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June 1999

MATERIALS PRODUCTION

PROJECT UPDATE

Microwave Assisted De-Oiling Of Steel Mill Wastewater Treatment Of Sludge

Project Meeting - On May 17, 1999, a project review meeting was held in Pittsburgh, PA. The meeting was attended by representatives of U.S. Steel, Bethlehem Steel, Carnegie Mellon Research Institute, E&E Consultants, U.S. Filter/Chester Engineers and EPRI Center for Materials Production (EPRI-CMP). Following a review of the project status, the attendees agreed to proceed with the comprehensive market study (mentioned in our May edition) to accurately identify current U.S. mill sludge production rates, composition, location, treatment and handling costs. In order to obtain complete and accurate information for the market study, the committee recommended that EPRI-CMP enlist AISI support in the form of an endorsement for the sludge market study. If necessary, data will be handled in a confidential manner by the AISI to protect the steel companies reporting data.

Microwave Sludge Tests to Begin - Governor's Recovery Technology Corporation (GRTC) announced that initial testing of the process at their New Mexico location will begin within the next few weeks. They recently received the microwave applicators they have been waiting for and are planning to start testing as soon as final installation and process modifications have been completed. The sludge GRTC will use for the initial tests has been stored for an extended period of time. As a result, the steel companies agreed to supply fresh sludge for additional testing and development of final data.

Data from these tests will be analyzed by EPRI-CMP and a final report will be issued completing this phase of the project. Following successful completion of these tests, an on-site demonstration is planned at a steel mill location to be selected in the next few months.

AISI Proposal - On March 12, 1999, EPRI-CMP submitted a proposal to the AISI for additional R&D funds aimed at meeting the needs of the DOE Steel Industry Technology Roadmap. If accepted by the DOE and AISI, this proposal will provide up to \$1,600,000 in funding for further development of the Microwave Sludge technology. In-kind support from GRTC and other companies participating in this project, will be matched up to 50% by the U.S. DOE. This program will demonstrate EPRI's Microwave Sludge technology on a large scale in actual steel mill conditions.

For further information on the Microwave Sludge Project, please contact Peter N. Kroeger, Director, EPRI-CMP at 610-861-4109 or via e-mail at kroeger@etctr.com.



'Microwave Applicator and Power Supply'



CUSTOMER SERVICES

Steel Training Course

EPRI-CMP has developed a two-day steel industry training course aimed at providing utility industry managers with a sound understanding of current steel manufacturing processes and technology. The course is particularly valuable to sales and marketing personnel responsible for accounts in the steel industry. It is available for presentation "on-site" at your facilities or at the EPRI-CMP offices in Pittsburgh or Bethlehem, PA. This is a fee-based service from EPRI-CMP which may be customized to meet your specific needs.

For further information regarding the Steel Training Course, please contact Kenneth Brickner, Technical Director, EPRI-CMP at 412-351-4060 or via e-mail at brickner@tarateccorp.com.

CENTER ACTIVITIES

Retirement

Joseph E. Goodwill - After more than 14 years as its director, Joseph E. Goodwill has elected to retire from EPRI-CMP at the end of May. He joined Carnegie Mellon Research Institute (EPRI-CMP's Operating contractor) in 1984 following positions with U.S. Steel and Allegheny Ludlum. He retired from CMRI last June and joined the Taratec Corporation, (the current operator of EPRI-CMP) on July 1 and a consultant to EPRI-CMP. Please join us in wishing Joe and his wife Nancy a happy, healthy retirement.

CMP Pittsburgh Office Staff Update

Dr. Kenneth G. Brickner, Technical Director
412-351-4060 or brickner@tarateccorp.com

Ms. Donna Hunter, Administrative Assistant
412-351-4060 or hunter@tarateccorp.com

UPCOMING MEETINGS

The EPRI-CMP Advisory Council Meeting will be held in conjunction with the EPRI Center for Materials Fabrication (CMF) Meeting in Philadelphia in the fall. This change in date and location was made to accommodate a number of requests we have had from Council members to hold the meetings back to back at least once a year. The dates for the Fall meetings are CMF: October 25 and 26, and EPRI-CMP: October 27 and 28, 1999. They will be held in Philadelphia, PA. More information will follow as the meeting dates get closer.

