

# SERBEP Update

JULY 1998

A Publication for  
the General  
Biomass  
Community

The Southeastern Regional Biomass Energy Program is one of five regional biomass energy programs. It is administered for the U.S. Department of Energy Office of Energy, Efficiency, and Renewable Energy Programs, by the Tennessee Valley Authority's Environmental Research Center in Muscle Shoals, Alabama. The 13-state region includes Florida, Kentucky, Mississippi, Georgia, North Carolina, South Carolina, Virginia, West Virginia, Missouri, Tennessee, Louisiana, Arkansas, Alabama, and Washington, D.C.

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## DRY VAC ENVIRONMENTAL INC. (DRY VAC)

A new filter press technology that its manufacturers claim can produce 99% solids from an initial slurry of 1% solids, and do it for substantially less energy than conventional methods, could have significant implications for various bioenergy applications. Marketed by Dry Vac Environmental, Inc. ("Dry Vac"), the technology consists of a patent pending diaphragm plate for use in conventional filter presses.

Typically filter presses dewater sludges and other materials to approximately 30-40% solid leaving a slurry or wet cake containing 60-70% water. The Dry Vac plate is designed to run hot water through the internals of the plate under pressure, causing the plate to expand and maintain a hot surface against the slurry cake. Once the cake is heated, a vacuum is applied to the chamber and the remaining water in the cake evaporates, leaving a material that is up to 99+% solid.

From the wet sludge to the finished Dry Vac cake, the weight and volume is reduced by a factor of 4 to 5 fold. Additionally, in most applications, by virtue of the moisture removal, the dried material is converted from a waste to a product having economic value.

The process is proprietary and worldwide patents are pending. The patents are expected to issue by July 1998. In California, three sub-units of the California Environmental Protection Agency—the State Water Quality Control Board, the Department of Toxic Substances Control, and the California Air Resources Board—are working to jointly certify Dry Vac technology.

One potential application for the new technology is the replacement of traditional drying beds used for municipal waste sludge. According to the manufacturers, compared to the traditional approach, the Dry Vac municipal waste solution requires only 30-40% of the capital cost and 15% of the land area. The resulting product is an EPA Class A Biosolid, which can be immediately applied as an organic fertilizer or stored for an indefinite period. Dry Vac has recently concluded a \$3.2 million installation using their technology at the municipal waste facility in Oslo, Norway.

Dry Vac is also seeking investors in their company. For additional information on the technology or the company, contact Dry Vac Environmental, Inc., at 101 North Front Street, Rio Vista, California 94571, phone (707) 374-7500.



Please let us know of others who would like to receive this update publication on a monthly basis. Also, let us know if you are currently receiving this information and wish your name removed from our mailing list.

**NREL Topical Issues Briefs**—The May/June 1998 issue of *SERBEP Update* carried a story on two NREL topical issues briefs, *Green Marketing in the Massachusetts Electric Company Retail Competition Pilot Program*, and *The New Hampshire Retail Competition Pilot Program and the Role of Green Marketing*.

These two reports are available on the web free of charge in two locations. "Green Power Network ([www.eren.doe.gov/greenpower](http://www.eren.doe.gov/greenpower))". More specifically, you can find the Massachusetts report at

<http://www.eren.doe.gov/greenpower/meco/toc.html> and the New Hampshire report at <http://www.nrel.gov/research/ceaa/ema/nhtib/index.html>. The reports are also available on the Power Marketing Association web site at <http://www.powermarket.ers.com/main.htm>.

**ANAEROBIC DIGESTION TECHNOLOGY PUBLICATION**

A 1997 report entitled *Biogas and More! Systems and Markets Overview of Anaerobic Digestion* has been prepared by the International Energy Agency (IEA) Bioenergy Anaerobic Digestion Activity, sponsored as a part of the Energy Recovery from Municipal Solid Waste Task. Published by Resource Development Associates, Washington, DC, this booklet provides an outline of the 1997 status of anaerobic digestion as the most promising method of treating the organic fraction of MSW and other wastes. It also summarizes policy issues which influence the deployment of anaerobic digestion technology, facility design concepts, the energy, economic and environmental issues relating to anaerobic digestion, and the comparison of alternative MSW treatment processes.

