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CLEAN COAL TECHNOLOGY EVALUATION

**United States of America
April 30 - May 10, 1994**

Prepared for:

US - ASIA ENVIRONMENTAL PARTNERSHIP



WORLD ENVIRONMENT CENTER

DISCLAIMER

This project was sponsored by the U.S. Agency for International Development (USAID) through the World Environment Center's (WEC) Cooperative Agreement in support of the U.S.-Asia Environmental Partnership (US-AEP). The opinions expressed herein are the professional opinions of the author and do not represent the official position of the Government of the United States of America or the World Environment Center.

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I. EXECUTIVE SUMMARY

From April 30 to May 10, 1994 an Environmental Business Exchange (EBE) brought five Indian participants to the United States. The participants, all involved in the energy sector in India, were attendants of the Coal Preparation Conference in Lexington, Kentucky. After the conference, the members of the exchange traveled to Pittsburgh, Pennsylvania to observe a coal preparation plant in operation. The conclusion of the exchange brought the participants to Washington, DC, where they participated in a meeting with representatives of various organizations engaged in the areas of environmental technology and the financing and administration of those technologies. Participants also met with representatives of the U.S. Department of Energy.

The purpose of this EBE was to expose participants to available coal preparation technology, its applications, and the benefits derived from its use. Central to the purpose of this exchange was to identify possible areas for joint ventures and future cooperation.

Funding for this project was provided through a Cooperative Agreement between the World Environment Center (WEC) and the United States-Asia Environmental Partnership (US-AEP).

II. INTRODUCTION

Representatives of India energy sector traveled to the United States to participate in an Environmental Business Exchange (EBE). The group included: Mr. B.C. Misra, Chairman and Managing Director of CMPDI, Coal India in Ranchi; Mr. M. Rajagopal also of CMPDI, Coal India in Ranchi; Mr. K.S. Rao, Indo Gulf Fertilizers and Chemical Corporation, in Sultanpur; and Mr. M.W. Goklany of Indian Power Partners in New Delhi. The participants were representatives of the Deputy Director of the Office of Environment, Energy and Expertise.

Participants, attended the Coal Preparation Conference in Lexington, Kentucky, observed coal preparation plants in Pittsburgh, Pennsylvania, and met with Department of Energy - Fossil Fuel Division representatives in Washington, DC.

The objective of the exchange was to expose the Indian participants to the latest available technology in coal preparation and its possible application in India. There was a great opportunity to witness the workings of this type of technology first-hand, as well as interact with several organizations and individuals associated with the Coal Preparation and Allied Industries. A cursory objective of this exchange was to identify possible partners for future cooperation and joint ventures in India. Attendance at the Coal Preparation Conference in Kentucky offered a general exposure, not only to available technology, but also the firms involved in the marketing and developing of such technologies. This exposure was important in the development of contacts for future dialogue on the issue of coal preparation technology.

III. MEETINGS AND FINDINGS

Participants had a number of opportunities to be exposed to the latest coal preparation technology as well as discuss possibilities for future cooperation with representatives of coal technology companies.

A. Coal Preparation Conference, Lexington, KY (May 3-5, 1994)

The participants were able to attend the various technical presentations. Among the most important topics discussed were the needs and demands of appropriate technology for application in coal washing and the development of appropriate technology to further arrest the sulfur-dioxide and nitrous oxide levels which pose threats to the immediate environment. Other discussions included: coal handling and storage; research and development activities related to the cleaning process; transportation and dewatering methods; and coal cleaning.

It was concluded that washed coal would improve the performance of power stations, especially with respect to the availability of boilers. In this regard the participants were presented with a valuable research paper (Research Paper CS 5713) "Reducing Electricity Generation Costs by Improving Coal Quality."

The exhibition at the conference offered an overview of the available American technology for coal beneficiation and allied areas. This exhibition also helped to establish one to one contact and an exchange of views in the areas of future collaboration, representation, and the possibilities of joint venture in India.

Discussions of future cooperation/joint ventures were held with the following:

1. Roberts & Schaefer Company
120 South Riverside Plaza
Chicago, IL 60606
- project engineering, contracting and consultancy
2. CLI Corporation
430 Park West One
Pittsburgh, PA 15275
- project engineering group
3. Precision Samplers, Inc.
147 Eleventh Avenue, Suite 200
South Charleston, WV 25303
- perform coal sampling

4. Tabor Machine Company
P.O. Box 3037, Bluewell Station
Route 52
North Bluefield, WV 24701
- manufacture vibrating screens
5. Phoenix Scale Technologies
200A Smiley Drive
St. Albans, WV 25177
- manufacture conveyor belt sales
6. Dust Control, Inc.
P.O. Box 4336
Gillette, WY 82717-4336
- dust control
7. John B. Long Company
P.O. Box 50608
Knoxville, TN 37950-0608
- coal sampling
8. Eimco Process Equipment Company
P.O. Box 300
Salt Lake City, UT 84110
- filtration systems

B. CLI Corporation, Pittsburgh, PA (May 5, 1994)

Contact: Mr. David G. Chedgy, President, CLI Corporation

The participants visited the CLI project office and discussed the design and process of coal preparation. Project implementation methodology also was discussed. CLI has set up a number of coal washeries and is presently involved in modernization of its facilities. They currently have two overseas plants, in Turkey and Indonesia. The participants met with the plant superintendent to ask questions about the related areas of operation and maintenance of the plant.

