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# *Governor's Pollution Prevention Award, 1998 Recipient*

## **Institute of Advanced Manufacturing Sciences (IAMS)**

***The Institute of Advanced Manufacturing Sciences (IAMS) is being recognized for providing pollution prevention technical assistance, outreach and education. Since 1992, IAMS has offered pollution prevention outreach and training activities such as conference workshops and several courses, developed education materials and tools for pollution prevention, and developed new pollution prevention methods.***

The Governor's Awards for Outstanding Achievement Pollution Prevention have been presented since 1986. The Institute of Advanced Manufacturing Sciences (IAMS) was one of seven recipients to receive the Award in 1998. These awards recognize outstanding commitments to improve Ohio's environment through pollution prevention. Evaluation criteria for the awards include: the reduction of waste at the source, recycling or recovery of materials, cost-effectiveness, ability of the program to serve as a model for others, and effectiveness in promoting pollution prevention as the preferred long-term approach for environmental management.



### **Institute of Advanced Manufacturing Sciences**

IAMS is a nonprofit manufacturing assistance organization. It is affiliated with the Thomas Edison Program of the Ohio Department of Development and the Manufacturing Extension Program of the U.S. Department of Commerce. IAMS provides regional manufacturing extension services in productivity and quality improvement; has a nationally-recognized machining laboratory; and offers industry education, training, and workforce development.

### **Pollution Prevention Activities**

In 1992, IAMS Board of Directors created an environmental division in response to industry in Southwest Ohio identifying environmental issues as some of the most difficult challenges they faced. An early decision was made to focus on pollution prevention, rather than compliance assistance. This decision was based partly on the existence of a robust environmental consulting industry in the region and partly on IAMS interpretation of its mission. While industry needs to comply with environmental laws in order to survive, compliance alone does not make them more competitive. In fact, traditional environmental control technology adds to the cost of doing business. By focusing on pollution prevention solutions, IAMS has been able to help industry meet their



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compliance challenges while reducing their costs.

## **Technical Assistance**

IAMS' engineers have provided on-site pollution prevention technical assistance to over 125 manufacturing companies, primarily in South-west Ohio. Industry sectors range from metal fabrication, to food processing, to printing, to chemical. Most of the companies have been small or medium-sized, with less than 500 employees. The technical assistance includes pollution prevention facility assessments, help implementing and obtaining financing for pollution prevention alternatives, and focused pollution prevention solutions to specific compliance problems.

## **Integrated Manufacturing Assessment Loans and Funding**

In 1995, IAMS became a leader in providing an integrated manufacturing assessment that identifies improvements in productivity, energy efficiency, and waste reduction. IAMS was uniquely qualified to provide this service because in addition to pollution prevention and energy efficiency experts, it had a staff of industrial engineers providing productivity assessments using a methodology called PRISSM. The integrated service (or tri-assessment) is called PRISSM Plus. It uses interdisciplinary teams of engineers to identify improvement opportunities and begin implementation of one high-priority project for the company.

IAMS also worked with the Ohio Office of Energy Efficiency to

develop a loan program to encourage companies to obtain integrated manufacturing assessments. The pilot loan program began in late 1996 and is administrated for the state by IAMS Manufacturing Small Business Development Center. Ohio manufacturers can obtain a low-interest loan to pay for an assessment either from a private consultant or a not-for-profit manufacturing extension center.

While some companies have hired IAMS on a fee-based client relationship, most of the pollution prevention services IAMS has provided in the last six years have been supported through government or utility funding. Some of this funding has allowed free services to be provided to small manufacturers within certain industries or geographic areas. Other support has provided co-funding, with the manufacturing clients paying a portion of the costs. Regardless of the source of funding, IAMS maintains the confidentiality of its clients.

The Ohio Department of Development has supported IAMS pollution prevention program from the beginning through its Ohio Edison Technology Program. Without this base-line support, IAMS would not have been able to develop its overall pollution prevention program.

## **Outreach and Training Activities**

IAMS pollution prevention outreach and training activities range from speeches at luncheon meetings, to conference workshops, to several day courses and include

both public courses and contract training for clients.

A basic pollution prevention training course for industry was developed in 1993, and has been offered twice a year under the title, *Lowering Costs through Waste Reduction*. Customized versions of the course have been conducted for local government and regulatory employees.

IAMS partners with regulatory agencies to offer timely seminars on environmental regulations that, in addition to teaching the regulations, show how cost effective compliance can be achieved through pollution prevention. Examples of this joint training include:

- Air Permits and Pollution Prevention, 1993 and 1995,
- Sewer System Regulation & Pollution Prevention, 1993,
- Revised Local Limits & Pollution Prevention, 1994, and
- Cutting through Oil & Grease Violations, 1996.

In 1994, IAMS developed a curriculum and wrote a Pollution Prevention Resource Manual for Publicly Owned Treatment Works (POTWs) under contract to the Ohio EPA. This one day course was offered three times and attended by 250 participants. In a follow-up project, IAMS engineers worked with four POTWs to implement pollution prevention projects and outreach activities in their communities. Building on this experience, IAMS staff instructed a one day course for POTWs at the 1998 National

Pollution Prevention Roundtable.