Around the world, pollution of the air and water from municipal, industrial, and agricultural operations continues to grow. Governments and industries are constantly on the lookout for technologies that will allow for more efficient and cost-effective waste treatment. One technology that can successfully treat the organic fraction of wastes is anaerobic digestion. When used in a fully-engineered system, anaerobic digestion not only provides pollution prevention, but also allows for sustainable energy, compost and nutrient recovery. Thus, anaerobic digestion can convert a disposal problem into a profit center. As the technology continues to mature, anaerobic digestion is becoming a key method for both waste reduction and recovery of a renewable fuel and other valuable co-products.

Worldwide, there are now more than 115 anaerobic digestion plants operating or under construction using municipal solid waste (MSW) or organic industrial waste as their principal feedstock. The total annual installed capacity is almost five million tonnes. Another 40 anaerobic digestion plants are in the planning phase with an announced total annual capacity of nearly two million tonnes. More than 50 prime technology license holders have a proven system

operating at the pilot- or full-scale level (at least 150 tonnes per year). Waste managers have found that anaerobic digestion provides environmental benefits allowing waste disposal facilities to meet increasingly stringent regulations. Controlling odor and emissions into air and soil are major drivers in their decision-making process.

The use of anaerobic digestion for treating industrial wastewaters has grown tremendously during the past decade to the point where there are now more than 1000 vendor-supplied systems in operation or under construction throughout the world. Over 30 types of industries have been identified with having wastewaters amenable for anaerobic digestion treatment, including processors of beverages, chemicals, food, meat, milk, pulp and paper, and pharmaceuticals, among others. Many of these industries use anaerobic digestion as a pretreatment step to lower sludge disposal costs, control odors, and to reduce the costs of final treatment at a municipal wastewater treatment facility.

For a copy of the publication *Biogas and More! Systems and Markets Overview of Anaerobic Digestion*, contact Phil Lusk, Resource Development Associates, 240 Ninth Street, NE, Washington, DC 20002-6110, (202) 546-6283, fax (202) 546-3518, email <[plusk@pipeline.com](mailto:plusk@pipeline.com)>.

**PAPER COMBUSTION VS. RECYCLING**

(The following information was taken from the 22 November 1997 issue of *New Scientist* magazine.)

Matthew Leach, an energy policy analyst at the Centre for Environmental Technology at Imperial College, London, along with his colleagues, set out to discover the overall environmental cost of the various waste paper management options. In a study published in November 1997 in the *International Journal of Environmental Planning and Management*, they conclude that recycling is better than Britain's favorite option, landfilling, but that it is usually worse than combustion. He says that combustion is better for the environment. His study analyzed five possible fates for waste paper:

recycling to make a similar grade of paper, recycling to make a lower grade, combustion with energy generation, composting, and landfilling with the recovery of methane to generate energy. The researchers then explored the economic and environmental gains and losses from each of these methods. These include the benefits of valuable by-products, such as the sale of electricity generated during combustion, but also the hidden environmental costs, so-called "externalities" such as carbon dioxide, methane, carbon monoxide, sulphur dioxide, nitrogen oxides and particulates. Cash values for these were then added to, or subtracted from, the costs of each method. The assumption is that the cheapest option, after the environmental externalities have been taken into account, is the best disposal route.

In Leach's analysis, studies which value externalities at a low level typically suggest that 80 percent of the waste should be recycled (the remainder, the poorest quality and most contaminated paper waste such as food wrappings, is useless for recycling and is landfilled). But when externalities are given high values, the study concludes that two-thirds of waste paper should be incinerated, with the remaining poorer grades of paper divided between composting and landfilling. The lesson is that recycling paper makes economic sense if you downplay the environmental costs. But if you care about the environment, combustion wins.

One reason for this finding is the value of energy generated by combustion. Another is that recycling uses large amounts of energy and creates pollution, especially when waste paper is transported to recycling mills. Also, the recycling process itself uses energy in the plants, in the form of heavy fuel oil and gas. The de-inking process produces a toxic sludge containing high concentrations of heavy metals, which must be placed in landfill sites.

