



Conservation News

Volume 3, Number 3

Conservation News is a quarterly publication of EPA's Facilities Management and Services Division (FMSD) Conservation Information Clearinghouse. FMSD established the Clearinghouse as a focal point for collecting and disseminating information about pollution prevention and energy and water conservation to serve all EPA facilities. The newsletter is intended to educate, inform, and help EPA staff involved in these efforts at EPA-owned or -leased facilities. We welcome your comments and suggestions. To receive additional copies of this newsletter, submit information for inclusion, or learn more, call the Clearinghouse Hotline at (202) 260-9803 or e-mail p2group@epamail.epa.gov. You can also access the newsletter through the Internet at <http://www.epa.gov/consrv-news>. f



A Note From the Agency Conservation Coordinator

GLOBAL THINKING IN OUR OWN BACKYARD

by Phil Wirdzek, FMSD

During the last year, the Office of Administration and its partners have brought forward a number of avenues for the Agency's employees, managers, and decision-makers to discuss and evaluate the environmental and pollution prevention practices EPA can pursue at its own buildings. Through conferences, innovative contract vehicles, and implementation of energy-saving technology, OA is embracing these practices in the Agency's facility management, and helping them to become part and parcel of EPA's day-to-day business venue. And none too soon.

Consider the heightening stakes for and the direct correlation of global economic activity, sustainable development, and atmospheric pollution. These issues have traditionally been debated locally. More recently, they have been discussed as a regional concern. However, with the creation of global markets, the desire for prosperity is causing nations to question their ability to sustain human and economic health and development. Mainstream news media is filled with this information and is thereby raising awareness for each of us.

Regardless of our individual beliefs on global warming, by having the issue addressed by the world's political leaders, industrial leaders, and scientists, we can be assured that the motivational factors for business and government will change in dealing with environmental protection.

Throughout this issue of *Conservation News*, we demonstrate the growing list of activities that EPA is taking with this change. To answer the frequent questions posed to OA and EPA facilities management, I believe we are ready to show an agency well engaged in tomorrow's business. f

A New Champion for Change

Administrator Carol Browner is looking to EPA facilities for support in accelerating our nation's transition to a sustainable energy future. Citing a Presidential address to the United Nations, Administrator Browner is asking EPA facilities to participate in President Clinton's new *Million Solar Roofs Initiative*, which aims to place one million solar energy systems on the roofs of American homes and businesses by 2010. We are up to the challenge.

Some of you may know that we have results from a study conducted by the National Renewable Energy Laboratory for renewable technologies to be used at EPA facilities. Using those results, we currently have photovoltaic installations underway or completed at facilities in Ann Arbor, MI, and Gulf Breeze, FL. We also have solar thermal installations underway or completed at Athens, GA, Edison, NJ, and Washington, DC. Passive solar design features, though not specifically included in the President's initiative, have been incorporated into the Ann Arbor office building and EPA's Ft. Meade, MD, laboratory. Solar technologies are being emphasized in the design stages for new laboratories planned in Las Vegas, NV, Edison, NJ, and Research Triangle Park, NC. So change is here, and EPA is engaged. f

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Region 5, Library (PL-12J)
77 West Jackson Boulevard, 12th Floor
Chicago, IL 60604-3590



Spotlight on Facilities

STUDY FINDS HEAT PIPE AT GULF BREEZE CONSERVES ENERGY

A Dinh-style heat pipe installed in October 1996 at the Gulf Breeze laboratory in Pensacola, FL, is saving the facility money and reducing its energy usage, according to a recent study led by FMSSD. The study determined the dehumidification effectiveness of the heat pipe installation by monitoring temperature and humidity levels of the outside and supply air, and by monitoring the load on the cooling coils and the load on the heat pipe during a two-week period. By comparing utility bills for the laboratory's Building 49 for the 12 months prior to and following the installation, the study found an actual energy reduction of 230,750 kWh (14%) and a cost reduction of \$9,980.

