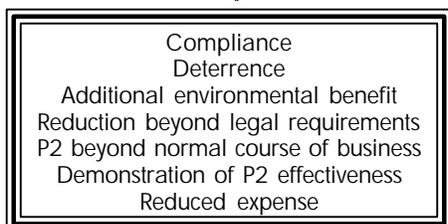
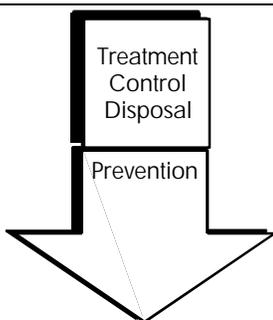
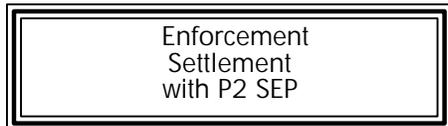
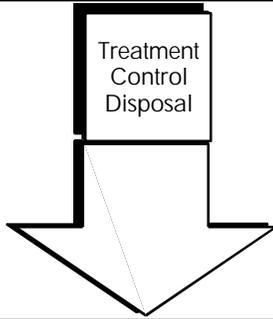


# Pollution Prevention in Ohio's Environmental Enforcement Settlements



While enforcement has been a valuable tool to reduce environmental risk in Ohio, a standard enforcement settlement typically operates through the pollution control measures of treatment and disposal. Instead of reducing or eliminating pollutants, these measures usually rely on the cross-media shifting of pollutants to achieve compliance and deterrence. Waste generation often continues at the same levels, resulting in multi-media transfer of wastes and contaminants, continued environmental impact, continued need for government oversight and the long term expense to violators that is associated with waste generation and control.

An enforcement settlement that includes an agreement for a violator to conduct a pollution prevention activity (usually termed a supplemental environmental project, or SEP) also results in compliance and deterrence, but has the added advantage of reducing waste generation. This can result in additional environmental benefit, reduction of waste beyond legal requirements and implementation of pollution prevention beyond what a facility would undertake in the normal course of its business. For some facilities, these activities represents their first exposure to the effectiveness and advantages of pollution prevention, and produce a long-term change in the way they view waste generation in the future.

## Background

For several years, the U.S. Environmental Protection Agency (U.S. EPA) has strongly encouraged its negotiators to incorporate pollution prevention SEPs into enforcement settlements when feasible. Its 1991 policy on the use of SEPs established that, as part of the settlement, the size of the final assessed penalty may reflect the commitment to undertake specific environmentally beneficial expenditures (U.S. EPA 1991).

U.S. EPA has recently updated its policy. The *Interim Revised EPA Supplemental Environmental Projects Policy*, May 10, 1995, Federal Register (60 FR 24856), was issued to provide greater flexibility to U.S. EPA in exercising enforcement discretion to establish appropriate settlement penalties and to the regulated community in proposing SEPs.

U.S. EPA encourages the use of SEPs in this policy. It recognizes that SEPs may not be appropriate in settlement of all cases, but sees them as an important part of its enforcement program. The use of SEPs also can help achieve other policy goals, such as promoting pollution prevention and environmental justice.

Following U.S. EPA's example, many of the states began to consider integrating pollution prevention into their own enforcement programs. As the states are not obligated to follow the U.S. EPA policy, integration efforts vary widely from state to state.

The Ohio Environmental Protection Agency (Ohio EPA) formally began its efforts to integrate pollution prevention into its enforcement process in 1990. It has developed a draft set of guidelines for the use of pollution prevention conditions, designed to assist Agency staff from before negotiations begin through implementation of activities by a facility, and afterwards. Every Ohio EPA division that conducts enforcement has used pollution prevention SEPs, as has the Ohio Attorney General's Office (AGO).

## Current activities

In Ohio, pollution prevention SEPs, which are agreed upon and included in consensual (negotiated) settlements, are activities that a facility typically performs in exchange for a partial enforcement penalty mitigation. The terms *pollution prevention* and *waste minimization* have been used in orders since 1990.

To date, pollution prevention and waste minimization conditions have been included in 52 settlements. These SEPs fall into two general categories: the development of a *pollution prevention/waste minimization program*, each of which includes a facility-wide, multi-media *assessment*; or a *project*.

A *pollution prevention assessment* is a systematic planned procedure for examining processes and procedures to identify ways to reduce or eliminate waste. Multi-media in scope, it addresses all wastes. One intention of an assessment is to demonstrate that pollution prevention activities are often sound business practices, encouraging a facility to prioritize pollution prevention in the future (see Figure 1 for the steps in a typical pollution prevention program).