Combustion, by contrast, generates energy. And, as with recycling plants, waste is mostly delivered to incinerators by road, but because incinerators also handle much

of the rest of domestic refuse, Leach says that they are usually sited closer to the waste source and so generate far less traffic. True, incinerators produce air pollution, but rules on incinerator emissions will effectively eliminate the impact on health of combustion. CO<sub>2</sub> is also seen as an evil by-product of combustion, but if the wood from which the paper was originally made was replaced by new trees, then those trees would suck up the same amount of carbon dioxide as is emitted when the paper is burned.

If combustion is used to generate energy, it leads to a net gain for the environment because it substitutes for the pollution caused by burning fossil fuels in conventional power stations.

Leach's findings about waste paper management are echoed in a report published last year by the London-based independent research group, the International Institute for Environment and Development (IIED). The work reviews a series of economic and environmental studies of the life cycle of paper, and concludes that "most of the available studies find that, in some circumstances, incineration [combustion] can have environmental advantages over recycling."

"Recycling is bad for the environment but good for your soul." If you have data that contradict this view or ideas about how recycling could be made greener, join the online recycling debate brewing on *New Scientist's* Web site at <http://www.new-scientist.com>

### **MATCHING INVESTORS AND ENTREPRENEURS**

The Environmental Capital Network (ECN) brings together individual companies and investors and offers services to both. ECN provides individual, professional, corporate, and institutional investors with access to early stage and expansion companies commercializing in environmental and "green" technologies, products and services. The network also assists such com-

### **NICE<sup>3</sup>**

**Solicitation—National Industrial Competitiveness through Energy, Environment, Economics (NICE<sup>3</sup>)** is a grant program sponsored by the US Dept. of Energy, and provides funding to state and industry partnerships for projects that demonstrate advances in energy efficiency and clean production technologies. Industry applicants must submit project proposals through a state energy, pollution prevention, or business development office. Awardees receive a one-time grant of up to \$400,000 for the proposed project. Grants fund up to 50% of total project cost for up to 3 years. The timeline for 1999 project is: solicitation opens June 15, 1998 and closes October 20, 1998. Evaluations by DOE, national laboratories, industrial assessment centers, DOE support offices, and a national selectoin panel completed by January 15, 1999. Awards are announced on or about February 28, 1999. For the year 2000, optional two-page abstracts will be accepted through May 14, 1999. For more information, contact the OIT Information Resource Center, Mail Stop EE-24, US DOE, 1000 Independence Ave, SW, Washington, DC 20585, (202) 586-2090, <<http://www.oit.doe.gov/Access/nice3>>.

### Inventions and Innovation

**Solicitation**—The US Department of Energy's Inventions and Innovation Program provides financial assistance at two levels—up to \$40,000 or up to \$100,000, depending on the stage of development—for establishing technical performance and conducting early development of innovative ideas and inventions. Ideas that have a significant energy savings impact and future commercial market potential are chosen for financial support through a competitive solicitation process. In addition to financial assistance, this program offers technical guidance and commercialization support to successful applicants. The timeline for FY 1999 projects is: Solicitation opens May 1, 1998 and closes July 31, 1998. Evaluation by technical staff and National Selection Panel completed October 15, 1998. Awards announcement on or about October 30, 1998. For more information, contact OIT Information Resource Center, Mail Stop EE-24, US DOE, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-2090 or <http://www.oit.doe.gov>.

panies to more efficiently and effectively raise capital.

**For Companies.** ECN is a specialized service that assists early and mid-stage companies in raising capital. ECN works with firms commercializing a wide range of industrial processes, energy, and environmental technologies, produces and services. ECN provides Capital Access and Business Development Services. ECN strives to complement companies' other fund raising efforts by providing access to a national network of individual, professional, non-profit, and governmental investors who want, specifically to finance emerging and growing environmental firms.

**For Investors.** ECN provides investors with a tool to find smart investment opportunities in the growing market of environmental businesses. They link environmental investors and companies and investors to each other to facilitate the financing of ventures that have a positive impact.