MUNICIPAL WATER & WASTEWATER

PROJECT UPDATE

AEP Sponsors Pulsed UV Research at Two Wastewater Plants

Pulsed UV has proven effective at disinfection of potable water supplies. With the success of that research, American Electric Power and the MWW Program are conducting an assessment of the technology in wastewater treatment. The study, to be conducted at plants of two of AEP's customers, is now underway and will assess the effectiveness of pulsed UV for disinfecting municipal wastewater. The goal of the research is to compute dose-response curves for pulsed UV on fecal coliform and total coliform and collect information on related water quality parameters, such as suspended solids and organic loading. The dose response curves will be used to compare the technology to more conventional UV systems. The information from this study will also be incorporated into the UV optimization project recently launched by the MWW Program. For more information on this project, please contact Ray Ehrhard of the EPRI Community Environmental Center through the EPRI CAC.

UPCOMING MEETING

MWW Program to Cosponsor International Ozone Association's 14th World Congress

The International Ozone Association (IOA) will hold the 14th Ozone World Congress August 22 to 26, 1999 in Dearborn, Michigan. Given the long and fruitful relationship between the EPRI MWW Program and the IOA, the MWW Program will cosponsor all technical sessions on Wednesday, August 25. Technical papers at the conference will cover a wide range of topics, including ozone applications in water and wastewater treatment, pulp and paper, odor control, advanced oxidation processes, and food and agriculture. In addition, technical sessions on ozone generation and contacting equipment, reaction mechanisms, mass transfer, and operations will also be held. Anyone interested in the state-of-the-art of ozone technologies and applications should attend. Members of the MWW Program are eligible to register for the event by paying IOA member rates. For more information about this conference, contact John Murphy of the EPRI Community Environmental Center through the EPRI CAC.



HEALTHCARE PROJECT UPDATE

Power Quality Case Studies

There is perhaps no more compelling way to make a point than with a real world example. We did a series of case studies- using actual circumstances and current financial data- to show how particular power quality problems can be resolved.

The five case studies that are the basis of this report relate to these specific areas:

- Supplying Emergency Power During Cardiac Catheterization
- Electromagnetic Interference with Hospital Equipment Caused by Electronic Lighting
- MRI System Malfunctions Caused by Power-Line Disturbances
- Second Source of Power to Hospital Reduces Service Interruptions
- "Hospital in a Hot Spot" Seeks Additional Emergency Power

All studies are complete, the next step will be to prepare a written report.

COMMUNICATIONS PRODUCTS

Products and Services Catalog

The revisions are completed for the "Products and Services Catalog" (BR-107072-R2). We have redesigned the layout, sectioning all products and services into the following categories:

- Building Performance
- Environmental Health and Safety
- Indoor Air Quality
- Power Quality
- General Healthcare Information (items which do not fit comfortably into the above categories)

We also added a Marketing Reference Guide. This section identifies the key personnel within a hospital and rates our products and services as being of Low, Medium or High importance to them. This grid will provide a guide for utility account executives to follow when presenting various technologies to their healthcare customers.

Also listed are publications produced in other EPRI targets that relate to healthcare facilities. These are available on a transactional sales basis. To view, download or order a copy of the Products and Services Catalog, please click [here](#).

Power Prescription for Healthcare

June Issue - (NL-112790) This issue's feature story is the Power Quality Council meeting held in early May in Dallas, Texas. The council wanted to discover the "missing links or gaps" that cause power quality related problems within today's' healthcare environment. The also discussed the implications of those power quality issues, including their impact on the quality of patient care, the associated costs of administering healthcare to patients, as well as the more intangible costs or risks associated with potential malpractice or other legal liabilities. Summaries of these discussions are in the June issue of Power Prescription for Healthcare. To view, download or order a copy of the June Issue of "Power Prescription for Healthcare" please click [here](#).

AGRICULTURE

MEETING WRAP-UP

ATA/FTA Joint Spring Meeting

The Agricultural and Food Technology Alliances held their Joint Spring Meeting, May 10-12, 1999 in Ithaca, New York. NYSEG hosted the 69 attendees and provided all arrangements for the Agriculture and Food Field Trips held prior to the business sessions.