*Pollution prevention projects* include, but are not limited to: process, equipment, and/or raw material changes; projects to improve efficiency of operations; water or energy conservation projects; and establishment of trust funds or provision of grants to third parties (see Figure 2 for examples of projects).

Alternative projects include sponsorship of training or educational material for third parties, such as

### Figure 1 - Steps in the development of a typical pollution prevention program

- Establish program** (management support, policy statement, build consensus)
- Organize program** (task force, state goals, involve and train employees, reward successes)
- Conduct preliminary assessment** (understand processes and wastes, gather background information, define production units, characterize general processes, determine outputs, establish priorities)
- Write plan**
- Conduct detailed assessment**
- Define P2 options** (propose options, screen options)
- Consider costs** (determine full cost of waste, develop economics)
- Perform feasibility analysis** (technical, economic, environmental)
- Write assessment report**
- Implement plan** (select projects, obtain funding, install selected projects)
- Measure progress** (evaluate, modify)
- Maintain program** (rotate team, refresh training, publicize success stories)

customers. These activities are less likely to result in environmental benefit than those listed above, and will require additional supervision from Ohio EPA. Therefore, these options are less preferred, and should be reserved for unusual situations.

## Maximizing effectiveness

Ohio EPA can maximize the effectiveness of SEPs while minimizing the resources associated with them through four key activities:

- Offer SEPs to appropriate facilities**
- Approve the most appropriate activities**

- 
- Facilitate the flow of information**
  - Use OPP's services**

### Appropriate activities

The following are examples of indications that a violator may be a good candidate for a pollution prevention SEP:

- The violator's activities lend themselves to pollution prevention. Examples include, but are not limited to:
  - processes such as: *parts cleaning; painting/coating; plating/finishing; metalworking; printing; and shipping/packaging.*
  - the manufacture of: *fabricated metal products; printed circuit boards; fiberglass/plastic products; paints or coatings; and chemical products.*
  - operations associated with additional industries such as: *photoprocessing; equipment repair; automotive refinishing; and hospitals.*
  - Local governments such as cities and villages typically conduct a number of waste generating activities. Key areas can include: *wastewater treatment plants; drinking water plants and water distribution; fleet maintenance; public transportation; building and grounds maintenance; electricity use; and office waste.*
- The facility or inspector, other Ohio EPA staff, or local air agency staff have identified potential pollution projects or waste streams that are likely to be reduced through pollution prevention.
- The violator is interested in implementing a pollution prevention activity.
- The violator understands the distinction between pollution prevention and pollution control or treatment.
- The violator appears to have the resources (financial or otherwise) to complete the pollution prevention activity.

These lists are intended only to provide examples of circumstances where pollution prevention conditions would be most appropriate. Facilities must be selected on a case-by-case basis.

### Appropriate facilities

In general, facilities that have previously developed formal pollution prevention or waste minimization programs, or that are more progressive than usual in their implementation of pollution prevention, are better candidates for project-related enforcement conditions than assessment-related conditions. These progressive companies have often already completed many of the steps of an assessment, and therefore probably do not have the potential to greatly advance their efforts by completing the remaining steps (or by redoing steps). Less progressive facilities may be appropriate for project and/or assessment-related conditions.

### Facilitate the flow of information

Reports submitted as a result of a SEP agreement in a settlement will generally be submitted to a person designated in the settlement order. That person, or an otherwise designated person, will need to track all reports to verify whether they are submitted on time. If a division requests that OPP review a report, OPP will need to receive a copy of the orders as well as the report.

OPP generally will review the report and prepare a draft response for the designated person. After that person's review of the response, OPP will forward the response to the facility. The district or division person can prepare a response using OPP's comments, if preferred.

### Utilize OPP's services

OPP supports the State of Ohio's negotiations and oversight of effective pollution prevention SEPs in several ways. OPP can supply information from pollution prevention literature through the OPP library, U.S. EPA and other states, and electronic and other resources. It has developed SEP language, reviewed numerous reports and proposals, proposed projects, provided literature, met with facility representatives on-site, and attended negotiation meetings.

Other Agency and AGO staff are encouraged to take advantage of OPP's experience and resources, and request its assistance.

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## Additional pollution prevention activity

If a facility would have implemented a particular activity without the incentive and/or assistance of a penalty reduction, then no new or additional environmental benefit is accomplished through the lowered penalty. Ohio gains nothing environmentally in exchange for this penalty reduction.

