoker; possibly Castone	Loan sanctioned 9/94	No action	Ignifluid Boilers: Mr. Rao; Tampella Power Corp: Mr. Patel
Sept. 93	INALSA, New Delhi	Industrial air filter	Pneumafil, Charlotte, NC	Case under review by ICICI; financing to be decided by 8/94. Meanwhile, INALSA & Pneumafil already working together to produce air filters for several Japanese orders.	ICICI action to seek technical clarifications	INALSA: Mr. Chatterjee; Pneumafil: Ugo Bert
Nov. 93	Ion Exchange	Wastewater treatment tech.	Allied Signal Modular Environmental Technology	Signed MOU for exchange in technology. Have not heard from Ion Exchange in some time, although SI is in contact w/them almost monthly.	ICICI follow-up with Ion Exchange	Ion Exchange: Satish Chilekar; New Jersey contact for Allied Signal: Brent Defeo; Modular Environ. Technologies: Calvin LeFevre
	Jet Engineering Co.			Business agreement signed with M.E.T.	ICICI action	
	J.S. Group of Companies	Water pollution equipment		Closed July 94	No action	
	Kirloskar	Air pollution equipment	Snyder General	Loan disbursed	No action	
Oct. 93	Larsen & Toubro Bombay	Soil cleanup		Info. gathered & sent 8-9/93	Waiting for feedback ICICI action	Sanjeev S. Rege
Nov. 93	Lucas-TV S Ltd.		Lean Power	Pending	SI follow up with Lean Power	
Nov. 93	Mantec Consultants Pvt	Oil recovery unit	Yankee Environ. Services	Waiting proposal to ICICI	SI maintain contacts with Y.E.S.	Christian Lint
	Marathe Engineering Industries			Pending	ICICI action	
	McClelland Engineering Industries			Pending	ICICI action	
	MIL Industries Ltd.	Solvent recovery		Waiting go-ahead for subcontractor report	ICICI action	Rajiv Sreedhar
Aug. 93	Munradtech	Joint venture for production of industrial air filters	Donaldson, Inc.	Loan sanctioned 9/94	No action	Kevin Lindquist

TEST CASE TRACKING SHEET

DATE	COMPANY	PRODUCT/TECH	PARTNER	STATUS	ACTION REQUIRED	CONTACT
Oct. 93	Neptune Equipment Pvt. Ltd.	Service station recovery and recycling		Pending	ICICI action	S.P. Shah
	Nilkamal Plastic and Allied Industries			Pending	ICICI action	
Spring 94	Nuchem Weir, Ltd New Delhi	1. Water pollution equipment 2. Agricultural waste construction design materials 3. Envir. audits	Beltron Radian Corp. Pyramod Tech-nologies	MOUs to be signed with possibly all 3 companies on 10/94 trip to U.S.	SI action – Handle business exchange & follow up contacts	Dr. N. Sriram
	Praj Amcane Industries Ltd.			Pending	ICICI action	
Spring 94	Praj Industries Ltd	Solvent recovery		SI awaiting ICICI approval for search for companies	ICICI action	Mr. N.S. Kunkollikar
Spring 94	Premier Ziba	Biotechnology for industrial waste--water treatment	U.S. Biotech	MOU signed for partnership in testing U.S. Biotech's biotechnology	Need India Ministry of Environment approval for testing. Premier Ziba will talk to ICICI about possibility of receiving grant funding to test new technology in India at 5 sites.	Mr. Govind Srivastava, Premier Ziba; or Tom Fergus, Commonwealth Trading Partners (U.S. rep. for 2 sides)
	R.J. Shah and Co. Ltd.			Pending	ICICI action	
Spring 94	Raman Boards Ltd.	Rice husk ash recovery technologies		Submitted tech. search outline & cost	Awaiting ICICI approval to begin search	Mr. V. Raman
	S.K. Systems Pvt. Ltd.			Pending	ICICI action	
	SIV Industries Ltd.			Pending	ICICI action	
	Sudarshan Chemical Industries Ltd.	VOC recovery for rayon plant	Radian	SI contacted Radian, still very interested, Radian pushing Sudarshan to negotiate	ICICI/USAID action – contact Sudarshan	Ramesh Vkidve Avi Patkar Dr. R.J. Rathi
	Tata Consultancy Services			Pending	ICICI follow up	
	Tata Consulting Engineers			Pending	ICICI follow up	N.J. Patel