ECN publishes a monthly Investors' Bulletin featuring executive summaries of companies raising capital, and conducts Environmental Capital Forums, which serve to introduce investors to selected companies. ECN also provides investors with an Investors' Network which facilitates introductions to other registered investors, and companies with a Business Plan Review, which provides a review of materials, written comments, and a consultation.

The next forums are the Mid-America Environmental Capital Forum, tentatively to be held October 14, 1998, in the Chicago area, and the West Coast Environmental Capital Forum, in the San Francisco area, to be held in early Winter 1999.

ECN can be contacted at 416 Longshore Drive, Ann Arbor, MI 48105, (734) 996-8387, fax (734) 996-8732 or visit their web site at <http://BizServe.com/ecn>.

### GUIDEBOOK ON LANDFILL GAS EXTRACTION AND UTILISATION

Recent years have led to the general attitude that the development and application of technology should be aimed at creating a sustainable society. One of the areas of

concern is the use of raw materials and energy. A more efficient use of these natural resources will have to be achieved in order to reduce emissions and prevent the exhaustion of reserves.

The extraction and utilization of landfill gas can make its own specific contribution with respect to this policy. It offers the possibility to reduce the emissions of methane, an important greenhouse gas and also to generate useful energy that would otherwise be produced from fossil fuels.

To promote the dissemination of available know-how and experience in this area, an assembly of advices available from a number of sources is presented in *Guidebook on Landfill Gas Extraction and Utilisation*, published by the Netherlands agency for energy and the environment (Novem) in August 1997. Novem specializes in the management of energy and environmental programs for European Union governments. The most important source of information in this publication consists of the Landfill Gas Extraction Manual as it was prepared by the Dutch Landfill Gas Advisory Centre.

This guidebook was drafted with the project "dissemination of landfill gas utilisation" within the Thermie B activities of the European Union. The participating countries are Finland, Italy, Portugal, and Spain. This handbook is part of the aim to promote and improve information on landfill gas in other countries. Parallel to the drafting of this guidebook a market survey was carried out to investigate the possibilities of forming Advisory Centres in the other EU countries.

This report is divided into a General Part and a Technical Part. The general part is aimed towards parties who are interested in these developments from the policy and regulatory point of view. The technical part is designed to support those who are actually involved in the development, construction, and operation of projects.

Copies of this report may be obtained from MHP Management & Secretary Services, PO Box 127, 3950 AC MAARN, the Netherlands, +31 343 441585, fax +31 343

441936, or email [mhp@knoware.nl](mailto:mhp@knoware.nl). The price is 50,00 NLG.

### **NATIONAL BIOASH UTILIZATION CONFERENCE PROCEEDINGS**

Proceedings are now available from the National Bioash Utilization Conference, held April 1996, in Portland, Maine. The purpose of the conference was to bring together researchers, regulators, ash generators, businesses, and others involved in research and development activities related to beneficial uses of bioashes in order to share information and to develop a research agenda.

Millions of tons of boiler ashes are generated annually from the forest products and electric utility industries. Ashes derived from wood, coal, and other fuels represent a significant waste management challenge for these industries, particularly with the rising costs of landfill disposal in many regions. Boiler ash generation also creates beneficial use opportunities, since ashes have characteristics that make them suitable as soil amendments and construction materials.

This report contains papers and presentation materials from the conference which address issues related to the composition, utilization, and regulation of wood-fired and mixed fuel boiler ashes from a range of perspectives. The report is divided into sections on (1) generation, composition, and management of bioash, (2) issues in land application, (3) alternate utilization opportunities, (4) cofiring wood with coal, and (5) environmental and health risk assessment.

Copies are available free of charge from Pamela Bruns, Publications Coordinator, NCASI, PO Box 13318, Research Triangle Park, NC 27709-3318, (919) 558-1987, fax (919) 558-1998, email [pbruns@ncasi.org](mailto:pbruns@ncasi.org).

