

## BENEFITS OF WMRC'S TECHNICAL ASSISTANCE

### COST CONTAINMENT

- Reduce waste monitoring, treatment and disposal costs
- Reduce manufacturing costs and raw material usage
- Reduce regulatory compliance costs
- Reduce insurance costs and potential liability associated with industrial wastes

### QUALITY IMPROVEMENT

- Enhance corporate image for customers and the public
- Improve employee morale by reducing exposure to hazardous chemicals
- Promote a healthier, safer workplace
- Improve product quality and purity

### HOW CAN I IMPROVE PROCESS EFFICIENCY?

Each year billions of pounds of waste are generated in the United States. It makes good business sense to improve the processes and practices that contribute to wastefulness. WMRC's Sustainable Solutions can provide environmentally responsible cost containment. Adopting these practices and techniques can lower a company's operational and environmental compliance costs. Furthermore, disposal costs are reduced when the volume of waste is decreased. By preventing pollution there will be a greater likelihood that a company will be in compliance with local, state, and federal environmental statutes.

### HOW CAN WMRC HELP YOU?

WMRC technical assistance engineers possess a unique mix of experience and training that enables them to investigate and solve a variety of business problems. Our experts can help businesses and organizations reduce all types of solid waste as well as toxic releases into the air or water. Industrial sectors that have been extensively served by WMRC include metal forming, metal finishing, plastics manufacturing, metal casting, printed wiring boards, printing, food processing, chemical manufacturing, military, hospitals and a variety of service oriented businesses.

### THE WMRC APPROACH

WMRC engineers work as change agents to help customers identify and implement practices that improve efficiency. Services typically begin with a free assessment to develop strategies and set priorities for addressing issues. Some of these recommended practices require only basic changes in existing processes. Other opportunities may include the development, transfer, or diffusion of innovative technologies. No matter the size of the project, WMRC can provide a sustainable solution!

## ABOUT WMRC

The Waste Management and Research Center has been providing assistance to Illinois businesses and the public since 1985. WMRC is a non-regulatory service organization affiliated with the University of Illinois and a division of the Illinois Department of Natural Resources. Services offered by the Center include: sophisticated analytical laboratory support, a library and clearinghouse on environmental and pollution prevention issues, and research funding to explore a wide range of issues impacting waste management in Illinois. WMRC has offices in Champaign, Oak Brook, Peoria, and Brighton.



VISIT US ONLINE AT  
[www.wmrc.uiuc.edu](http://www.wmrc.uiuc.edu)

### WMRC MAIN OFFICE

One East Hazelwood Dr.  
Champaign, IL 61820-7465  
(800) 407-0261  
(217) 333-8940

### CHICAGO AREA

1010 Jorie Blvd.  
Oak Brook, IL 60523  
(630) 472-5016

### PEORIA

1320 SW Monarch  
Peoria, IL 61602  
(309) 671-3196

### SOUTHERN ILLINOIS

8450 Montclair Ave.  
Brighton, IL 62012  
(618) 466-3806

# SUSTAINABLE SOLUTIONS

A COOPERATIVE PROGRAM FOR ILLINOIS INDUSTRY



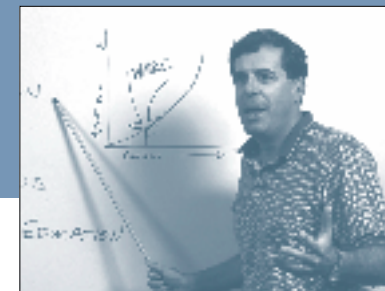
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WMRC

ILLINOIS WASTE MANAGEMENT  
AND RESEARCH CENTER

# WMRC SERVICES



## ● POLLUTION PREVENTION

WMRC staff work closely with customers to help them identify opportunities to improve efficiency by reducing raw material utilization and waste. WMRC personnel also work to implement process modifications and new technologies that improve industry competitiveness. On-site demonstrations and pilot trials of innovative technologies are frequently used to resolve compatibility and complexity issues.

## ● ENERGY EFFICIENCY

WMRC engineers possess training and instrumentation necessary to identify opportunities for improving energy efficiency in many industrial sectors. WMRC can provide cost-effective recommendations and assistance with the implementation of more efficient components. In facilities that have massive energy requirements, WMRC frequently partners with energy utilities and consultants to identify efficiency opportunities.

## ● WATER PURIFICATION AND CONSERVATION

WMRC researchers and engineers are skilled at developing and applying the latest technologies to purify water and water-based chemistry in a wide variety of industrial and domestic applications. In addition, WMRC engineers have a great deal of experience with the implementation of incremental practices (conductivity controls, counter current rinsing, flow restrictors, etc.) for reducing water utilization.

## ● ENVIRONMENTAL MANAGEMENT SYSTEMS

WMRC offers a full service ISO14001/EMS implementation program structured to meet customer needs. EMS services range from decision enhancing information, presentations to staff, and complete on-site assistance that is designed to lead companies to ISO 14001 certification. WMRC will also provide the necessary documentation examples to facilitate program initiation and implementation. Additionally, WMRC staff help companies achieve the targets and objectives they establish during the development of their EMS.

## ● GREEN CHEMISTRY

Green Chemistry is the utilization of a set of principles that reduce or eliminate the use or generation of hazardous substances in the design, manufacture and application of chemical products. WMRC staff have experience helping companies develop and implement processes that are more environmentally friendly and less wasteful.

## ● COMPLIANCE ASSISTANCE

WMRC personnel can assist customers with their permitting and compliance efforts by facilitating contact and communication with various federal, state, and local agencies.

For further information, or to examine case studies, check out the WMRC web site at:  
[www.wmrc.uiuc.edu](http://www.wmrc.uiuc.edu)

## ● TESTING OF ALTERNATIVE TECHNOLOGIES

Ability to test alternatives is often a major stumbling block for manufacturers interested in evaluating and embracing innovation. Process efficiency improvements and radical processing changes involve investigation of material properties, equipment efficiency, and residual generation. WMRC has access to a variety of test and process equipment to answer the myriad of questions that arise in conjunction with change.

## ● AVAILABLE EQUIPMENT

### PROCESS EQUIPMENT

- Non-phase change separation systems based on membranes such as ultrafiltration, nanofiltration, reverse osmosis, and diffusion dialysis
- Ion exchange equipment for ion removal or for acid recovery
- Distillation columns for solvent recovery and fractionation
- Atmospheric and vacuum evaporators for wastewater volume reduction
- Basket centrifuge, hydroclones, and coarse filtration systems for solid liquid separation
- High-speed centrifuges or coalescers for liquid-liquid separations
- Ozonator and photochemical reactors for carrying out oxidation reactions

### MATERIAL INVESTIGATION EQUIPMENT

- Equipment to measure physical properties such as viscosity, density, surface tension, and contact angle
- UV, FTIR, AA, and ICP-MS spectroscopic techniques
- Imaging equipment such as Scanning Electron Microscope, Transmission Electron Microscope and Confocal Microscope.
- Particle size characterization using Photon Correlation Spectroscopy and Diffraction.
- Equipment for corrosion measurement.
- High-pressure glass reactors for organic synthesis and reaction studies.