TEST CASE TRACKING SHEET

DATE	COMPANY	PRODUCT/TECH	PARTNER	STATUS	ACTION REQUIRED	CONTACT
	Tata Risk Management	Hazardous waste environ. impact – risk assessment		Pending	ICICI action	Subir Gupta
	Technology Transfer Ass'n	Computer database	No U.S. partner	Submit proposal under info. component	No action	
Summer 93	The Associated Cement Companies Ltd.	Flow modeling and testing lab	Research Cottrell	Loan sanctioned 9/94	No action	
	The Associated Chambers of Commerce & Industry of India	Grant dissemination / environ. information	No U.S. partner	ICICI evaluating grant request	No action	
	The Fertilisers & Chemicals Travancore Ltd.			Closed July 94		
	The Phosphate Co. Ltd.			Pending	ICICI action	Suresh Bangur
	Thermax Ltd.			Pending	ICICI action	
	TIL Ltd.			Pending	ICICI action	
July 94	Uniexcel Agencies & Services Pvt. Ltd.	Laser welding technology for filter production for petrochemical industry		Several companies have been contacted & there is interest on U.S. side; awaiting further doc. from Uniexcel on details of filter manufacture	SI waiting for ICICI/ Uniexcel feedback	S. Nagaswami
July 94	United Phosphorous	Waste treatment facility for Ankleshwar	Weston International	Awaiting Weston's qualifications info.	SI action	Mr. R. Panjwani
	Vam Organic, New Delhi/ Kinetics Technol. India Ltd.	Water pollution processes/ air pollution, VOC technology	Info. forwarded to Research Cottrell in Sept. for VOC controls	Trying to reach Research Cottrell to check on status	No action; not responding Call P. Dhargalkar	Prakash Dhargalkar, Research Cottrell
	Vikram	Gen'l engineering resources		Financing		Sumit Shab
Jan. 94	Vimta Labs Ltd.	Partnership w/a pollution testing lab	Law Environmental Georgia	Waiting for Vimta Labs to send SI further info (per request of 5/12/94)	No action	S. P. Vasineddi
	Voltas Ltd., Bombay	Air pollution equipment		Subcontractor report mailed 9/93	Waiting for feedback	D.K. Kelapure
	Western – Paques India Ltd.			Closed July 94		

Filter in use: IND, Contacts in India

List ID: IND Contacts in India

	"Joydale"	Nalanchira	Trivandrum 695 015	INDIA
	62-a, Banerjee Para Lane	Dhakuria	Calcutta 700 031	INDIA
	I-13, Second Floor	Lajpat Nagar III	New Delhi 110 024	INDIA
Akar Impex Pvt. Ltd.	E-9, Sector-6, NOIDA	Dist. Ghaziabad (U.P)	NOIDA	INDIA
Andrew Yule & Company Ltd.	225E, Acharya Jagadish Chandra Bose Road		Calcutta 700 020	INDIA
Aqua Bird Water Treatment Co.	C-14 Grace Plaza, S.V. Road	Jogeshwari (W)	Bombay	India
Bass Pollution Control Systems	310, 3rd Fl., House of Lords	St. Marks Road	Banglore	India
Bio-Systems India	Dalia Building Opp. Town Hall	Ellisbridge	Ahmedabad	India
Central Pollution Control Brd.	Parivesh Bhawan, C.B.D.-Cum-	Office Complex, E. Arjun Nagar	Delhi	India
Cyno Clean Company	Regency House, 250 Mount Road	Opp.Congress Grounds,Teynampet	Madras	India
Datamation	B-30, Madhuban,	Indraprastha Ext.	New Delhi-110 092	India
Din & Grey Consultants Pvt Ltd	E-19, Dadabhai Cross Lane No 3	Vile Parle (West)	Bombay	India
Dyna-K	Plot No. 450/J Block	MIDC Industrial Estate	Bhosari, Pune	India
Enviro-Clean Systems Ltd.	P.O. Box 10	Hemanagar Uppal Post Office	Hyderabad	India
F. Harley & Company	5 Rameshwar Shaw Road		Calcutta	INDIA
Fluid-Air (India) Pvt. Ltd.	Ankur Theatre Building	Govandi (E), Near Rly Station	Bombay	India
Grindwell Norton Ltd.	Devanahalli Road	Off Old Madras Road	Bangalore	India
Hinditron	69/A, L Jagmohandas Marg,		Bombay	India
Hydraulic & General Engineers	203 Arun Chambers, 2nd floor	J. Dadaji Road, Tardeo	Bombay	India
Hydraulic & General Engineers	25/26 Deonar Ancillary Indl.	Complex, Deonar, Baiganwadi	BOMBAY	INDIA
ICEG - Industrial Castings	Export Group	23/26 Industrial Area, Lodi RD	New Delhi	India
IDRI	Flat 158-B, Pocket B	Mayur Vihar, Phase 2	New Delhi-110 091	India
Ignifluid Boilers	47, First Main Road	Gandhi Nagar, Adyar	Madras	INDIA
Instrumentation Ltd.	7th Floor, Core-6	Scope Complex, Lodi Palace	New Delhi	India
Ion Exchange	Tieicon House	Dr. E. Moses Rd, Mahalaxmi	Bombay	India
J.K. Organisation	Link House, 4th Fl.	3, Bahadur Shar Zafar Marg.	New Delhi	India
KTI (Kinetics Tech. India Ltd.	Corporate Office Sheetla House	73-74 Nehru Place	New Delhi 110 019	India
Larsen & Tourbo Ltd	Powai Works, Saki Vihar Road,		Bombay	India
MECON	Ranchi		Bihar	India
MIL Industries Limited	Plot 25-A, Industrial Estate	Ambattur	Madras	India
Mil Industries Ltd	425 Pantheon Road, Egmore		Madras	India
Neptune Equipment Ltd	17/B, Dena Bank Bldg	Horniman Circle Fort	Bombay	India
Nuchem Limited	HOR&D 20/6	Mathura Road	Faridabad	INDIA
Phosphate Company Ltd. (The)	14 Netaji Subhas Road		Calcutta	INDIA
Praj Industries	917/17 British Library Lane	Off. F. C. Road	Shivajinagar, PUNE	INDIA
Raman Boards Limited	Mysore Ooty Road	Thandavapura 571 325	Mysore District, Karnataka St.	INDIA
Shriram Industrial Enterprises	Shriram Foods & Fertiliser	15, Shivaji Marg	New Delhi	India
Sudarshan Chemical Industries	162 Wellesley Road		PUNE	INDIA