A facility may be less inclined to implement a particular pollution prevention activity during its normal course of business because of issues such as:

- The project is not economically attractive enough (either because of long payback period or high capital cost).
- The project carries considerable technical risk.
- Implementation of the project would adversely affect immediate production concerns due to demands on time, money, and personnel, or

because it would require temporarily ceasing some operations.

- Management is nonresponsive to and/or unaware of the benefits of pollution prevention.

For example, a facility will often use payback calculations to determine whether or not a pollution prevention activity is economically attractive. The payback period is the amount of time required for an investment to generate enough cash flow to cover the initial capital outlay necessary to implement a project.

If a payback period is too long (e.g., several years), a facility usually won't implement without outside pressure or incentive. A payback period of one and a half years is often representative of the cut-off point that a company will use when evaluating the economic attractiveness of a pollution prevention activity. A penalty reduction, when applied against the investment costs of a project, would shorten the payback period for an economically unattractive project, thus potentially providing sufficient incentive for implementation.

### Figure 2 - A Partial list of projects that have been written into Ohio enforcement settlements

- ❖ Replacement of vapor degreasing with aqueous cleaning
- ❖ Installation of energy-efficient lighting systems
- ❖ Installation of solvent recovery and recycling equipment
- ❖ Reformulation of raw materials to replace solvent constituents
- ❖ Installation of equipment to allow the use of coatings with a lower volatile organic compound content
- ❖ Installation of high transfer efficiency spray application equipment, such as high volume/low pressure coating guns
- ❖ Installation of a wastewater recycling system for an aqueous parts washer
- ❖ Installation of equipment and reformulation of paint to replace the solvent constituent of a coating with carbon dioxide
- ❖ Financial donation to a waste exchange
- ❖ Development of a municipal solid waste recycling program
- ❖ Installation of a paint proportioning unit
- ❖ Development of a municipal water conservation education program
- ❖ Implementation of upgrades and improvements to a city water distribution system to conserve water
- ❖ Installation of a cooling water tower to allow reuse of once-through cooling water
- ❖ Installation of oil mist eliminators on metal working machines (increasing the recycling of metal working fluids)

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A violator can demonstrate the need for a penalty reduction by providing a cost-benefit analysis or payback figures or by otherwise successfully arguing that the penalty reduction will be directly responsible for the implementation of the proposed project. For less tangible barriers, such as low management awareness of pollution prevention, input can be provided by personnel familiar with the facility, such as inspectors, provided they have received sufficient training.

## What can you do?

### Inspectors

Inspectors perform a unique “front line” role in the enforcement process. Because they personally view facilities and interact with representatives while on site, they may have particular insight into whether a facility is a good candidate for a SEP. Their process knowledge can help them evaluate proposed pollution prevention projects, or even suggest possible projects to Central Office. Inspectors may find themselves in the position of tracking the submittal of reports. Reports are generally submitted to Central Office staff or inspectors, and may then be forwarded to OPP for review if OPP’s review is desired.

In addition, inspectors can sometimes promote pollution prevention to Ohio industry even when no enforcement action is pending. An inspector with an understanding of the basics of pollution prevention, some pollution prevention literature (which can be supplied by OPP), and some knowledge of additional sources of information can encourage pollution prevention to achieve or go beyond compliance - without compromising his or her role as an inspector.

### Enforcement staff/attorneys

Central Office enforcement staff, and Ohio EPA and AGO attorneys also may have insight into the appropriateness of a facility for a pollution prevention SEP, or the appropriateness of a particular proposal. They can also initiate the concept of SEPs, encouraging a facility to develop a SEP proposal. They can work, perhaps together with the inspector and staff from OPP, to develop possible projects or suggestions for a violator to consider.

Inspectors may be unaware of the role they can play. Enforcement staff and attorneys can solicit information from them regarding a facility or project.

Some enforcement staff have passed along pollution prevention literature to violators during negotiations. This allows someone with limited knowledge regarding pollution prevention for a particular industry to still assist a violator develop a SEP proposal.

OPP suggests that there may be good opportunities for pollution prevention that may not be readily apparent. The State of Ohio's interest in seeing that pollution prevention action is included in settlements is often more critical than immediate detailed knowledge of the technical options.

Enforcement staff and attorneys can also facilitate OPP’s involvement. They can solicit additional input and assistance from OPP, if desired.