The Agriculture Field Trip began with a tour of the Cayuga Aqua Ventures, LLC facilities (an EPRI ATA sponsored project) to view an indoor tilapia fish farming demonstration. A brief stop was made at the Ithaca Municipal Waterworks to view an operational pilot research project to efficiently handle dairy animal waste. From this site, the group continued by chartered bus to one of the largest dairy farming operations in the area where they toured the dairy barn installation and spoke with the owner and manager about the complexities involved in running a large dairy farm. The tour ended at the Cornell University Controlled Environment Lettuce Facility which has been designed to produce 1,000 heads of high quality lettuce 365 days a year. The group saw lettuce production from seed to packaged product and celebrated the first full day of production.

Tilapia from Cayuga Aqua Ventures and lettuce from the Controlled Environment Lettuce Facility were provided to all attendees and guests at the NYSEG hosted informal evening reception, May 11th.

Ralph Tedesco, Senior Vice President, Customer Service Business Unit, NYSEG, welcomed the ATA and FTA attendees at the luncheon, May 11th. He spoke about NYSEG's current



position in the deregulation arena and their outlook and programs for future strategies.

During the business sessions, the ATA and FTA Subcommittees reviewed thirty-four continuing projects and evaluated three new proposals. The Subcommittees referred the new proposals to the ATA/FTA Steering Committees for final consideration. Upon completion of the voting procedure, the Steering Committees forwarded their recommendations to EPRI for funding considerations.

Special Recognition

Myron Jones - EPRI Project Leader, was recognized at the ATA/FTA Joint Spring Meeting in Ithaca, New York, for his leadership and continuing support of the Food and Agricultural Technology Alliances. Richard Peterson, Chair of the ATA Steering Committee and Anne Eisele, Chair of the FTA Steering Committee, presented a plaque to Myron and commented on his organizational skills and leadership in the operations of the Alliances.

Teresa Taylor - TVA and LaVerne Stetson, USDA were also honored by the Agricultural Technology Alliance for their long-time service to the ATA and their efforts to promote agricultural research.

Anne Eisele & James Bud Clark - The FTA recognized and presented plaques to Anne Eisele, BG&E and to James Bud Clark, Central and South West Services. Ms. Eisele and Mr. Clark were chosen for their outstanding support and contributions to the Food Technology Alliance.

FOOD

MEETING WRAP-UP

ATA/FTA Joint Spring Meeting

Sixty-nine people attended the jointly held Agricultural and Food Technology Alliances Spring Meeting in Ithaca, New York, May 10-12th. The Meeting, hosted by NYSEG, included a FTA Field Trip to the Canandaigua Winery and the Geneva Experiment Station Food Laboratory facilities, with a final stop at the new Cornell University sponsored Controlled Environment Lettuce Facility where the group viewed the entire processing facility.

The Meeting continued with Subcommittee reviews of the ongoing FTA projects and considered one new research proposal. Following the Subcommittee meetings, Dr. Norman Scott, Professor, Agricultural Engineering and former Vice President of Research, Cornell University, led a discussion on food programs in New York. Dr. Scott had earlier led a discussion with the ATA attendees on New York's agricultural programs. Later in the day, a group of twenty-five visited EPRI's Freeze Concentration Unit at the North East Dairy Center at Cornell University and reviewed the Freeze Concentration of milk products. May 12th the FTA Subcommittees convened with the ATA Subcommittees and made recommendations to the FTA and ATA Steering Committees. Steering Committee recommendations will be forwarded to EPRI.

Final actions included accepting the Northern States Power invitation to hold the Fall 1999 Joint Meeting, October 11-13, in Minneapolis, Minnesota. Bill Orendorff of Tri-State G&T extended an invitation to come to Denver, Colorado for the Spring 2000 Meeting. Anne Eisele, Baltimore Gas & Electric invited the group to Baltimore for the Fall 2000 Meeting.