Tata Consulting Engineers Thermax	Tata Press Bldg, 414, Veer 4 Bombay Pune Road	Savarkar Marg, Prabhadevi, Shivajinagar	Bombay Pune	India India
United Phosporus Limited	167, Readymoney Terrace	Dr. A.B. Road, Worli	Bombay	India
Vam Organic Chemicals Ltd.	Amba Deep, 20th Floor	14, Kasturba Ganhi Marg	New Delhi	INDIA
Varun Enterprises		Surya Kiran, 19, Kasturba	Gandhi Marg, New Delhi	India
Vikram Projects Ltd	2C/462, Senapati Bapat Marg	2nd Floor, Phoenix Mills Comp.	Lower Parel, Bombay	India
Vimta Labs Limited	Plot No. 142, IDA, Phase II	Cherlapally	Rangareddy Dt. Hyderabad	INDIA
Voltas Limited	Maneckji Wadia Bldg, 127,	Mahatma Gandhi Rd, PO BOX 900	Bombay	INDIA
Yokogawa Blue Star Ltd.	40/4 Lavelle Road		Bangalore	India

Total selected = 47

Filter in use: TES, Contacts for TEST

List ID: TES U.S. Contacts for TEST

	3095 Serpa Drive		San Jose	CA95148	USA
Walker Process Corp.	840 North Russell Avenue		Aurora	IL60506	USA
ADS Environmental Services	5025 Bradford Ave.		Huntsville	AL35805	USA
AERCOR	76 Webster Street		Worcester	MA01603-1911	USA
AERInc	6612 Denny Place		McLean	VA22101	USA
AGAR Corporation	PO Box 802127		Houston	TX77280	USA
AME International Inc.	87775 Cloudleap Court	Suite 227	Columbia	MD21045	USA
ANDCO Environmental Processes	595 Commerce Drive		Buffalo	NY14228-2880	USA
ANGI	814 Washington Street		Cape May	NJ08204	USA
AWT (Air & Water Tech.)	1001 Bishop St.	Suite 500	Honolulu	HI96813	USA
Ab.sorb, Inc.	14525 Highway 7	Suite 145	Minnnetonka	MN55345	USA
Acurex Environmental	PO Box 13109		Research Triangel Park	NC13109	USA
Advanced Environmental System	P.O. Box 2019		Kihei, Maui	HA96753	USA
Advanced Fuel Development Tech	9504 Golden Hills Circle		Austin	TX78759	USA
Airborne Environmental Surveys	3130 Skyway Drive	Suite 108	Santa Maria	CA93455	USA
Alfa Laval Separation-Sharples	955 Mearns Road		Warminster	PA18974-0556	USA
Allied Signal	Environmental Systems & Svcs.	PO Box 1053	Morristown	NJ07962-1053	USA
Allied Signal Inc.	PO Box 580970		Tulsa	OK74158-0970	USA
American Electric Power Service	AEPS Corp	1 Riverside Plaza	Columbus	OH43215	USA
American Schack	207 Pine Creek Road		Wexford	PA15090	USA
Andritz-Ruthner, Inc.	1010 Commercial Blvd So.		Arlington	TX76017	USA
Anti Pollution Inc.	PO Box 885		Morgan City	LA70381-0885	USA
Aztec Machinery Company	960 Jacksonville Road		Ivyland	PA18974	USA
BW/IP International, Inc.	200 Oceangate Blvd, Suite 900		Long Beach	CA90802	USA
Barrett Consulting	3000 Alpine Road		Menlo Park	CA94028	USA
Bayou Ash	P.O. Box 66377		Baton Rouge	LA70896	USA
Beltran Associates, Inc.		1133-T E. 35th Street	Brooklyn	NY11210	USA
BioSafe	Fresh Pond Square	10 Fawcett Street	Cambridge	MA02038	USA
Bioremediation Service, Inc.	P.O. Box 2010		Lake Oswego	OR97035-0012	USA
Biotech Environmental	2 Penn Plaza		New York	NY10031-0034	USA
Bird Machine Company	100 Neponset Street		South Walpole	MA02071-1037	USA
Black & Veatch	5540 Centerview Drive	Suite 114	Raleigh	NC27606	USA
Brentwood Industries, Inc.	P.O. Box 605		Reading	PA19603	USA
Brownwell Electro Inc.	260 North Route 303	PO Box 550	Congers	NY10920-0550	USA
Burlington Environmental	1011 Western Avenue	Suite 700	Seattle	WA98104	USA
Burner & Energy Systems (BESI)	901 Via Rodeo	Building No. 22	Placentia	CA92670	USA
CAC International, Inc.	1420 N 135th Place		Seattle	WA98133	USA
CERA	P.O. Box 8372		Grand Forks	ND58202-8372	USA