## What can OPP do?

OPP can perform a number of activities to facilitate the development, implementation and follow-up of a SEP. OPP can review proposals for pollution prevention activities, and develop or review draft language. It will also review reports or worksheets submitted as a result of settlement requirements upon request. OPP staff also will attend settlement meetings if desired. OPP only becomes involved in an enforcement case upon request of district, Central Office or AGO staff.

OPP can help a violator generate ideas for SEPs, and can at times propose projects. These activities can be accompanied by an on-site visit by OPP staff, if necessary and upon request. Staff also can visit a facility after implementation to assess pollution prevention results. OPP has developed case studies of some facilities after implementation, analyzing both the quantitative results of the SEPs and how the SEP process affected the enforcement case. Full versions of the following case studies and others are available from OPP.

## Case Studies

### Murfin Division, Menasha Corporation

#### Background

The Murfin Division, Menasha Corporation (Murfin), Columbus, Ohio, screen prints pressure sensitive labels.

Murfin had investigated and implemented some pollution prevention activity prior to the enforcement

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case. However, pollution prevention efforts were informal and not considered a priority by the facility.

### Negotiations

Final Findings and Orders from Ohio EPA in April, 1993 cited Murfin for installing and operating two air contaminant sources without permits and for using coatings that exceeded the allowable volatile organic compound (VOC) content limit. During enforcement negotiations, Murfin proposed a number of SEPs. The Division of Air Pollution Control (DAPC) gave Murfin a penalty reduction of 10 percent of the capital costs of a hot stamping press, and 70 percent of the capital costs of a dedicated pump dispensing system for adhesives. The enforcement settlement also included a condition for the facility to develop a facility-wide, multi-media pollution prevention program.

All parties involved felt that the incorporation of these conditions into the enforcement settlement required extra resources. The facility worked with several contractors during negotiations and while conducting the assessment. Extra resources from DAPC included staff time. The use of these SEPs also increased the complexity of enforcement negotiations and increased the amount of time necessary to settle the enforcement case. These disincentives were offset by the multi-media environmental benefits that could potentially be gained through the credit projects.

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***Murfin's pollution prevention activities have reduced air emissions by 12.5 tons per year, hazardous waste generation by more than 75 percent, and solid waste by 10 percent.***

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### Implementation

All figures in the following sections of this case study should be considered approximate.

Dedicated pump dispensing system - Prior to this project, adhesives were pumped through a single pumping system. Filters and related equipment had to be cleaned after each adhesive was used. Each

adhesive now has its own dedicated pumping system, eliminating cleaning associated with changeovers. Implementation of this system reduced hazardous waste generation for this process by at least 90 percent, and overall hazardous waste generation by 65 percent. It cost \$25,000 to install, and has saved over \$60,000 in reduced disposal and raw material costs.

Hot stamping press - Installation of a hot stamping press allowed the use of a film laminate that does not require an adhesive, but is instead bonded through heat and pressure. This project was expected to reduce the use of adhesive by five to eight percent, which would result in a reduction of air emissions of isopropanol and heptane by 1.2 tons per year and reduction of hazardous waste generation by 1200 pounds per year. Several product lines were moved from the original equipment to this equipment. The loss of one customer and another customer's product change has reduced this to two percent. Murfin has been active in trying to identify new films which would increase the number of products that can be switched over to the hot stamping. Installation of this equipment cost \$38,200.

Pollution prevention assessment - The assessment was conducted following U.S. EPA's *Facility Pollution Prevention Guide*. Murfin submitted four reports during the course of the assessment, detailing progress and actions taken. The assessment was conducted by in-house staff, with assistance provided by consultants. The use of consultants had not been specified in the enforcement settlement, and did incur additional cost.

A number of solid waste reduction and recycling projects were implemented quickly, to stimulate employee interest in the development of the program. Implementation of these projects has resulted in a decrease in overall solid waste of five percent, for a savings of \$3,000 per year.

Other projects implemented included:

Upgrades to drying equipment - Two newly installed driers are fabricated from stainless steel (to avoid the corrosion that can be caused by water-borne materials), and incorporate both ultra-violet (UV) housings and traditional oven drying, allowing Murfin to increase use of water-borne and UV cure inks and adhesives.

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Increased use of water-borne and UV cure inks has reduced air emissions by 10.5 - 11.5 tons per year of glycol ethers, isopropanol, heptane and cyclohexanone. Murfin is researching a new water-borne ink that has the potential to reduce air emissions by an additional five tons per year.