### **BIODIESEL POWERS RESTAURANT IN JAPAN**

A renewable fuel derived from vegetable oils and wastes oils and greases, biodiesel is currently used throughout Europe but has only recently been commercially available in

the United States. Pacific Biodiesel, Inc., the first Pacific Rim firm to build biodiesel refineries from the ground up to process used cooking oil, has built a plant in Nagano, Japan to convert used cooking oil into fuel. Its feedstock comes primarily from Kentucky Fried Chicken (KFC) restaurants around Nagano but other restaurants and tempura shops also are able to recycle their oil into biodiesel.

In what is thought to be a first, one of the KFC restaurants uses the biodiesel made from the used cooking oil to power the restaurant. Unlike most distributed generation power plants, the engine/generator unit is located in front of the restaurant so that it is highly visible.

The plant at Nagano is owned and operated by Yoshida & Co, owners of one of the largest chains of gasoline stations in Japan. The plant is a demonstration project for alternative fuels and conservation, and went into operation in October 1997. It disposed of waste oil during the 1998 Winter Olympics.

The Nagano biodiesel production plant is capable of making 600,000 liters/year of biodiesel from used cooking oil and has the capability of expansion to 1,200,000 liters/year. One of the unique things about the processing plant is that biodiesel is used to provide the energy for the processing. A 30 Hp, 4-cycle Kubota V1505 diesel engine powered with straight biodiesel powers pumps and other process equipment for the plant. Also somewhat unique, process heat for the processing plant is supplied by steam generated by a boiler fired with waste motor oil.

Pacific Biodiesel, a Maui, Hawaii, company that developed a small-scale plant to turn waste cooking grease into an alternative fuel for diesel engines, uses a catalytic chemical process that has been documented by many research organizations in the United States. The resulting biodegradable alternative fuel reduces tailpipe emissions, visible smoke and noxious odors, and operates well in a conventional diesel engine with no engine modifications, and can also be used in a blend with conven-

### **Woodfuel at Work Conference**

**Proceedings**—A 3-day conference with international interests on the theme of "Woodfuel at Work" was held in England October 20-22, 1997. The conference was organized by ETSU on behalf of the Department of Trade & Industry and with support from the EC ALTENER Programme. Sessions were devoted to interactive workshops on various aspects of wood use for energy. A limited number of copies are available at no charge from Dan O'Connell at [dan.oconnell@aeat.co.uk](mailto:dan.oconnell@aeat.co.uk), or for a nominal fee from SERBEP.

**1998 The World of Corn**—The National Corn Growers Association's (NCGA) *1998 The World of Corn* has just been published in a color, reader-friendly format. This publication is an annual report on America's corn crop. Contents include current acreage and harvest statistical data, usage, exports, values, research, consumption trends, and more. *The World of Corn* is available on the NCGA web site: [www.ncga.com](http://www.ncga.com)

tional diesel while still achieving substantial reductions in emissions. Because biodiesel is biodegradable, and has a significantly higher flash point, handling and storage are safer than conventional diesel fuel. The cost ranks well compared to other alternative fuels.

Because Japanese energy costs are high, biodiesel will be competitive with petroleum diesel. There are larger refineries in Japan and in the Philippines, but they produce biodiesel as a by-product of making glycerin. Pacific Biodiesel has not revealed the price of the Nagano plant, because of restrictions imposed by the buyer, but the Nagano refinery is the first in a series planned for East Asia.

For more information, contact Pacific Biodiesel, Inc., 285 Hukilike St., B-103, Kahului, HI 96732, USA, phone (808) 877-3144, fax (808) 871-5631, email [bking@biodiesel.com](mailto:bking@biodiesel.com)

#### **EPA—PROFILE OF THE FOSSIL FUEL ELECTRIC POWER GENERATION INDUSTRY**

Environmental regulatory agencies are beginning to embrace comprehensive, multi-statute solutions to facility permitting, enforcement and compliance assurance, education/outreach, research, and regulatory development issues. The central concepts driving the new policy direction are that pollutant releases to each environmental medium (i.e., air, water, and land) affect each other and that environmental strategies must actively identify and address these inter-relationships by designing policies for the "whole" facility. One way to achieve a whole facility focus is to design environmental policies for similar industrial facilities. By doing so, environmental concerns that are common to the manufacturing of similar products can be addressed in a comprehensive manner. Recognition of the need to develop the industrial "sector-based" approach within the U.S. Environmental Protection Agency (EPA) Office of Compliance led to the creation of this document.