CIESIN	1825 K Street, NW		Washington	DC20006	USA
Cadence Environmental Energy	Cadence Park Plaza		Michigan City	IN46360	USA
Calgon Carbon Corporation	PO Box 717		Pittsburgh	PA15230-0717	USA
Camet Products	Washington Research Center	7379 Group 32	Columbia	MD21044-4098	USA
Carnot	15991 Red Hill Ave	Suite 110	Tustin	CA92680	USA
Carylon Corporation	The Environmental Protection	2500 West Arlington Street	Chicago	IL60612-4108	USA
Castleton Beverage Corporation	PO Box 26368		Jacksonville	FL32226-6368	USA
Castone Int'l Ltd.	1355 W. Brierbrook Road		Memphis	TN38138	USA
Catalyst International Corp.	520 Pike Street	Suite 2110	Seattle	WA98101-4001	USA
Catalytic Combustion Corp	P.O. Box 66		Bloomer	WI54724	USA
Center for By-Products Utiliz	University of Wisconsin-Milwau		Milwaukee	WI53201	USA
Clean Air Engineering	500 W. Wood Street		Palatine	IL60067	USA
Clean Fuels	1065 12th Avenue	Suite E-1	Issquah	WA98027	USA
Coastal Climate Company	316 Second Avenue South		Seattle	WA98104	USA
Colorado State University	NCVECS	Indust'l Sci. Bldg., Rm. 200A	Fort Collins	CO80523	USA