A heat pipe dehumidification system is a passive device which uses a series of closed tubes filled with refrigerant to transfer heat from the outside supply air to the supercooled post-cooling coil air. Because the heat pipe pre-cooling coil provides initial air cooling, the total cooling and dehumidification capacity of the system is increased during peak load conditions. During off-peak conditions, the heat pipe pre-cooling coil replaces part of the load on the cooling coil necessary to provide a given level of dehumidification, and the reheat coil replaces part of the reheat load necessary to provide a comfortable supply temperature, with no energy input. As a result, heat pipes provide both enhanced dehumidification and energy savings.

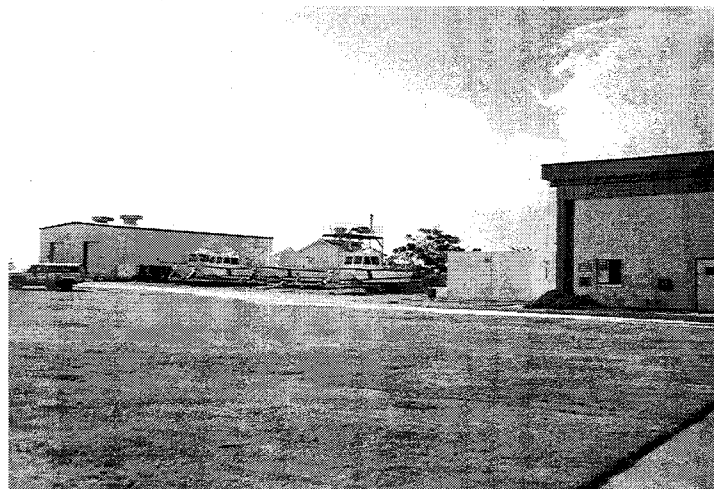
The study showed that the heat pipe in Building 49 was effective in reducing inside humidity levels about 10%, from an average of 75% before installation to an average of 65% after installation. An additional 20 tons of mechanical cooling would have been necessary to provide this additional dehumidification during peak conditions. The heat pipe cost \$42,000 to install, and the additional mechanical cooling necessary to provide the same level of dehumidification would have cost \$30,000. Therefore the additional cost of installing a heat pipe instead of mechanical cooling to provide the 10% inside humidity reduction was \$12,000.

By recording heat pipe and cooling coil loads for 15-minute intervals during a two-week monitoring period, it was determined that the heat pipe pre-cooling load, and subsequent reheat load, increases linearly with outside temperature. Using a weather bin method analysis, the heat pipe in this location provides a maximum 20 tons of pre-cooling and 240 kBTU/h of reheat with no energy input,

saving an estimated 56 kW in peak summer demand, 153,775 kWh in annual energy consumption (about 10% of the total), and \$7,700 in annual energy costs. The simple payback of using a heat pipe to provide the enhanced dehumidification for this installation is therefore 15 months. The payback will vary for other installations based on weather data, mechanical system efficiencies, and utility rates. For more information, contact the Clearinghouse at (202) 260-9803. ✎

UNDERUSED CHILLER TAPPED TO COOL NEW SPACE

A new Facilities Maintenance Shop at the Gulf Ecology Division (GED) is being cooled by an already existing chiller at another building at the Gulf Breeze laboratory in Pensacola, FL. The new shop is located approximately 200 feet from the Marine Toxicology and Chemistry Laboratory, which is equipped with a 100-ton chiller, but only uses 38% of the capacity. Clay Peacher, the on-site Energy Manager, decided to use this oversized chiller to provide cooling capacity for the new building, saving initial central plant costs and energy.



A trench between the two buildings (shown in the photo) and insulated water pipes connecting the chiller and the new air handling system provide the cooling mechanism. As a result, the new building is conditioned without significant additional funding, and the existing chiller is operating closer to full load, at a much higher efficiency than it was at the part-load conditions. Energy consumption and operating costs to condition both buildings would have been significantly higher if two separate chillers were being used at part load. The ingenuity and creativity of the Gulf Breeze staff resulted in a win-win situation. Good job! ✎

U.S. Environmental Protection Agency
 Office of Research and Development
 1200 Pennsylvania Avenue, N.W.
 Washington, D.C. 20460
 (202) 260-9803

ESPCs IN THE WORKS FOR ANN ARBOR, ADA

The Office of Administration and Resources Management (OARM) expects to select a contractor in January 1998 to implement an energy-efficiency upgrade at the National Vehicle and Fuel Emissions Laboratory in Ann Arbor, MI. The Agency is currently evaluating the best and final offers for the Energy Savings Performance Contract (ESPC) proposal – the first of its kind requested by EPA – and is intending to require the offeror to conduct an “investment grade” audit of the facility to secure financing. Barring unforeseen difficulties with the project’s design, the audit and final negotiations with the offeror should be completed and the contract awarded in the spring of 1998.