Mr. Chedgy, the president of the corporation expressed his interest in doing business in India. As someone who has prior experience in the country, Mr. Chedgy expressed a willingness on behalf of CLI to create a business venture relating to the set up of coal washeries in India. CLI would be willing to offer both financial and engineering expertise.

C. Key Stone Coal Preparation Plant, Pittsburgh, PA (May 6, 1994)

Contact: Mr. J.C. Knight, Manager of Preparation

Mr. Knight led the participants on a tour of the coal washery and pointed out the critical areas. One of the major areas of interest was on-line monitoring of both raw and prepared coal quality; i.e. ash, moisture, etc. - the data collected for the basis of commercial billing. The visit was quite useful in that the participants gained valuable exposure, not only to the type of technology that is currently in use, but also to the quality standard in the United States. It is notable that in the U.S. coal washeries are independently operated from coal users, unlike in India.

D. Offices of the U.S. Department of Energy, Washington, DC (May 9, 1994)

Contact: Mr. Kenneth Laner, Tropical Research and Development Inc.
Mr. Jack S. Siegel, Assistant Secretary for Fossil Energy, U.S.
Department of Energy

After a formal introduction of the participants, Mr. Laner discussed the US-AEP Clean Coal Programme with the group. Each of the participants related their observations and interests from the exchange. Major emphasis was placed on the use of clean coal to ensure the improved performance of power stations, while also ensuring a significant reduction in air pollution.

Mr. Siegel briefly explained the U.S. Government's role vis-a-vis the interest of the government in the promotion of business ventures. He also explained the interest and the areas where business understanding may be developed, such as joint ventures, technology transfers, and upgradation of existing power stations. It was concluded that several entrepreneurs in the U.S. are optimistic on the idea of doing business in India with appropriate partners. Others who took part in this discussion were Mr. Carl T. Bell representing the Delta Group, Mr. S. Padmanaban, RC/Hagler Bailly, Inc., Dr. William C. Peters of the U.S. Department of Energy, Mr. Loren S. Rodwin of Environmental and Energy Infrastructure, Tropical Research and Development, Inc.

Further, Mr. Wayne R. Trumble, CC Pace Resources and the representative of Exim Bank and Miss R. Murrell explained the availability of financial support for undertaking joint business ventures in India. The president of ICF Kaiser International Operations Group, Mr. Douglas W. McMinn also expressed his interest in participating in future coal washery projects.

IV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. The exchange provided the necessary access to the available technology in preparation of coal for use in the utility sector in India. Coal washeries provided an important basis for the use of "cleaner" coal.
2. The participants were able to meet with a wide cross-section of representatives of the industry and exchange views and interests.
3. Numerous business proposals were discussed reflecting the positive attitude in the U.S. toward investment in India.

APPENDICES

APPENDIX A

ITINERARY

MAY 3-5, 1994

Coal Preparation Conference, Lexington, KY

MAY 5-6, 1994 - PITTSBURGH, PA

CLI Corporation

Mr. David G. Chedgy, President

Key Stone Coal Preparation Plant

Mr. J.C. Knight, Manager of Preparation

MAY 9, 1994 - WASHINGTON, DC

Meeting at the Offices of the U.S. Department of Energy

Mr. Jack S. Siegel, Assistant Secretary for Fossil Energy, U.S. Department of Energy

Others attending meeting:

Mr. Kenneth Laner, Tropical Research & Development, Inc.

Mr. Carl T. Bell, Delta Group

Mr. S. Padmanaban, RC/Hagler Bailly, Inc.

Dr. William C. Peters, U.S. Department of Energy

Mr. Loren S. Rodwin, Environmental & Energy Infrastructure, Tropical Research & Development

Mr. Wayne R. Trumble, CC Pace Resources

Miss R. Murrell, Exim Bank

APPENDIX B

BUSINESS CARDS OF PERSONS CONTACTED

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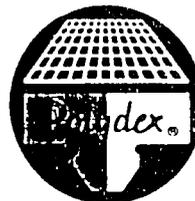
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WEC/US-AEP

Environmental Business Exchange (EBE) Trip Reports

February 22, 1995

Trip Reports as per Cooperative Agreement (CA) AEP-0015-A-00-2055-00 in Support of the U.S.-Asia Environmental Partnership

<u>EBE ID#</u>	<u>EBE DATES</u>	<u>TITLE OF TRIP REPORT</u>
INDI-1I	11/7-23/93	Oil Absorbent Demonstration
INDI-1K	12/6-29/93	Review of Incinerator Operations, Indian Thermal and Cyno Clean
INDI-2	4/23 - 5/6/94	Review of Pollution Prevention Control Technology in the Textile Industry
INDI-5	4/30 - 5/10/94	Clean Coal Technology Evaluation
INDI-1P (1&2)	5/94-8/94	Clean Technology for Paper Mills - Esvin - Parts 1&2
INDI-1R	6/18-30/94	Evaluation of Biological Formulations for Industrial Wastestreams Treatment (Premier Ziba)
INDI-1Q	6/18-7/1/94	Indian Boilers Manufacturers' Association Trade Mission
PHIL-8	9/27-10/6/94	Technical Assistance on H2S Gas Abatement Systems (PNOC)
HONG-1	10/23-11/9/94	Coleman Energy and Environmental Systems Technology Transfer
KORE-1	12/9-22/93	Fuel Gas Desulfurization Technology Assessment (KEPCO)
INDI-1L	1/17-2/23/94	Corporate Environmental Mission (IT Corporation Exchange)
INDI-4	3/11-30/94	Evaluation of CS ₂ Recovery in Rayon Mills