The driers cost more than \$200,000 to install, and achieve annual costs savings of \$2,000 primarily through reduced disposal costs. An additional minimal savings of \$24 per ton of air emissions is also achieved.

*Closed loop solvent dispensing system for cleaning and reclaiming used printing screens* - Previously, waste solvent was generated by the removal of ink residue from used printing screens. Now, this closed loop solvent dispensing system circulates contaminated solvent through a filter, to be cleaned again for reuse. Hazardous waste generation from this cleaning operation was reduced from 80 pounds per month to 100 pounds per year. Raw material use was reduced by 60 percent. Reduction in reduced fugitive air emissions has not been quantified. This equipment cost \$12,000 to install, and saves \$10,000 annually.

*Dispensing of clean-up solvent at printing presses* - Cyclohexanone is applied to disposable towels and used to wipe down printing screens to clean the surface and remove contaminants or dried ink. The assessment team noticed that more solvent than was necessary was applied to the rags. Plunger cans were replaced with spray bottles to reduce solvent use. Studies indicated a reduction in solvent use of 20 percent, for a reduction in emissions by 1.3 tons per year. This project was implemented for little capital cost, and saves \$2,000 annually through the decreased purchase of new solvent.

*Smaller towels for cleaning screens at printing presses* - The assessment team also noted that a significant portion of each of the disposable towels was not being used and towels were being discarded prematurely. Towels size has been reduced by 25 percent. Employee meetings were organized to explain the costs associated with buying and disposing of towels, and stating the importance of using them with discretion. This project reduced the overall hazardous waste stream by 10 percent. There was no capital cost associated with this project. It has resulted in annual costs savings of \$20,000.

*Improved ink inventory system* - In 1994, inventory problems such as overpurchasing accounted for 10 to 12 percent of waste ink, which is a hazardous waste. Implementation of a computerized system which electronically monitors raw material use has reduced this to less than two percent. No cost analysis has been applied to this project since the computerized system will be used for other purposes, such as production scheduling and payroll.

*Semi-clean room* - This project involved the installation of a semi-clean room environment to reduce the number of defective parts caused by lint and similar contaminants becoming incorporated into parts. It included upgrades to the air handling system, installation of nonporous walls and floors, and the use of specialized clothing by employees working in certain process areas.

This project resulted in a five to six percent reduction in overall solid waste. A cost analysis has not been applied to this project because some changes were part of a larger building modification project.

## Results

Implementation of all the activities has accomplished multi-media waste reduction. Two of the activities have reduced overall hazardous waste generation by 75 percent, and the remaining projects have reduced generation by 2060 pounds per year. Air emissions have been reduced by approximately 12.5 tons, and may soon be reduced by an additional 3.5 tons. Overall solid waste generation has been reduced by 10 percent. It is important to note that these reductions were achieved primarily by source reduction (with some recycling), not by the cross-media transfer of pollutants that is typically associated with pollution control or treatment. Other benefits include cost savings for some projects and increased competitiveness.

Murfin expects pollution prevention activity to continue in the future. Pollution prevention is a much higher priority for management, and the facility has improved its own ability to research and proceed with activities that may reduce waste generation. Employees have a greater understanding of how their actions directly affect both waste generation and the financial operations of the facility, which in turn affects profit sharing. They are more willing to speak up now and propose new ideas.

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## The Universal-Fuller Company

### Background

The Universal-Fuller Company, located in Cleveland, Ohio, provides industrial laundry and cleaning services using water washing and dry cleaning with stoddard solvent. Prior to the implementation of the SEP, this large quantity generator's (LQG) primary hazardous waste stream was a stoddard solvent still bottom, which was a characteristic hazardous waste due to ignitability.

The facility implemented a number of pollution prevention projects prior to its SEP. These included solvent recycling, automated chemical loading and water conservation.

### Negotiations

In December 1994, Ohio EPA cited Universal Fuller for storing ignitable hazardous waste within 50 feet of its property line.

During enforcement negotiations, the Ohio EPA Division of Hazardous Waste Management (DHWM) frequently informs companies that they may be able to implement a pollution prevention or other SEP. With this case, the incentive was particularly strong to include a SEP in the settlement because of the storage issue. Universal-Fuller could not continue to operate as a LQG and store its waste within 50 feet of its property line. Due to property constrictions, there was no simple way to avoid this problem. However, if Universal-Fuller could reduce its hazardous waste generation enough to reclassify itself as a small quantity generator or a conditionally exempt small quantity generator it would no longer be subject to this requirement. This could potentially be achieved through a SEP.