Partly in anticipation of this kind of award, OARM and the Department of Energy’s (DOE’s) National Renewable Energy Laboratory (NREL) offered training in October for EPA’s engineers and laboratory managers on ESPCs. The course provided details on bundling efficiency components to improve the investment potential for a project, the step-by-step approach to be used in developing an ESPC contract or delivery order, and the regional delivery order ESPCs that DOE has established with NREL for all federal users.

Based on the efforts contributed to the Ann Arbor ESPC and the success of this training, the Office of Administration is working with the Office of Research and Development to prepare an ESPC delivery order for EPA’s Kerr Laboratory in Ada, OK, and possibly the Narragansett, RI, laboratory. †

ESPCs Will Save EPA Money

An Energy Saving Performance Contract (ESPC) is a financing alternative for energy-efficient improvements in federal buildings. Under this type of arrangement, federal agencies contract with energy-service companies who pay all of the up-front costs for the energy upgrade. In exchange, the company receives a share of the utility cost savings until the contract period expires, which can be up to 25 years. At that time, the federal government retains all of the equipment, and any future cost savings.



Partnerships and Information Exchange

GREEN BUILDINGS CHALLENGE '98

by James White, National Risk Management Research Laboratory, Air Pollution Prevention and Control Division, Office of Research and Development

As part of an international effort to encourage environmentally sound buildings, the United States is selecting EPA’s Research Triangle Park (RTP) as one of three U.S. entrants for the Green Buildings Challenge ‘98 (GBC ‘98). The “green building” concept is a process of designing and constructing facilities that minimize their overall environmental impact by the way they are designed, what materials are used in construction, and how they incorporate other environmental issues such as indoor air quality and energy efficiency into the buildings’ management.

GBC ‘98, led by Canada’s CANMET Energy Technology Center of Natural Resources and co-sponsored by the Canadian Green Building Information Council, is a challenge for nations to develop a scorecard for assessing the energy and environmental performance of buildings. Thus far, 12 countries have formed teams to meet this challenge. The challenge invites countries to “score” three different types of buildings using an initial assessment framework, which regards global issues as its core with energy, environment, and other issues based on the individual considerations of each country. In scoring their three showcase buildings (multi-residential, office, and educational), the national teams will adapt this framework to reflect national interests such as regional energy and environmental priorities, cost effectiveness, and planning issues.

A 50,000 square-foot office in the new RTP facilities will be compared to the U.S.’s adapted framework and scored using GBC ‘98 software programs. The results then will be presented as part of an international conference scheduled for October 1998 in Vancouver, British Columbia. †

Interested in reading earlier issues of *Conservation News*? Point your web browser to <http://www.epa.gov/consrv-news> for archives.

PRIVATE LABS OFFER P2 EXPERIENCE AT SYMPOSIUM

Private laboratories shared their experiences implementing pollution prevention initiatives at a benchmarking symposium on November 5-6, 1997. The symposium, hosted by the Office of Administration at the American Institute for Architects in Washington, DC, assembled representatives from Union Carbide, DuPont, Xerox, Cytec Industries, University of Louisville, University of Wisconsin, University of Illinois, and American Medical Laboratories.



Representatives from industry and academia gather to discuss their pollution prevention experiences in Washington, DC

Participants discussed their program elements and successes in the five areas of OA's pollution prevention program – chemical management, energy and water conservation, affirmative procurement, waste prevention and recycling, and Green Buildings – and invited comments from



EPA's Phil Wirdzek talks with a conference attendee during a break

attendees. The group's discussion touched on many important issues, such as the applicability of hazardous waste regulations to laboratory waste, the significance of gaining management support, and the drivers behind the program that show pollution prevention is the "right thing to do." For more information on the conference, contact Phil Wirdzek at (202) 260-2094. ✂



DOE AND EPA PARTNER IN ENERGY STAR COMMITMENT

DOE and EPA recently signed a letter of commitment that establishes a partnership for an Energy Star® buildings program. The purpose of the partnership is for the agencies to work toward the goals of the Energy Policy Act of 1992 (EPAct) and Executive Order 12902 through the use of energy-efficient, cost-effective, and environmentally beneficial building technologies and practices. Both agencies recognize that widespread use of these innovations can improve personnel productivity, reduce emissions created by power production, reduce needless expenses, and improve the nation's energy security and economic competitiveness. Further, they agree that federal agencies have a unique opportunity to provide leadership in energy efficiency management practices.