This Sector Notebook, *Profile of the Fossil Fuel Electric Power Generation Industry*, (EPA 310-R-97-007, September 1997) is one in a series of volumes published by EPA to provide information of general interest regarding environmental issues associated with specific industrial sectors. It addresses the fossil fuel electric power generation industry, which comprises the majority of the total electric power generation industry. This subset of the industry includes only facilities that use either coal, petroleum, or gas as the energy source to generate electricity and does not include facilities that use nuclear or renewable (e.g., wood, solar) energy sources exclusively. However, this subset would include power generation activities at facilities that use both fossil fuels and another energy source. In addition, the scope of this profile is further limited to address only those facilities that generate electricity either as a primary activity or as an ancillary activity. The profile does not include facilities and activities associated with the transmission and distribution of electricity.

A listing of all available Sector Notebooks and document numbers is included at the end of this publication. Other publications of possible interest to bioenergy followers include furniture manufacturing, the textile industry, and the lumber industry. For a complete copy, contact Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 512-1800, fax (202) 512-2250. Complimentary volumes are available to certain groups or subscribers, such as public and academic libraries, Federal, state, and local governments, and the media from EPA's National Center for Environmental Publications and Information at (800) 490-9198. Electronic versions of all Sector Notebooks are available via Internet on the Enviro\$en\$e World Wide Web at <http://es.epa.gov/comply/sector/index.html> or use [www.epa.gov/oeca](http://www.epa.gov/oeca), the select the button labeled Industry and Gov't Sectors and select the appropriate sector from the menu. The Notebook will be listed.

## CALENDAR OF EVENTS

**July 8-10, 1998**

South Bend, Indiana  
*1998 Fuel Ethanol Workshop*

*International*

Kathy Bryan, Bryan & Bryan, Inc.

tel: (719) 942-4353

email: etoh85@aol.com

**July 12-14, 1998**

Nashville, Tennessee

*Southeast Hearth Products Association*

*Annual Meeting*

Ed Lenard

SEHPA

PO Box 747

Gastonia, NC 28053

tel: (888) 399-5649

fax: (704) 739-0099

**August 2-7, 1998**

Boulder, Colorado

*27th International Symposium on*  
*Combustion*

Dr. Donald R. Hardesty

Combustion Resch. Dept. MS 9052

Sandia National Laboratories

7011 East Avenue

Livermore, CA 94551-0969

tel: (510) 294-2321

fax: (510) 294-1004

email: drharde@sandia.gov

website:

<http://me-www.colorado.edu/27symp>

**August 23-27, 1998**

Boston, Massachusetts

*American Chemical Society Division of*  
*Fuel Chemistry Symposium on Fuels*  
*for the Year 2000 and Beyond*