Industry and process specific training has been conducted jointly with trade associations and other partners:

- Keeping It Clean, Seminar for Dry Cleaners, 1992,
- Alternatives to Solvent Cleaning, 1993,
- Waste Reduction for Metal Finishers, 1994,
- Annual Electroplaters Environmental Workshop, 1995-1998,
- Reducing Metalworking Fluid Waste and Wastewater Discharges in Machine/Fabrication Shops, 1996,
- Energize Your Workplace, a four part energy efficiency series, 1996,
- The Motor Challenge, An Energy Efficiency Motor Workshop, 1997,
- Pollution Prevention for the Printing Industry, 1997, and
- Industrial Packaging Alternatives, 1998.

In addition to training courses and events, IAMS hosts two industry networking groups that meet regularly to stay up to date on pollution prevention topics. The *Electroplaters Environmental Collaborative* has met since 1993 and the *Waste Minimization Collaborative* was formed in 1994. This innovative approach to pollution prevention education is the subject of an article in the Summer 1998 issue of *Pollution*

*Prevention Review*, a national journal. IAMS is partnering with the Ohio Chemical Council and the Ohio Office of Energy Efficiency on a new Chemical Industry Collaborative that began in the fall of 1998.

## Information and Education Resources

IAMS also develops educational materials and tools for pollution prevention. It has written four manuals which provide practical information for facility level employees and are based on IAMS experience in the industries.

The Pollution Prevention Information Resource for Industry Sectors (P2IRIS) is an internet based tool designed to provide process improvement and waste reduction information. It is a user friendly and efficient way to learn industry proven best practices. The system was developed by IAMS under a cooperative agreement with NIST and the U.S. Department of Commerce, for manufacturing extension agents at their centers nationwide. It has wide application for regulatory agencies and others working with multiple industry sectors. The current industry sectors covered by P2IRIS are electroplating, printing, and metal painting.

IAMS also is involved in pollution prevention development and demonstration using its expertise in machining and machine tool technology.

## Health and Safety Benefits

Health and safety benefits are clearest from the manufacturing

reduction in solvent usage. The benefits accrue most directly to the workers in individual facilities, but when volatile organic carbon (VOC) emissions are reduced, community health benefits are also realized.

## Management Commitment

In 1992, the president and Board of Directors created the Center for Applied Environmental Technologies, a separate division within IAMS, to help companies implement cost-effective pollution prevention improvements to the manufacturing process. The program has been reviewed annually and continues to receive top level support from IAMS Board and management.

## Environmental Benefits

Although the motivation for IAMS pollution prevention program is to help make manufacturers become more competitive, significant environmental benefits have resulted. No statistics are available on total environmental benefits from the over 125 on-site projects done by IAMS at manufacturing facilities. The focus is on cost savings, not the related environmental benefits. Examples barely scratch the surface of actual results:

- chemical coatings manufacturer - reduced solvent waste by 83%,
- chemical batch operation - reduced wastewater containing scrap product by 1.4 million gal/yr.,
- small, family owned electroplater - reduced chrome waste by 300 pounds/yr., reduced wastewater by

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340,000 gal/month,

- small metal finisher - reduced wastewater by 37,000 gal/day,
- printing company - reduced solvent use by 325 gal/yr.,
- printing company - reduced 23 tons/yr. of solid waste,
- printing company - reduced 25 tons/yr. of VOC emissions,
- metal fabrication company - reduced VOC emissions by 13 tons/yr.,
- metal fabrication company - replaced chlorinated solvent degreaser with aqueous cleaner, reducing hazardous waste and air emissions, and
- a one time waste exchange saved 100,000 pounds of solid waste from disposal.

## **Transferability**

IAMS participates in numerous pollution prevention organizations and forums to share its experience and learn from others. IAMS is also an active member of the NIST Environmental Working Group, meeting regularly with manufacturing extension centers nationwide to share tools and methods for working with manufacturers. Collaborating is an excellent example of how IAMS shares pollution prevention experiences with others. For industry, these collaboratives are designed as a method for members to exchange pollution prevention experiences and learn together.

## **Economic Benefits**

The key performance measure used by IAMS to judge its organizational success is economic impact. Every project done with a company is designed to make it more competi-

tive. This is usually done by reducing the cost of goods sold. While most pollution prevention projects will save disposal costs, even greater savings are often realized in labor, raw materials and compliance costs. The PRISSM Plus tri-assessments have resulted in average annual savings of \$300,000 for the participating companies. To date, nine of these assessments have been evaluated for economic impact for a total savings of about \$2,700,000. These are actual savings realized after implementation, not potential savings based on recommendations.

## **For More Information**

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**This is one in a series of documents Ohio EPA has prepared to promote pollution prevention activities in Ohio and integrate pollution prevention into Ohio EPA programs. For more information, call the Office of Pollution Prevention at (614) 644-3469.**

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*The Office of Pollution Prevention was created to encourage multi-media pollution prevention activities in Ohio to reduce risk to public health, safety, welfare and the environment. Pollution prevention stresses source reduction and, as a second choice, environmentally sound recycling while avoiding cross media transfers. The Office develops information related to pollution prevention, increases awareness of pollution prevention opportunities, and can offer technical assistance to business, government, and the public.*

**Office of Pollution Prevention WWW address: [www.epa.state.oh.us/opp](http://www.epa.state.oh.us/opp)**