Federal Grants Awarded to HWRIC Focus on Information Networking and Development

HWRIC’s experience with pollution prevention information networks has resulted in the Center’s participation in six federal grants to further develop these resources. The majority of these projects are underway and emphasize collecting and developing pollution prevention materials compiled from the best sources available for industry sectors of importance in Illinois and the Great Lakes region. The goal of these inter-related projects is to provide high quality pollution prevention information to businesses and others through a network of technical assistance providers.

HWRIC’s information projects include:

- “Developing a Pilot Inter-Regional Information System,” a cooperative three-year project with the Northeast Waste Management Officials’ Association and the Solid and Hazardous Waste Education Center (SHWEC) of the University of Wisconsin to establish a model program of interstate cooperation on pollution prevention information sharing. The materials being prepared by HWRIC staff are for printing and foundry operations.

- “Great Lakes Pollution Prevention Clearinghouse,” in association with SHWEC and member organizations of the Great Lakes Regional Pollution Prevention Roundtable, to establish a regional clearinghouse of pollution prevention materials. Some specific objectives of this project will be to maintain and distribute bibliographic, case study, and equipment/service vendor databases, and to establish an Internet list server on regulatory and pollution prevention topics.

- “Environmental Compliance Assistance Center for Printing,” to centralize existing and future technical and compliance assistance information for the printing industry into a single, highly accessible, user friendly electronic system. In establishing this Printers’ National Environmental Assistance Center, HWRIC partners include SHWEC, the Graphic Arts Technical Foundation, and the Printing Industries of America.

- “Pollution Prevention Assistance and Information Database,” to design an environmental information system of databases, analytical tools and other resources for the National Institute for Standards and Technology’s Manufacturing Extension Programs that assist businesses in modernization strategies.

- “Establishing a National Network of Pollution Prevention Information Providers,” in collaboration with the National Pollution Prevention Roundtable and other regional organizations to accelerate reduction and elimination of industrial hazardous waste and toxic emissions through providing reliable, focused information about pollution prevention technologies and techniques. HWRIC will serve as a national point of contact or referral for access to pollution prevention information via a toll-free telephone number.

- “Regional Pollution Prevention Newsletter,” to publish a quarterly regional pollution prevention newsletter called LINK. This newsletter is compiled from contributions made by organizations from throughout the Great Lakes states and Canadian provinces. The newsletter’s purpose is to improve communication about pollution prevention activities and accomplishments in the region. It has proven to be a highly valued information resource and funding has been approved for a third year.
Pollution Prevention Case Study — Food Processor

A large processor of pickled herring and smoked salmon was concerned with their rising environmental compliance costs. The processing of fish, especially pickling with sugars, generates large quantities of wastewater. From 1992 through 1994, the company incurred annual sewer use fees averaging $142,000. High biological oxygen demand (BOD) levels in the effluent accounted for approximately 88% of this cost. Additionally, the company was spending approximately $115,000 on labor, chemicals, and sludge disposal associated with the pretreatment system necessary to meet sewer discharge limits. Consequently, this food processor was having difficulty remaining competitive in the industry.

A site assessment to gather preliminary information on existing processing techniques was the first step taken by HWRIC engineers to examine this problem. Several waste reduction recommendations were made to the company that focused on controlling the loss of product and improving their processes. Information gathered during the initial site visit determined that pickling brines from the herring processing lines were a major source of BOD in the wastewater. HWRIC proposed to investigate the potential for reusing the pickling brine solution. Reuse of the brine would have the advantages of reduced BOD discharge, raw material usage, and wastewater treatment costs.

The project was conducted in two phases. In phase one, on-site process evaluation studies were conducted over a period of one month. The studies focused on identifying the influence of critical factors such as brine/fish ratio, degree of agitation, and time needed for curing the herring. As a result, a significant factor of safety in the curing time period was uncovered. Subsequently, a two stage process incorporating an extra period of soaking and modifications to the curing solution to permit recycling was designed and demonstrated at the bench scale. Phase one determined that recycling of the cure brine using a membrane filtration system (ultrafiltration) could reduce both BOD levels and raw material usage.

Phase two studies were to demonstrate that satisfactory product could be made with recycled brine in an in-plant trial using a pilot-scale membrane filtration system. Three ultrafiltration and two microfiltration membranes were evaluated on a rented pilot-scale unit. The waste brine and permeate were extensively characterized for sugar, acid, salt, flavors, preservatives and microboriological quality. Two membranes were identified as more appropriate for industrial use based on factors such as reduced fouling, productivity and permeate quality. Evaluation of the final herring product for quality and taste revealed no significant difference. Recommendations made as a result of the studies include: lowering the amount of cure brine needed per quantity of fish by adjusting the curing and soaking times, and recovering the used brine by membrane filtration for up to three more uses.