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CHEMICALS, PETROLEUM AND NATURAL GAS

PROJECT UPDATE

Electrolytic Destruction/Modification of Hydrocarbons in Wastewater

This technology was uncovered by the EPRI Fiber, Apparel, Carpet and Textile Office for removal of color from wastewater. The Chemicals, Petroleum & Natural Gas Center (CPNG) recognized that it could be applied for benzene ring compounds. The following is known at this point:

1. Pollutants successfully destroyed to low PPB levels (aromatics/phenols/nitroaromatics/alcohols/ carboxylic acids/aliphatics /amines/ halogenated compounds /microorganisms).
2. Nothing added except electricity (no solids or odors).
3. Costs are dependent on conductivity/type of molecule/concentration change/extent of destruction.
4. Technology can be applied so pollutants go to CO₂ and H₂ or less toxic material (i.e. benzene to acetic acid).
5. The cost is from \$0.5 to \$2/1,000 gal for some applications.
6. Potentially usable upstream of evaporators and biotreaters, and for mixed organic/inorganic streams.
7. Successfully demonstrated on textile, food and fine chemicals effluents.
8. There is an existing 125 gpm pilot unit, and 0.25 gpm desktop unit (available for purchase or lease for proprietary self testing).

We are currently seeking interest from members, before developing a TC proposal. If you are interested, please contact Sam Woinsky at 281-419-1122.

MEETING WRAP-UP

Spring 1999 CPNG Steering Committee Meeting

The Spring 1999 Chemicals & Petroleum Electric Utility Steering Committee Meeting was held on May 26-27, 1999 in Salt Lake City, Utah. The items covered included PacifiCorp's Industrial Marketing Program, The New EPRI Organization, The CPNG Target Offering for 1999, 1999 Deliverables In Natural Gas, 1999 EPRI CAC Deliverables, CPI Wastewater Problems Solution Alliance (WPSA), The Supply Side Marketing Kit, 1999 Deliverables in Chemicals and Petroleum Energy Program, 1999 Deliverables in Chemicals and Petroleum Environmental & Process Programs, 1999 SS&T Deliverables,

Member Prioritization of Projects, EPRI 2000 Offering Industrial Customer Solutions. The Steering Committee approved the EPRI planned 1999 deliverables. For more information, contact Sam Woinsky at 281-419-1122.

Short Course Overview of the Petrochemical Industry

Prior to the Spring Chemicals and Petroleum Steering Committee Meeting in Salt Lake City, Sam Woinsky gave this course to the Committee attendees. An abbreviated version of the course is being put on EPRIweb, and you will be able to download it.

UPCOMING MEETINGS

CWRT/EPRI Water Management Workshop

A CWRT/EPRI Water Management Workshop is to be held on November 10, 1999 at Monsanto's facilities in St Louis. This Workshop which is to be held in cooperation with The Center For Waste Reduction Technologies (CWRT) will focus on water management issues, technologies and problem solutions. There will be speakers from the Government, technology developers, vendors and process industry end users of electricity. Problems and issues will be identified, current and emerging technologies will be described, successes and failures will be described, and a path forward to potential collaborative projects will be developed. For more information, or if you want to participate, contact Sam Woinsky at 281-419-1122.

Possible Change in Plans for The 1999 Fall Chemicals and Petroleum Steering Committee Meeting

The date and location of the next Chemicals & Petroleum Steering Committee Meeting may be changed from Nov. 17-18, 1999 in Houston to Nov. 11-12, 1999 in St Louis, so Chemicals & Petroleum Steering Committee Members can have the opportunity to attend the CWRT/EPRI Water Management Workshop to be held on Nov. 10. at Monsanto's facilities in St Louis. An alternate possibility would be to hold the meeting on Nov. 11-12, 1999 in Clearwater Beach, Florida, so Chemicals & Petroleum Steering Committee Members can have the opportunity to attend The 13th International Forum on Electrolysis in the Chemical Industry, which will be held in Clearwater Beach on Nov. 7th through noon on Nov. 11th. Both of these meetings are open to utility participation, and are excellent opportunities. When the final decision is made, we will inform you.



Gas/Electric Partnership Meeting Change

At the 5/21/99 planning meeting, the membership decided that the 9/23-24/99 Gas/Electric Partnership Symposium III planned for Houston should be a workshop (the place and date to be announced).