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Columbia Analytical Services	1317 South 13th Avenue	PO Box 479	Kelso	WA98626	USA
Comprehensive Environ Services	1601 Dove Street	Suite 160	Newport Beach	CA92660	USA
Conversion Systems, Inc.	200 Welsh Road		Horsham	PA19044	USA
Custom Biologicals Inc.	4431 North Dixie Hwy.		Boca Raton	FL33431	USA
DURCO Engineered Systems Group	9542 Hardpan Road		Angola	NY14006	USA
Davis Water & Waste Industries	1828 Metcalf Avenue		Thomasville	GA31792	USA
Davy International	1 Oliver Plaza		Pittsburgh	PA15222	USA
Detroit Stoker Company	1510 E. First Street		Monroe	MI48161	USA
Donaldson Company, Inc.	P.O. Box 1299		Minneapolis	MN55440	USA
Dorr Oliver Inc.	612 Wheeler, s Farm Road	PO Box 3819	Milford	CT06460	USA
Drew Products	1717 Fourth Street		Berkley	CA94710-1783	USA
Dupont De Nemours Inc.	Glaslow Site	Route 816	Newark	DE19711	USA
Dust Free, Inc.	Pro-1 Intl Trading	1847 S.E. Port St. Lucie Blvd	Port St. Lucie	FL34952	USA
Dynaphore, Inc.	2709 Willard Road		Richmond	VA23294	USA
EA: Engineering, Science and Tl	11019 McCormick Road		Hunt Valley	Md21031	USA
EER: Energy & Envir. Research	1345 N. Main Street	PO Box 153	Orville	OH44667	USA
EIC/Econergy	The Barr Building	910 17th Street, N.W., # 200	Washington	DC20006	USA
EIMCO	PO Box 300	669 West Second South	Salt Lake City	UT84110-0300	USA
EOSAT	33 Wood Avenue S., Suite 600		Iselin	NJ08830	USA
EPA	401 M Street, S.W. (H-8105)		Washington	DC20460	USA
ERI (Enviro. Remediation, Inc.)	P.O. Box 45212-210		Baton Rouge	LA70895	USA
ERIM	P.O. Box 134001		Ann Arbor	MI48113-4001	USA
ETUS Inc. -Environ. Technology	1511 Kastner Place		Sanford	FL32771	USA
Earth Resource Mapping	Suite 900	4370 LaJolla Village Drive	San Diego	CA92122	USA
Eclipse Systems	12 Cork Hill Road		Franklin	NJ07416	USA
Ecological Systems, Inc	1125 Brookside Avenue	Suite d	Indianapolis	IN46202	USA
Ecology and Environment, Inc.	1700 North Moore Street	Suite 1610	Arlington	VA22209	USA
Emtrol	1440 Veterans Memorial Hwy		Hauppauge	NY11788	USA
Enders Process Equipment Corp	PO Box 308		Glen Ellyn	IL60137	USA
Energion Company (The)	P.O. Box 1352		Laramie	WY82070	USA
Energy Conversion Devices	1675 West Maple Road		Troy	MI48084	USA
Energy Systems Associates			Fairfax	VA	USA
Envirex Ltd.	PO Box 1624		Waukesha	WI53187-1624	USA
Environmental Communications	National Wildlife Building	1400 16th st	Washington	DC20036	USA
Environmental Concerns	6150 Northeast 192nd		Seattle	WA98155	USA
Environmental Data Systems	655 Broadway	Suite 825	Denver	CO80203	USA
Environmental Services Ltd.	4201 Tudor Centre Drive	Suite 307	Anchorage	AK99508	USA
Environmental Technologies Grp	1400 Taylor Avenue	PO Box 9840	Baltimore	MD21284-9840	USA

Extra Engineer, Inc.	Environmental Services	638-D West Rhapsody	San Antonio	TX78216	USA
Ferro-Tech	467 Eureka Road		Wyandotte	MI48192	USA
Flo Trend Systems, Inc.	707 Lehman		Houston	TX77018	USA
Florida Department of Commerce	107 West Gaines Street,	Collins Building	Tallahassee	FL32399-2000	USA
Fluid Power Industries	555 Madison Avenue	Suite 2900	New York	NY10022	USA
Foss Environmental	7440 West Marginal Way South		Seattle	Wa98108-4141	USA
Foster Wheeler	Perryville Corporate Park		Clinton	NJ08809-4000	USA
Frisby Group	1031 Chuck Dawley Blvd.	Suite 7	Mt. Pleasant	SC29464	USA
GEC- Global Environ. Consult	175 Strafford Avenue	Suite 1	Wayne	PA19087	USA
GEO-CENTERS, Inc.	7 Wells Avenue		Newton Center	MA02159	USA
GSF Energy Inc.	7201 Hamilton Blvd		Allentown	PA18195-1501	USA
Gelman Sciences	600 S. Wagner Road		Ann Arbor	MI48106	USA
Gelman Sciences	600 South Wagner Road		Ann Arbor	MI48106	USA
Genesis Energy Systems, Inc.	12304 Santa Monica, Suite 300		Los Angeles	Ca90025	USA
Gov't of Gujarat, Indust. Comm	Block 1, Udyag Bhavan, GH 4	Sector 11	Gandhinagar	382 011	USA
Green Bay Packaging	PO Box 19017		Green Bay	WI54307	USA