This letter of commitment addresses two objectives for EPA. First, it reaffirms the Agency's responsibility to install, at a minimum, all cost-effective energy conservation measures that pay back within 10 years or less by 2005, as required by EPAct and E.O. 12902. Second, it reiterates the Agency's responsibility to serve as an example of excellence and leadership for energy efficient technology installations, and program implementation. Therefore, this commitment encourages EPA to maximize the energy efficiency and pollution prevention practices at its facilities by aggressively pursuing energy conservation measures with payback periods of up to 10 years. ✂

CONFERENCE DISCUSSES LABORATORIES OF THE 21st CENTURY

In September, the Office of Administration (OA) co-hosted the first of what is intended to be a semi-annual conference for agencies pursuing energy conservation in federal laboratories. With cooperation from Lawrence Berkeley National Laboratory (LBL) and the National Renewable Energy Laboratory (NREL), the first conference, held at the American Institute of Architects headquarters in Washington, DC, was organized into two sessions: a formal training component and an informal open discussion/working session. The training was provided by a host of speakers presenting views and technical information on integrated design approaches to laboratory retrofits and new construction, energy efficiency opportunities in laboratory buildings, on-site power generation from energy-efficient and/or renewable technology, financing operations, and comprehensive case studies. The informal sessions enabled attendees to present their agencies' current issues and projects and have federal peers join in an exchange of views and experiences.

The conference drew representatives from a wide variety of agencies, including the National Institutes of Health, Sandia National Laboratory, and Princeton Plasma Research Laboratory. Attendees provided significant verbal and written support for the conference, and endorsed the idea of it becoming a semi-annual event for laboratory engineering professionals. OA and DOE's Federal Energy Management Program are planning to hold a second conference in San Francisco on April 7-9, 1998. The conference agenda is being developed by a team from EPA, DOE, LBL, NREL, and academia. The course will be held at the LBL facility in Berkeley, CA. Organizers are planning to prepare proceedings to post on an Internet page to enable exchanges of information from the conference as well as to promote communication among individuals involved with promoting energy conservation in federal laboratories.

If anyone is interested in attending, please notify Phil Wirdzek via e-mail (wirdzek.phil@epamail.epa.gov), and we will mail a conference announcement with the registration form when it is completed. ✎



Conservation Calendar

If you have questions about the activities below or want to publicize an event, call the Clearinghouse at (202) 260-9803.

ENERGY STAR SPONSORS WORKSHOPS

EPA's Energy Star program is sponsoring several workshops for both facility managers and executives. The "Building Know-How Lighting Tech Sessions" are geared toward facility managers, and will focus on lighting technologies and potential applications. These workshops are scheduled for February 4, 1998, in Los Angeles, California, and on February 18, 1998, in Orlando, Florida.

For non-technical, executive staff, the "Building Momentum Workshops" discuss how to develop partnerships and to implement energy strategies. A session of this workshop is scheduled for January 15, 1998, in San Diego, California.

To register for any of the workshops, or for more information, please call the Energy Star Hotline at 1-888-782-7937.

ALSO COMING UP

The "First Annual Civilian Federal Agency Environmental Symposium" will be held in Denver, Colorado, from March 10-12, 1996. The agenda, currently being developed, will include sessions under these topic areas:

- Environmental Compliance
- Facility Management
- Environmental Management
- Environmental Initiatives
- Property Transfers
- Poster Sessions

For more information, contact Will Garvey of EPA's Office of Enforcement and Compliance Assurance at (202) 564-2458. ✎



Update on Pollution Prevention

P2 A HOT TOPIC AT DENVER MEETING

The Office of Administration's "Serving the Customers Training Conference," held on September 15-17, 1997, in Denver, Colorado, covered a full agenda of plenary and workshop sessions on wide range of topics, among them pollution prevention and energy conservation. The conference was an excellent opportunity for interaction between Headquarters staff and its customers in the field and for building partnerships with other offices in the Agency.