CUSTOMER SERVICES

On-Site Courses

- Petrochemical Industry Overview Course
- Petroleum Refining Overview Course

For more information on these on-site courses, contact Sam Woinsky of CPNG at 281-419-1122.

FIBER, APPAREL, CARPET AND TEXTILE

PROJECT UPDATES

Microwave Tumble Dryer

A project opportunity is available to evaluate existing gas, steam or electric tumble dryers in comparison with a more efficient microwave tumble dryer. The primary objective is to compare and document the quality and cost benefits of drying textile products with a pilot microwave tumble dryer in comparison to a conventional tumble dryer at the customer's site. The pilot microwave tumble dryer has a capacity of 10 pounds and is powered by three 1.8 kW magnetrons. During 1998 the unit was refurbished electrically and mechanically to assure safe and efficient operation in commercial, institutional and industrial environments. One in-plant demonstration has been completed and two additional trials are scheduled in 1999. Textile manufacturers and commercial and industrial cleaning or laundering facilities have an opportunity to utilize microwave technology to improve the tumble drying process. To view and print the full text of this Tailored Collaboration Opportunity, TO-111957, please click [here](#).

Contact Ed Fouche at the EPRI FACT Office for additional information at 919-515-7550 or efouche@epri.com.

PULP, PAPER AND FOREST PRODUCTS

PROJECT UPDATES

VOC Emission Control

The release of VOCs (Volatile Organic Compounds) from wood drying operations has been a persistent problem in the wood products industry. It has been determined that it is easier to alter the process of minimizing VOCs than it is to control the emissions. The principle emissions are terpenes that are secreted through the epithelium and stored in the resin canal. Wood flakes emit 2-5 kg/ton giving off more emissions for fines and less for lumber.

The IPST (Institute of Paper Science and Technology) method of reducing emissions heats water-saturated wood with microwave or radio frequency (RF) energy in a closed container. Both the drying rate and physical properties of the wood remains the same. The advantages of this method are a 70% reduction in VOCs and low energy costs. Drawbacks are the capital cost of the heating unit and additional wood handling. Implementing this new technology could provide cost advantages over regenerative thermal oxidizers (RTOs) and other competing technologies.

The mechanism works by heat generated from microwave energy and causing a temperature rise inside the wood. Internal pressure increases in the wood. Viscous fluid inside the canal heats faster than the fluid outside the canal, thus producing a temperature gradient. This heating accelerates the trapping of VOCs.

AST Whitewater Clarifier

Separation of suspended solids, such as wood fibers, inorganic fillers and other process wastes is central to the pulp and paper industry. In conjunction with the Agenda 2020 Recycling Task Group, a program is under way to develop a pilot-scale AST (acoustic separation technology) system for whitewater clarification. When ARP (acoustic radiation pressure) comes in contact with fibers suspended in water, fiber migration results. It was discovered that the migration could be manipulated in such a manner that fibers could be separated based on length. When the system is implemented, fibers move through a vertically-oriented pipe and are deflected by an acoustic wave creating two output streams: one concentrated, one clean.



Essentially, pulp thickening or dewatering is achieved. Users of this may potentially benefit from reduced operating costs, reduced energy consumption, and reduced environmental impact per unit of production.

Both of these projects represent excellent TC opportunities for utility co-funding. Contact Ernie Soczka through the EPRI CAC for further information.

MATERIALS FABRICATION

PROJECT UPDATES

Effect of IR on Curing of Powder Coatings

With all equipment in place at the University of Southern Mississippi, work has begun on the first phase of this project; that of identifying the effect of infrared (IR) on the flow and leveling of powder coatings and then judging the surface appearance of the cured powder coating with IR vs. gas convection. This first phase is expected to be concluded in June, with an initial report available in July or August.

This project will also include the study of pigmentation and other additives on the cured powdered coatings, as well as an evaluation of any relationship between different resins and the effect infrared has on flow, leveling, and cure rate of coatings made with these resins. Finally, substrate composition will be evaluated for the effect of infrared heating on different substrates. For additional information on this project, contact: Sal Lovano, CMF, 216-226-3470; slovano@tarateccorp.com.