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Groundwater Technology, Inc.	100 River Ridge Drive		Norwood	MA02062	USA
HBTI	Vencon				USA
HNU Systems Inc.	160 Charlemont St.		Newton	MA02161-9987	USA
HPD Incorporated	HPD Place	55 Shuman Blvd.	Naperville	IL60563	USA
Hach Company	P.O. Box 389		Loveland	CO80539-0389	USA
Harding Lawson Associates-CTA	4763 South Conway Road		Orlando	FL32812	USA
Hi-Tech Group Inc.	215 Renaldo Drive		St. Louis	MO63017	USA
Hiller Group Inc.	5321 Memorial Hwy		Tampa	FL33634	USA
Horiba Instruments Inc.	17671 Armstrong Ave.		Irvine	CA92714	USA
Humbolt Decanter Inc.	3200 Pointe Parkway		Worcross	GA30092	USA
Hydranautics	8444 Miralani Drive		San Diego	CA92126	USA
ICF Kaiser Engineers	4, Gateway Center		Pittsburgh	PA15222-1207	USA
IFC	1850 "Eye" St., NW		Washington	DC20433	USA
ISCO	Environmental Division	531 Westgate Blvd	Lincoln	NB68528-1586	USA
Industrial Ecosystems	#80 Eureka Square, suite 128		Pacifica	CA94044	USA
Innerasia Consulting Group	2627 Lombard Street		San Francisco	CA94123	USA
International Connection	7006 Outlook Avenue		Oakland	CA94605	USA
International Imaging Systems	1500 Buckeye Drive		Milpitas	CA95035-7484	USA
International Imaging, Inc.	1500 Buckeye Drive		Milipitas	CA95035	USA
International Technology Corp	312 Directors Drive		Knoxville	TN37923	USA
International Technology Corp	312 Directors Drive		Knoxville	TN37923	USA
Ionics	65 Grove Street		Watertown	MA02172	USA
John Zink Company	PO Box 21220	1190-T E. Apache	Tulsa	OK74121-1220	USA
Johnson Matthey	460 Swedesford Road		Wayne	PA19807-1880	USA
Joy Environmental Technologies	Tower Park North, 10700 N.	Freeway	Houston	TX77037	USA
K3 Corp.	10115 Walker Lake Drive		Great Falls	VA22066	USA
KDP Group International	39 Andreas Court		Novato	CA94948	USA
Kinetic Recovery Corporation	7517 Washington Ave. South		Edina	MN55435	USA
Kinetico Engineered Systems	10845 Kinsman Road		Newbury	OH44065	USA
Koch Membrane Systems Inc.	850 Main Street		Wilmington	MA01887-3388	USA
Koch Membrane Sytems	850 Main Street		Wilmington	MA01887	USA
Komline-Sanderson	12 Holland Avenue		Peapack	NJ07977-0257	USA
Krupp Wilputte	1370 Washington Pike		Ridgeville	PA15017	USA
LICON Inc.	200 East Government Street	Suite 130	Pensacola	FL32501	USA
LSR Technologies, Inc.	898 Main Street		Acton	MA01720	USA
LV PETRO	Contact: Stacey Standley	Innerasia Consulting Group	San Francisco	CA94123	USA
Lamar University	Department of Chemical Engin.	P.O. Box 10053	Beaumont	Tx77710	USA
Lamson Corporation	1 Lamson Street	PO Box 4857	Syracuse	NY13221	USA

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Law Engineering & Environ. Srv	114 Townpark Drive	Suite 295	Kennesaw	GA30144	USA
Lean Power Corp.	8700 Georgia Avenue		Silver Spring	MD20910	USA
Lemna Corporation	1408 Northland Drive	Suite 310	St. Paul	MN55120	USA
Lemna Mid-Atlantic	6717 Mechanicsville Turnpike	Suite 201	Mechanicsville	VA23111	USA
Lifesource Internat'l Ltd.	80 Ayrault Street		Newport	RI02840	USA
MCTTC	Texas Engineering Extension	Service, Texas A&M Univ. Sys.	College Station	TX77843-8000	USA
MIDAC Corporation	17911 Fitch Avenue		Irvine	CA92714	USA
MTC Modern Technologies	4032 Linden Avenue		Dayton	OH45432	USA
MTI-Mechanical Technology, Inc	968 Albany-Shaker Road		Latham	NY12110	USA
Martin Marietta Energy Syst.	P.O. Box 2009		Oak Ridge,	TN37831-8242	USA
Maryland, International Div.	401 E. Pratt Street	World Trade Center, 7th Fl.	Baltimore,	MD21202	USA
McIlvaine Company (The)	2970 Maria Avenue		Northbrook	IL60062	USA
Membran Corporation	Hennepin Business Center	1037 10th Ave. SE	Minneapolis	Mn55414	USA
Memtek Corporation	28 Cook Street		Billerica	MA01821	USA
Morrison & Kibbey Ltd.	800 Third Avenue, Suite 2300		New York	NY10022	USA
Morrison Knudsen Corp	CF Systems	3D Gill Street	Woburn	MA01801	USA