The session on pollution prevention presented new projects and efforts that have been implemented or are currently underway, including:

- *OA's Annual Pollution Prevention Progress Report.* This report, required under Executive Order (E.O.) 12856, describes EPA's internal pollution prevention program and summarizes the progress made during FY 1996. EPA's response to E.O. 12856 is part of a larger integrated approach to prevent pollution.
- *Revised Pollution Prevention Plans.* OA is revising site-specific pollution prevention plans by incorporating progress made and establishing new goals into previously developed plans. The revised plans will focus on specific areas that all EPA facilities should address through their management programs, such as identifying amounts of waste, sources of waste, and measurable goals. A new user-friendly program to assist in this process was demonstrated at the conference.
- *Benchmarking EPA Facilities with Private Sector Laboratories.* These benchmarking efforts are intended to assist EPA in assessing its pollution prevention program and identifying areas that can be improved. (See page 4 for a related article on a recent P2 benchmarking symposium.)
- *Opportunity Assessments.* OA's pollution prevention steering committee analyzed site-specific pollution prevention plans to determine which activities have been the most successful over the last year, and how they could be implemented at other facilities. To promote information exchange and share lessons learned, OA distributed informative pamphlets on a variety of topics, including battery management, painting, alternatively fueled vehicles, chemical

management, solvents, furniture management, and environmentally preferable cleaning products.

- *Case Studies.* Several EPA staff presented their success stories in implementing pollution prevention. Pierre Belanger of EPA's Region IX Richmond Laboratory discussed his success in recovering and reusing solvents; Dianne Thiel of Region VIII's Denver Office presented her success in implementing a pollution prevention program through the Green Team; and Bill Holbrook of Region I's Boston Office shared his success in implementing a recycling program that began as a grass-roots effort.

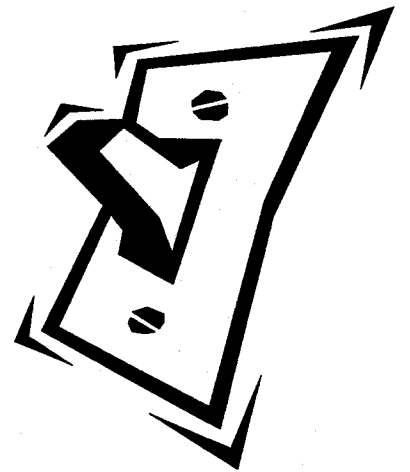
The session on energy conservation focused on current efforts to implement Energy Savings Performance Contracts (ESPCs) at several EPA facilities. Dick Lawrence of EPA's National Vehicle and Fuel Emissions Laboratory (NVFEL) in Ann Arbor described the process that NVFEL is going through to use an ESPC to upgrade the laboratory with energy-efficient technologies. (See page 3 for an update on the NVFEL project.) Other topics that were presented and discussed included:

- EPA's mission and national goals of security, sustainability, environmental choices (such as P2), and the future
- Personal ownership for facility managers and employees
- Energy flows within the laboratory environment
- Integration of energy-efficient technologies to provide a comprehensive energy system
- Funding alternatives.

During the conference, information on OA's pollution prevention and energy conservation programs was displayed in the lobby area of the hotel, and was available for participants to take with them. Participants found the materials so useful that Region VIII requested copies to display throughout its facilities, and the poster series is being displayed in Headquarters' Waterside Mall. To obtain copies of these materials or for more information, contact the Clearinghouse at (202) 260-9803. ♣

**With a “Flick of a Switch” you can help
EPA save energy and money!**

- Turn off computers, monitors, printers, and copiers at night and on weekends
- Enable power management features
- Buy Energy Star equipment (computers, printers, and copiers)
- Consider an ink jet printer
- Consider printer sharing
- Buy a correctly-sized copier
- Choose a copier with good duplexing capabilities



Information from the “*Guidelines to Energy Efficient Office Equipment, Revision 1, American Council for an Energy-efficient Economy, 1996*”