IR/UV Traveling Demonstration Unit

The Infrared (IR)/Ultraviolet(UV) Traveling Demonstration Unit (TDU), which consists of powder coatings application and recovery equipment, conveyors, and a combination electric IR/UV curing oven, is now available for scheduling throughout the remainder of the year. CMF, in collaboration with suppliers of coating application systems, IR/UV equipment, and UV-curable powder coatings, has launched this new project to promote IR/UV curable powder coatings as a VOC compliant alternative for metal, plastic, and wood substrates. This technology allows fabricators to meet environmental standards, increase production line speeds, and reduce overall finishing costs. The TDU, which will travel to any location in North

America to demonstrate IR/UV curing technology to potential end-users, is available in one week intervals to those utilities that wish to schedule visits. For additional information please contact Sal Lovano, CMF at 216- 226-3470; slovano@tarateccorp.com.

COMMUNICATIONS PRODUCT

Industry Segment Profiles Provide Look at Industry Issues, Energy Opportunities

Industry Segment Profiles - Over the past couple of years, CMF has developed profiles of various industrial sectors by SIC code. Though somewhat similar to the Industry Brief, Industry Segment Profiles go into more detail on industry issues i.e., competition and environment, manufacturing methods and electrotechnology energy opportunities. The most recent profile is Fabricated Rubber Products, TB-113087, (SIC 302,305, & 306) and is available by contacting Eileen Mauro at CMF - by phone: 614-421-3440, fax: 614-421-3446 or email: emauro@tarateccorp.com.

CUSTOMER SERVICES

Auditing Finishing Systems Seminar

CMF funding utilities can help their customers satisfy one of the many requirements for ISO 9000 and QS 9000 certification through a new one-day CMF seminar entitled Auditing Finishing Systems. Customers can meet one of the certification requirements by conducting an equipment and process audit of their painting or finishing operation. This seminar walks your customers through the entire finishing process from beginning to end, shows them how to conduct an audit and provides them with all the materials needed to gather and record the requisite data. The Finishing System Audit Guidebook, received by each seminar attendee, shows the user how to audit all critical subsystems. Attendees are shown how to use this Guidebook to collect process data and how to use the information gathered to formulate an appropriate action plan to improve the performance of the finishing system. Even for customers who are not pursuing certification, this seminar will help them bring their finishing system back to its original design parameters, improving productivity and product quality in the process. For additional information regarding this seminar, contact Sal Lovano of CMF at 216-226-3470 or slovano@tarateccorp.com.



COMMUNICATIONS PRODUCTS

INSTRUCTIONS FOR VIEWING ALL HYPERLINKED COMMUNICATIONS PRODUCTS

The communications products listed below are available on-line. Just click your mouse on any of the products listed to access the publications on EPRIweb. Follow EPRIweb instructions for printing, ordering and downloading the products of your choice.

OI#	TITLE	DISTRIBUTION DATE
Materials Fabrication		
TR-112781	Energy Utilization in Injection Molding	Jun-99
Materials Production		
TR-112788	All Electric vs. Oxy-Fuel Glass Melting	Jun-99
Food		
NL-113173	Food Industry Currents	Jun-99
Healthcare		
BR-107072-R2	EPRI Healthcare Products and Services Catalog	Jun-99
NL-112790	Power Prescription for Healthcare	Jun-99
Municipal Water and Wastewater		
NL-113029	Water and Energy Clear Solutions - July Issue	Jun-99
TC-113030	Issues for Ozone for Drinking Water Treatment	Jun-99