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NATEC Resources Inc	Environmental Systems Div	1177 West Loop South	Houston	TX77256-6571USA
Nao Inc	1284 East Sedgley Avenue		Philadelphia	PA19134 USA
Netzsch Incorporated	119 Pickering Way		Exton	PA19341-1393USA
New England Fertilizer	Fore River Staging Area	97 East Howard Street	Quincy	MA02169 USA
Northwest EnviroService Inc.	1700 Airport Way South	P.O. Box 24443	Seattle	Wa98134 Usa
NuKem Development	3000 Richmond Avenue		Houston	TX77098 USA
OHM Corporation	16666 Northchase	Suite 100	Houston	TX77060 USA
ORS Environmental Equipment	32 Mill Street		Greenville	NH03048 USA
Oil Skimmers, Inc.	Post Office Box 33092	12800 York Road	Cleveland	OH44133 USA
Orbital Sciences Corporation	21700 Atlantic Boulevard		Dulles	VA20166 USA
Oregon Envir. Technical Assn	P.O. Box 10763		Eugene	OR97440 USA
Osmonics Inc.	5951 Clearwater Drive		Minnetonka	MN55343 USA
PDM Pitt-Des Moines Inc.	3400 Grand Avenue		Pittsburgh	PA15225 USA
PESCO Pragmatic Env. Sol. Cntrl	1866 Technical Street, SE	Roanoke Industrial Center	Roanoke	VA24013 USA
PMI - Power Marketing Intl	23902 Swan Street		Moreno Valley	CA92557 USA
PVS Chemicals	10900 Harper Avenu		Detroit	MI48213 USA
Pacific Rim Institute	10900 N.E. 8th Street	Suite 900	Bellevue	WA98004 USA
Panametrics	P.O. Box 35001		Richmond	VA23235 USA
Panametrics, Inc.	221 Crescent Street		Waltham	MA02154 USA
Parkson Corporation	2727 Northwest 62nd Street	P.O. Box 408399	Fort Lauderdale	FL33340-8399USA
Parsons	6120 South Gilmore Road		Fairfield	OH45014 USA
Pentek	1026 Fourth Avenue		Coraopolis	PA15108 USA
Pollution Control Exports USA	612 Main Street	PO Box 793	Somers	CT06071 USA
Pollution Control Exports USA	612 Main St., P.O. Box 793		Somers	CT06071 USA
Polybac Corporation	Courtney Place	3894 Courtney Street	Bethlehem	PA18017-8999USA
Praxis Engineers, Inc.	852 North Hillview Drive		Milpitas	CA95035 USA
ProgressMaterial, Inc.	One Progress Plaza	P.O. Box 15208	St. Petersburg	FL33733 USA
Prudential Relocation Managmnt	1300 Parkwood Circle	Suite 200	Atlanta	GA30339 USA
Pruett-Schaffer Chemical Co.	PO Box 4350		Pittsburgh	PA15204 USA
Purity Control, Inc.	360 Knickerbocker Avenue		Bohemia	NY17716 USA
Quality Industries, Inc.	P.O. Box 406, 1920 Canal Blvd.		Thibodaux	LA70302 USA
RC Systems	2513 Hwy. 646		Santa Fe	TX77510 USA
RETEC	Damonmill Square	9 Pond Lane	Concord	MA01742 USA
RNA	202 State Street, Suite 303		Madison	WI53703 USA
RST Systems, Inc.	508 West Main Street	P.O. Boc 100	Larose	LA70373 USA
Radian Corporation	PO Box 201088		Austin	TX78720-1088USA
Radian Corporation	PO Box 201088		Austin	TX78720-1088USA
Radian Corporation	2455 Horsepen Road	Suite 250	Herndon,	VA22071 USA

Recon Systems, Inc.	5 Johnson Drive	Box 130	Raritan,	NJ08869-0130USA
Research Cottrell	PO Box 1500		Somerville	NJ08876 USA
Research Triangle Institute	P.O. Box 12194		Research Triangle Park	NC27709-2194USA
Riordan Materials Corp.	PO Box 3404		Crofton	MD21114 USA
Roediger Pittsburg Inc.	3812 Rt. 8		Allison Park	PA15101 USA
Ronald T. Dodge Company	55 Westpark Road	PO Box 630	Dayton	OH45459 USA
Roy F. Weston	21 Avignon Drive		Newark	DE19702 USA
Rubber Research Elastomerics	4500 Main Street NE		Minneapolis	MN55421 USA
S&N Trading Co.	37192 O'Neill Drive		Solon	OH44139 USA
SAIC	4031 Col. Glenn Hwy	Suite 300	Beaver Creek	OH45431 USA
SAIC	11251 Roger Bacon Drive		Reston	VA22090 USA
SRC: Synergic Resources Corp.	111 Presidential Blvd.		Bala Cynwyd	PA19004-1008USA
SRI International	1611 N. Kent Street		Arlington	VA22209 USA
Sanborn	25 Commercial Drive		Wrentham	MA02093 USA
Scott Environmental	PO Box 369		Plumsteadville	PA18949 USA
Sellers Engineering Co.	Po Box 48		Danville	KY40422 USA