Ohio EPA initiated the concept of a pollution prevention SEP, and provided the facility with information about pollution prevention for dry cleaners. Universal-Fuller proposed installation of a secondary still designed to be used on still bottoms. The project was expected to reduce or eliminate the ignitability characteristic associated with this particular waste stream.

The facility representative and the Agency staff involved all felt that the incorporation of this project into the negotiation process required extra resources,

specifically time. For instance, the inspector had to work with the local fire department to ensure that the facility wouldn't be violating its rules regarding storage, and with the DHWM permitting unit to clarify that this new distillation wouldn't be classified as treatment. However, it was generally felt that because this credit project offered a solution to a difficult situation (the 50 feet issue), it effectively helped settle the enforcement case.

Universal-Fuller received a \$10,600 penalty mitigation. This represents approximately five percent of the expected capital cost of the project.

### Implementation

Universal-Fuller's new still has been in operation since March 15, 1995. Installation required a significant amount of "tweaking," since this was the first time this equipment was being used by a stoddard dry cleaner. Installation of the equipment was accompanied by the installation of pumps and piping designed to eliminate worker contact with the still bottoms and associated material.

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***Through this project, Universal-Fuller has nearly eliminated its hazardous waste generation, which has reduced the possibility of compliance problems in the future.***

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The still bottoms from the primary still are pumped directly to the new still, where they undergo a second vacuum distillation while being continuously stirred. The reclaimed solvent (about 25 percent of the primary still bottoms) is pumped directly into a storage tank, and can be reused in the dry cleaning process as is. The remaining oily residual is also pumped directly into a storage tank. Its flash point is approximately 177 degrees, so it is no longer considered a hazardous waste. This residual oil is sent off-site to be burned for energy.

A small amount of hazardous waste is still generated by other operations at the facility, such as maintenance. Universal-Fuller hopes to be able to reclassify itself as a conditionally exempt small quantity generator of hazardous waste.

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## Results

In 1994, the company disposed of 84.4 tons of hazardous waste, primarily still bottoms. Through the secondary distillation of these still bottoms, hazardous waste from this process has been eliminated, and reuse of solvent has increased. Although this project probably also has reduced fugitive air emissions (due primarily to the pumps and lines installed, reducing exposure of material to air), they have not been measured.

This project cost approximately \$200,000 to implement. Cost savings will be achieved through reduced raw material costs and reduced waste management costs. The facility expects to save approximately \$3000 in solvent purchases and \$2000 in waste management costs annually. These values do not take into account savings achieved through reduced paperwork, reduced labor or other areas that may have benefited financially through the implementation of this project.

The most significant benefit cited by the facility was the potential to be reclassified at a lower level of hazardous waste generation. Safety hazards have been reduced, since workers no longer handle still bottoms, and there are fewer drums used to transport material. The company that manages the oily residue tests the waste more often now, which helps Universal-Fuller ensure that customers are not sending gloves or other items with hazardous material on them to be cleaned.

Agency staff noted the benefits to both the Agency and the facility of not only the ability to return to compliance, but also the likelihood of reducing regulatory requirements associated with the generation of hazardous waste for this facility in the future.

## Conclusion

Universal-Fuller was unable, because of property restrictions, to comply with a regulation that specifies that hazardous waste cannot be stored within 50 feet of property lines. This resolution was accomplished through pollution prevention, minimizing the potential environmental detriment of cross-media transfer typically associated with pollution control or treatment, and not through more environmentally neutral options such as the purchase of additional adjoining land or moving the business.

## For more information

For more information or to request assistance from the Office of Pollution Prevention, please call the office's Technical Assistance Unit at 614/644-3469.

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Ohio EPA. 1995. *Pollution Prevention in Ohio Environmental Enforcement Settlements - Analysis and Update*. Ohio EPA, Office of Pollution Prevention, Columbus, Ohio. 92 pp.

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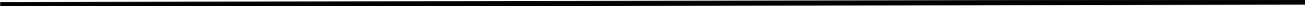
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**Pollution prevention is the use of source reduction techniques to reduce risk to public health, safety, welfare and the environment and, as a second preference, the use of environmentally sound recycling to achieve these same goals. Pollution prevention avoids cross media transfers (of wastes and pollutants) and is multi-media in scope, addressing all waste and environmental releases to the air, water and land.**

**This document was prepared by the Ohio EPA Office of 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.**





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