PREVIOUSLY ANNOUNCED PRODUCTS NOW ON-LINE

OI#	TITLE	DISTRIBUTION DATE
Agriculture		
TA-112717	Freshwater Recirculating Aquaculture Facility: TechApplication	May-99
TB-112663	Variable Frequency Drives for Controlling Agriculture Ventilation Fans	Apr-99
TR-111495	A Demonstration of Commercially Sustainable, Land-Based Marine Finfish Aquaculture in the Northeast	Dec-98
TR-112457	The McLeod Harvest Method	Mar-99
Materials Fabrication		
TA-112685	UV Curable Coatings for Wood Meet Manufacturer's Challenges: TechApplication	May-99
TA-112686	Electric IR Booster Speeds Aluminum Aging Process: TechApplication	May-99
TR-111818	Induction Heat Treating Marketing Kit: A Sales and Marketing Support Guide	Apr-99
Materials Production		
TR-112003	Analysis of the effect of Melting Furnace Type on the Cutting Machinability of Gray Iron	Mar-99
Fiber, Apparel, Carpet and Textile		
TO-111957	Microwave Drying of Textile Products	Jan-99
Municipal Water and Wastewater		
TC-112661	Technologies for the Desalination of Brackish Water and Seawater	Apr-99
TR-112559	Joint Meter Reading -- A Collaborative Approach	May-99
Pulp, Paper and Forest Products		
TR-112598	Resource Guide for Technology Transfer to the Pulp and Paper Industry: Part 3: Power Plant Efficiency and Optimization	Apr-99

FOR ADDITIONAL INFORMATION CALL U.S. & CANADA 800-313-3774 (EXT. 4) • INTERNATIONAL 650-855-2121 (EXT. 4)



EPRI Industrial and Agricultural Technologies & Services

BUSINESS SUMMARY:

Responding to the needs of EPRI members and their customers, activities focus on being the Business Partner of our members by delivering products and services that provide competitive advantages in the marketplace:

- ▶ Supporting Customer Retention and Competitiveness
- ▶ Growing Electricity Market Share
- ▶ Offering New Business Opportunities
- ▶ Increasing Customer Value of Electricity
- ▶ Providing Customers with Energy Solutions

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1999 EPRI INDUSTRIAL CALENDAR OF EVENTS

Jun 21-22	American Society of Healthcare Engineers Conference	Philadelphia, PA
Jun 24-25	EPIC Committee Meeting	San Francisco, CA
Jun 28	Water & Energy Conference	Vancouver, CANADA
Jun 29-30	Municipal Water & Wastewater Program Meeting	Vancouver, CANADA
Aug 10-11	Board of Directors Meeting	Coronado, CA
Aug 22-26	14 th Ozone World Congress	Dearborn, MI
Aug 29-31	MWW Program/Waterworld Energy Efficiency Conference	San Diego, CA
Sep 6-10	Integrated Global Water Management Conference	Prague, Republic of CZ
Sep 13-14	Fiber, Apparel, Carpet and Textile Office Advisory Meeting	Raleigh, NC
Sep 27-28	ATA Ozone Conference II: Pre and Post Harvest Applications	Tulare, CA
Sep 30-Oct 1	Client Relations Council Meeting	Nashville, TN
Oct 4-6	1999 Gas Machinery Conference & Exhibition	Houston, TX
Oct 4-8	Retail Advisory Meeting	Vancouver, CANADA
Oct 5-6	Fall Industrial & Agricultural Business Advisory Council Meeting	Vancouver, CANADA
Oct 11-12	Pulp, Paper & Forest Products Advisory Board Meeting & Seminar	Charlotte, NC
Oct 11-13	Agriculture & Food Technology Alliances Joint Fall Meeting	Minneapolis, MN
Oct 13-14	Fall Healthcare Initiative Conference	Charleston, SC
Oct 20-21	Research Advisory Committee (RAC)	La Jolla, CA
Oct 20	Water & Energy Conference	Nashville, TN
Oct 21-22	Municipal Water & Wastewater Program Meeting	Nashville, TN
Oct 25-26	Materials Fabrication Advisory Council Meeting	Philadelphia, PA
Oct 27-28	Materials Production Advisory Council Meeting	Philadelphia, PA
Oct 28-31	Worldwide Food Expo '99	Chicago, IL
Nov ?	Chemicals & Petroleum Steering Committee Meeting	TBD
Nov 10	CWRT/EPRI Water Mngmt. Meeting: Issues, Technologies & Solutions	St. Louis, MO
Nov 7-11	International Forum on Electrolysis in the Chemical Industry	Clearwater Beach, FL
Nov 16-17	Board of Directors Meeting	San Antonio, TX
TBD	Chemicals & Petroleum Gas/Electric Workshop	TBD

Calendar items in dark blue have been revised or added since last month's Calendar of Events

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