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Filter in use: TES, Contacts for TEST

List ID: TES U.S. Contacts for TEST

Servomex Company Inc.	90 Kerry Place	Norwood	MA02062	USA
Simonds Manufacturing Corp.	See Florida Dept of Commerce	Aburndale	FL33823	USA
Sloan Equipment & Sales Co.Inc	10822 Meadowlea Road	Owingsmill	MD21117	USA
Small Flows Clearinghouse	West Virginia University	Morgantown	WV26506-6064	USA
Smith & Loveless	14040 Santa Fe Trail Drive	Lenexa	KS66215-1284	USA
Soil Technologies	7865 N.E. Day Road West	Bainbridge Island	WA98110	USA
Sonic Environmental Systems	141 New Road	Parsippany	NJ07054	USA
Southern Research Institute	2000 9th Avenue South	Birmingham	AL35255	USA
Spokane Industries	Spokane Industrial Park	Spokane	WA99220	USA
Standard Chartered Bank	160 Water Street	New York	NY10038-4995	USA
Stephens & Associates	P.O. Box 414	Kiowa	CO80117	USA
Stewart & Stevenson Services	5840 Dahlia Street	Commerce City	CO80022	USA
Stone Container	1979 Lakeside Parkway	Tucker	GA30084	USA
Stranco Inc,	P.O. Box 389	Bradley ,	IL60915-9907	USA
Struthers Corporation	3 Gateway Center	Pittsburg	PA15222	USA
Sun Coal Jewel	PO Box 10388	Knoxville	TA	USA
Sun Microsystems, Inc.	MS MPK1-16	Mountain View	CA94043	USA
SwiftShips, Inc.	Box 1908	Morgan City	LA70381	USA
Tensa Services, Inc.	6200 Savoy Drive, Suite 540	Houston	TX77036	USA
Tetra Technologies	25025 I-45 North	Woodlands	TX77380	USA
Texcon Environmental, Inc.	817 Spruce Avenue	West Chester	PA19382	USA
ThermAll Inc.	PO Box 1776	Peapack	NJ07977	USA
Thermo Environmental Instr.	8 West Forge Pkwy	Franklin	MA02038	USA
Thermo Process Systems	12068 Market Street	Livonia	MA48150	USA
ThermoChem, Inc.	5570 Sterrett Place	Columbia	MD21044	USA
Toma International		Santa Cruz	CA95061-0523	USA
Trinity Consultants, Inc.	12801 N. Central Expwy.	Dallas,	TX75243	USA
U.S. Biotech, Inc.	100 Hollister Road	Teterboro	NJ07608	USA
U.S. Filter Corporation	73-710 Fred Waring Drive	Palm Desert	CA92260	USA
U.S. Filters Corporation	181 Thorn Hill Road	Warrendale	PA15086	USA
Umpqua Research Company	PO Box 791	Myrtle Creek	OR97457	USA
United Emission Catalyst	110 Catalyst Drive	Canton	NC28716	USA
United Emission Catalyst	110 Catalyst Drive	Canton	NC28716	USA
University of Berkeley	Energy & Environment Division Berkeley Lab, Univ. of CA	Berkeley	CA94720	USA
Urea Technologies, Inc.	Two University Plaza	Hackensack	NJ07601	USA
Utility Service Assoc., Inc.	4955 Foothill Road	Bigfork	MT59911	USA
Vencon Management, Inc.	301 West 53rd Street	New York	NY10019	USA
Village Marine Tec.	2000 West 135th Street	Gardena	CA90249	USA

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WEIC	World Energy & Infrastructure	35546 Biscay Place	Newark	CA94560	USA
WESTEX International, Inc.	1717 K Street N.W.		Washington	DC20006	USA
WISE	223 Wilmington-Westchester	PikSuite 223	Chadds Ford	PA19317	USA
Wahlco Environmental Systems	3500 W. Segerstrom Avenue		Santa Ana	CA92704	USA
Walters Cincinnati Technical Services		3270 Profit Drive	Fairfield	OH45014	USA
Water Protection, Inc		7962 N.W. 66th Street	Miami	FL33166	USA
Waterman Asia	2084 E. Southern Ave. G-101		Tempe	AZ85282	USA
Westech Engineering Inc.	3605 South West Temple	PO Box 65068	Salt Lake City	UT84115	USA
Wheelabrator	441 Smithfield Street		Pittsburgh	PA15222	USA
Yankee Manufacturing Inc.	625 South Alaska Street	Suite C	Seattle	WA98108	USA
Zimpro	301 West Military Road		Rothschild	WI54474	USA

Total selected = 264