Dr. Steven A. Benson

Univ. of North Dakota

tel: (701) 777-5177

fax: (701) 777-5181

email: sbenson@eerc.und.nodak.edu

Dr. Craig Fairbridge

National Centre for Upgrading  
Technology

Alberta, Canada

tel: (403) 987-8618

fax: (403) 987-5349

email: craig.fairbridge@nrcan.gc.ca

**August 25-27, 1998**

Vancouver, Washington

*2nd Conference of the*  
*Short-Rotation-Woody Crops*

*Operation Working Group*

tel: (502) 335-3151

email: GMSIMON@Westvaco.com

**September 1-4, 1998**

St. Augustine, Trinidad, West Indies

*International Symposium and*  
*Exhibition, Energy and the Environment*

Sr. W.A. Mellows

Dr. A.C. Pilgrim

Univ. of the West Indies

Office of the Dean

Faculty of Engineering

St. Augustine, Trinidad

tel: (868) 645-3233-9, ext. 2061/ 2503

fax: (868) 662-4414

email: enerviro@eng.uwi.tt

website: <http://www.uwi.tt/~power/sym/>

**September 20-25, 1998**

Florence, Italy

*World Renewable Energy Congress*

tel: 39.55.4376300

**October 4-8, 1998**

Madison, Wisconsin

*Bioenergy '98*

Fred Kuzel

Great Lakes Regional Biomass Energy  
Program

35 E. Wacker Drive, Suite 1850

Chicago, IL 60601

tel: (312) 407-0177

fax: (312) 407-0038

email: fkuzel@cglg.org

website: [http://www.cglg.org/projects/](http://www.cglg.org/projects/biomass/bioenergy98)

[biomass/bioenergy98](http://www.cglg.org/projects/biomass/bioenergy98)

**November 8-11, 1998**

Phoenix, Arizona

*New Crops & New Uses: Biodiversity &*  
*Agricultural Sustainability*

David Dierig

USDA, ARS, US Water Conservation

Laboratory

4331 E. Broadway

Phoenix, AZ 85040

tel: (602) 379-4356

fax: (602) 379-4355

email: ddierig@uswcl.ars.ag.gov

**November 18-19, 1998**

London, England

*First World Ethanol*  
*Conference—Preparing for Global*  
*Competition*

F.O. Licht

25 Frant Road

Tunbridge Wells

Kent TN2 5JT ENGLAND

tel: +44 (0) 1892511807

fax: +44 (0) 1892 527758/544895

email: conferences@agra-europe.com

**1999****January 10-14, 1999**

*Thirteenth International Symposium on*  
*Management & Use of Coal*  
*Combustion Products (CCPs)*

American Coal Ash Association

2760 Eisenhower Ave., Suite 304

Alexandria, VA 22314-4553

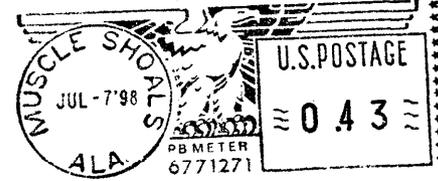
tel: (703) 317-2400

fax: (703) 317-2409

website: <http://www.ACAA-USA.org>



**SERBEP Update**  
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~~CLEAN CITIES HOTLINE~~  
~~1617 COLE BLVD, BLDG. 16~~  
~~GOLDEN, CO 80401 3305~~

8

SERBEP  
UPDATE

The use of trade names is for information purposes only and does not imply endorsement, nor does the omission imply lack of endorsement, by the federal government.



## BioEnergy '98—Expanding Bioenergy Partnerships *8th Biennial Conference*

Just a reminder—Each month we receive returned newsletters with no forwarding address available. We are forced to remove these names from our mailing list. If you have moved and wish to keep receiving the *SERBEP Update*, please be sure to send us your new address.

BioEnergy '98 is a premier international event hosted biennially by the U.S. Department of Energy's Regional Biomass Energy Program. The focus of BioEnergy '98 is to build a thriving biomass energy industry through partnerships for energy, the environment, and the economy. BioEnergy '98 will be the first major biomass conference to examine implications from the Kyoto Conference of the Parties meeting on greenhouse gas emissions and other environmental drivers.

Topics include special emphasis on bioenergy mitigation of greenhouse gas emissions, financing issues, innovative and successful bioenergy projects around the world. Other topics include liquid biofuels, electric power production from various feedstocks and technologies, biogas production and utilization, biomass cultivation and harvesting, technical and economic assessments of cropping and production systems, national and international policy issues, market opportunities, and environmental aspects of bioenergy production and use.

BioEnergy '98 will be held at the new Monona Terrace & Convention Center designed by Frank Lloyd Wright in Madison, Wisconsin, October 4-8, 1998, at the start of Energy Awareness Month. The conference is hosted by the Great Lakes Regional Biomass Energy Program. More information, including the call for papers and Trade Show exhibitor application, can be obtained from the Internet at <http://www.cglg.org/bioenergy98> or by contacting Fred Kuzel at (312) 407-0177 or [fkuzel@cglg.org](mailto:fkuzel@cglg.org).

