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Governor's Pollution Prevention Award, 1996 Recipient

Wright-Patterson Air Force Base

Wright-Patterson Air Force Base replaced chemical based film in their multi-media center with digital processes. The project eliminated 15,570 gallons of hazardous chemicals per year, and three million gallons of tempered wastewater, resulting in an annual savings of \$400,000.

The Governor's Awards for Outstanding Achievement in Pollution Prevention have been presented since 1986. Wright-Patterson Air Force Base was one of eight recipients to receive the Award in 1996. These awards recognize outstanding commitment 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 prevention as the preferred long-term approach.

What is Pollution Prevention?

Pollution prevention is the use of source reduction techniques to reduce risk to public health, safety, welfare and the environment and, as a second preference, the use of environmentally sound recycling to achieve these same goals. Pollution prevention avoids cross media transfer (of wastes and/or pollutants) and is multi-media in scope,

addressing all waste and environmental releases to the air, water and land.

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The Wright-Patterson Team from the Office of Environmental Management (EM) and the 88th Communication Group Multimedia Center Branch of the Aeronautical Systems Center (ASC) worked together in this effort.

The mission of the EM is to educate, motivate and regulate the Wright-Patterson community about the restoration, protection and enhancement of the environment. EM's responsibilities include implementing the Air Force pollution prevention program at Wright-Patterson AFB. The program's objective is to reduce the use of hazardous materials and the release of pollutants into the environment to as near zero as possible.

As part of the 88th Communications Group, the Multimedia



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Center was responsible for providing visual imaging support to the Wright-Patterson AFB community. This included graphics, video and photographic services. The photographic services department consisted of developing and printing photographs using standard, environmentally unfriendly chemical processes.

The two offices of Wright-Patterson AFB were recognized for converting chemistry-based photographic processes at the base's multimedia center to a digital system. These efforts include eliminating the use of hazardous material purchases, elimination of over 150 supply items, and sanitary sewer discharges, air emissions as well as conserving natural resources. The task was enormous and extremely complex, integrating new and emerging technologies with existing computer-based capabilities to provide an integrated whole.

Pollution Prevention Activities

The Multimedia Center was supported by Blue Chip Computer Company through the 88th Communications Group's Network Support and Integration contract. The accomplishments of this group were exceptional.

- ◆ Eliminated hazardous materials purchases, including an EPA chemical, and 15,570 gallons

per year. Eliminated storage of over 150 supplies items from 1993-1996.

- ◆ Replaced chemical film developers with digital printers requiring no hazardous materials. \$117,000 annual cost avoidance.

- ◆ Provided recordable CD-ROM products to customers instead of paper and film base presentations and photographs. \$12,000 annual cost avoidance.

- ◆ Replaced film based cameras with digital cameras, entirely eliminating negative development. \$65,000 annual cost avoidance.

- ◆ Used digital scanning equipment and techniques instead of photographic duplication processing. \$13,000 annual cost avoidance.

- ◆ Improved the photographic processes to provide a quality product, in a shorter period of time and at a lower cost.

- ◆ Duplication, waste and time delays were reduced through the use of digital cameras and printers in the photo studios.

- ◆ Turnaround times have decreased significantly, from two days to one hour.

- ◆ Prints are only made after reviewing the image on the computer monitor. This eliminates waste.

- ◆ Images are saved electronically so that copies can be made without retaking photos. This eliminates redundancy.

- ◆ Provided digital, photo quality output of graphical products instead of photographic processing.

- ◆ Actual product can be viewed immediately by technicians.

- ◆ Digital products are less expensive than photographic products.

- ◆ Products are produced in one step without waiting for photographic developing processing.

- ◆ Producing products digitally eliminates reduction in quality due to photographic reproduction processing.

- ◆ Using digital storage, networking and access technologies saves time and space.

- ◆ Completed projects can be reused without duplication of effort.

- ◆ Works in process can be shared without manual transfer delays.

- ◆ Digital photography can be immediately utilized by technicians.

In 1992, the Multimedia Center used six wet-chemistry photographic processes that required

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numerous photographic chemical solutions. These solutions included fixers, bleaches, developers, stop baths, activators and stabilizers. The primary chemicals included formaldehyde, methanol and ammonia. Other chemicals used were potassium hydroxide, potassium carbonate, sodium bromide, hydroquinone, diethylene glycol, dipropylene glycol, triethanolamine, ammonium thiocyanate, and multiple caustic chemicals. Chemical usage was approximately 15,570 gallons per year.

Environmental Benefits

Approximately three million gallons of tempered water was also used with the chemicals in the photographic processes. Some of the chemical wastes were disposed as hazardous waste, however, most (95%) was discharged to the sanitary sewer after being processed through a silver recovery unit. Also the Center emitted various amounts of ammonia, formaldehyde, ammonia and ammonium thiocyanate to the atmosphere during operations in 1992. The ammonia was potentially harmful to the laboratory workers and the formaldehyde was a NIOSH carcinogen.

In implementing the digital imaging process at the Multimedia Center, tremendous source reduction has been achieved through direct process changes. The project has eliminated hazardous material purchases, sanitary sewer discharges, hazardous waste, and air emissions. It has conserved natural resources.

Economic Benefits

The total estimated yearly savings of this project was estimated at more than \$400,000. The costs of equipment and facility modification invested in this project is \$1.5 million (from 1993-1997). Payback/return on investment was estimated at approximately 3.4 years.

Transferability

The success of this project has become the benchmark for other organizations throughout the Department of Defense (DOD). Lessons learned at WPAFB have been shared with countless other DOD activities through conferences, video teleconferencing meetings, and telephone conference calls, etc., so that other organizations would not have to “reinvent the wheel.”

For More Information

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This is the 44th in a series of documents Ohio EPA has prepared on pollution prevention. For more information, call the Office of Pollution Prevention at (614) 644-3469.

The Office of Pollution Prevention was created to encourage multi-media pollution prevention activities within the state of Ohio, including source reduction and environmentally sound recycling practices. The Office analyzes, develops, and publicizes information and data related to pollution prevention. Additionally, the Office increases awareness of pollution prevention opportunities through education, outreach, and technical assistance programs directed toward business, government, and the public.

Office of Pollution Prevention WWW address: www.epa.ohio.gov/opp