Implementation of these recommendations will result in annual cost savings of $104,00 in waste treatment costs and $133,000 in raw material recovery for a total annual savings of $237,000. Up front capital costs are estimated to be $193,000, while recurring operating costs are estimated to be $63,360 per year.

Reductions in BOD are estimated to be over 50%, with an additional 30% reduction in brine raw material needs. The total savings from the implementation of the above recommendations is estimated to be $820/day in user charge fees and reduced raw material needs.

For more information on this case study, please contact Kishore Rajagopalan at 217/244-8905.

If you are interested in having a pollution prevention site assessment done at your facility, contact Tim Lindsey at 217/333-8955.
Surfin’ the Net? Visit HWRIC!
HWRIC has jumped onto the information superhighway with a Homepage on the Internet. Our address is http://denr1.igis.uiuc.edu/hwric/htmlhome.html. The site will continue to be upgraded and additional environmental links provided. Currently, staff members’ e-mail addresses are available from this site as is information on HWRIC programs and services. Stop by and check it out!

Additional Research Project Chosen for Funding

An additional project has been chosen for funding using available FY96 funding: **Development of a Sensitive Bioassay to Detect Exposure to Environmental Estrogens**, Co-Investigators-Elizabeth Jeffery and Paul Vancutsem, University of Illinois.

Illinois waste sites contain a variety of environmental estrogens, most of which are lipophilic (absorbed into fat cells) and can therefore be expected to accumulate in the food chain. Chemicals having estrogenic effects include methoxychlor, DDT, PCBs, and bisphenol A. Estrogenic pollutants cause serious adverse effects, including eggshell thinning in birds and liver cancer in humans, and are hypothesized to disrupt reproduction and threaten species survival. An assessment of the impact of these chemicals on people and wildlife at contaminated sites is needed to make judicious risk management decisions. A bioassay will be developed through molecular biology techniques available in the researcher’s laboratory. Once established, this assay can be simplified to rely on routine serum analysis techniques commonly available at diagnostic laboratories.

Ninth Annual Governor’s Pollution Prevention Awards Honor Variety of Organizations

The 1995 Governor’s Pollution Prevention Awards were presented by Lt. Gov. Bob Kustra at a September 20th luncheon in Rosemont. The awards honor businesses and other organizations in Illinois that have successfully reduced the generation of wastes and the use of toxic chemicals. These wastes include toxic air contaminants, wastewaters, infectious wastes, energy, plus hazardous and other industrial process wastes. By recognizing the outstanding achievements of these organizations in pollution prevention, it is our hope that others will be encouraged to do their share in preventing pollution at the source.

The 1995 recipients include:

**Educational Category**
- University of Illinois at Chicago-Certificate
- Elgin Community College-Certificate

**Small Industrial Category** (1-150 employees)
- Amoco Chemical Co., Willow Springs-Award
- Central Illinois Light Company-Certificate

**Medium Industrial Category** (150-500 employees)
- 3M Cordova-Award
- Stephan Company-Certificate
- UOP McCook Plant-Certificate
- Amoco Chemical Co., Joliet Plant-Certificate
- Eaton Corporation-Certificate

**Large Industrial Category** (>500 employees)
- Chrysler Corporation, Belvidere-Award
- Honeywell’s MicroSwitch Division-Award
- Commonwealth Edison Company-Certificate
- Caterpillar, Inc., Mossville Engine Center-Certificate

**Continuous Improvement Category**
- Caterpillar, Inc., East Peoria Facility-Certificate
- Homeshield Fabricated Products-Certificate
- Motorola Lighting, Inc.-Certificate
- Tellabs Operations, Inc.-Certificate

For additional information either on this year’s winners or on how to apply for next year’s awards competition, contact Ken Barnes at 217/244-9940.
Hazardous Waste Worker Training Program

The University of Illinois’ Institute of Labor and Industrial Relations has scheduled a series of 30 training programs for hazardous waste site, emergency response and confined space entry personnel. Programs fulfill the Occupational Safety and Health Administrations training requirements.

Training sessions are held in Chicago, Champaign, Springfield, Peoria, Rockford, and at an employer’s facility. Program topics include respiratory protection, chemical protective clothing, air monitoring equipment, emergency response, hazard control, decontamination, confined space entry and federal regulations. Multiple day programs emphasize practical hands-on training. The faculty consist of environmental engineers, industrial hygienists, fire service personnel and hazardous waste specialists. Continuing Education Units and the American Board of Industrial Hygienists certification maintenance points are awarded upon successful completion of a program.

For training dates and further information contact the University of Illinois, Institute of Labor and Industrial Relations, Hazardous Waste Worker Training Program, 217/333-0640 or FAX 217/244-8396.