Ohio EPA

Office of Pollution Prevention

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Pollution Prevention in Enforcement

The Mead Corporation, Chillicothe, Ohio

The Mead Corporation in Chillicothe, Ohio used a P2 SEP (pollution prevention supplemental environmental project) to settle an enforcement action with Ohio EPA. The project involved replacing 36 solvent-based degreasers with 17 aqueous parts washers, resulting in:

- *elimination of 34 tons per year of volatile organic compound (VOC) emissions*
- *elimination of over 33,000 lbs. of hazardous waste*
- *reduction in worker exposure to solvents and solvent vapors*

Introduction

The Mead Corporation, like many companies today, is realizing substantial environmental and financial benefits from incorporating pollution prevention into their standard operating practices and environmental management systems. Pollution prevention (P2) avoids or reduces generation of waste at the source.

Pollution prevention can be incorporated into environmental enforcement settlements via P2 supplemental environmental projects (SEPs). SEPs are environmentally beneficial projects that a company agrees to undertake when settling an enforcement action. P2 SEPs use P2 techniques to reduce waste generation beyond what is required by law.

Ohio EPA has developed a number of case studies that document the inclusion of P2 SEPs in enforcement settlements. This case study was developed by OPP and Ohio EPA's Division of Air Pollution Control (DAPC) to illustrate the benefits of using P2 SEPs in enforcement cases.

Facility description

The Mead Corporation, Chillicothe Operations (Mead) is an integrated pulp and paper mill that employs approximately 2500 people. The mill produces coated and uncoated paper, carbonless paper, and paper for greeting cards. Facility operations include an integrated Kraft pulp mill, seven paper machines, five coating machines, two supercalendering machines, and numerous finishing machines. In 1997, Mead sold over half a million tons of paper products, for sales of $669 million.

Pollution prevention prior to enforcement

Pollution prevention is an important concept at Mead's international headquarters, located in Dayton, Ohio. In the

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past, the corporate office has supported P2 projects at the Chillicothe facility.

Mead was aware of the benefits of P2 prior to the enforcement case, and had implemented a number of projects to decrease their use of hazardous materials and reduce risk to the community from a possible spill or accident. Aware that conservation of raw materials, water, and energy make good business sense, Mead has formed employee problem-solving teams to analyze their use of raw materials, water and energy.

One of Mead's most significant P2 projects involved elimination of chlorine gas from the pulp mill, where wood is processed for use as a raw material in the paper mill. The pulping process involved large quantities of potentially hazardous chlorine gas, used to bleach the pulp. Mead voluntarily redesigned its pulping process to an elemental chlorine-free process for its bleaching operations.

Teamwork

In the early 1990's, Mead and Ohio EPA's Southeast District Office committed to a cooperative regulatory problem solving process. The team acknowledged that 1) Mead was going to continue its presence as a leader in the paper industry and in Ohio's business community, and 2) that environmental protection agencies and regulations to protect the environment are here to stay. The team works towards facilitating Mead's efforts to go beyond regulatory compliance, and do more than is what is required by law to protect the environment.

Enforcement case

Environmental violations at Mead, alleged by Ohio EPA's Division of Air Pollution Control (DAPC), involved repeated violations of air pollution control regulations over a period of several years. During enforcement negotiations, Mead and DAPC agreed that the case had the potential for a P2 SEP.

Mead proposed two P2 SEPs: replacing the solvent-based parts cleaners with aqueous units; and increasing the combustion efficiency of their #6 wood-waste boiler (used to generate heat for the pulping process) by adding an over fire air system. Ohio EPA and Mead settled in May of 1997; the final findings and orders (F&O's) included both P2 SEP projects.

The parts washer project was particularly attractive since it was multimedia and would not only reduce air emissions of Volatile Organic Compounds (VOCs), but would also reduce generation of hazardous waste. The project was also attractive because Mead has good opportunities for information sharing and technology transfer to other Mead facilities as well as other paper mills.

In addition, the settlement was particularly innovative because it was settled quickly, using alternative dispute resolution techniques, without legal representation from Mead or Ohio EPA. Mead and DAPC agreed on a reasonable implementation schedule.

Implementation

Mead has many parts washers located throughout the plant, that are used to clean a wide variety of parts. The parts washers are used primarily to remove oil, grease and dirt from metal equipment parts during routine maintenance.

Pursuant to the May 1997 Orders, Mead replaced 36 solvent based parts washers with 17 aqueous-based cleaning units. The aqueous units, manufactured by Graymills and Precision Metal Works, are versatile, and address a number of different cleaning needs at the Mill. The vendor performed on-site trials of the aqueous units.

The PMW units operate much like an automatic dishwasher,

and work by spraying the parts with hot water and soap, while the parts rotate on a turntable. Water acts as the solvent, with assistance from a powdered soap supplied by the vendor.

A second type of unit, made by Graymills, replaces the "sink on a drum" type parts washers used to clean parts by hand. The fluid is recycled through the system and filtered. The new aqueous washers prevent dermal contact with solvents and inhalation of solvent vapors by operators, which is a common problem with sink on a drum type solvent-based parts washers.

There are many different types of soap and additives available for the wide variety of aqueous parts washers. The soaps have differing chemistries to control factors such as cleaning, spotting, foaming, and rust prevention.

Results

Since implementation of the P2 SEP, Mead no longer uses 3000 gallons per year of solvent. Installation of the aqueous parts washers has resulted in eliminating 33,000 pounds of hazardous waste and decreasing VOC emissions to the air by 34 tons per year.

Equally important, because the new washers use only soap and water, the employees are not exposed to the liquid solvent or solvent vapors during the cleaning process.

In addition to these environmental, and health and safety benefits, the project has financial benefits for Mead, both in solvent management and labor costs.

Prior to implementation of the P2 SEP, Mead leased the old solvent parts washers for $50,000 per year. This included the solvent, solvent disposal, and monthly servicing.

If you compare the annual solvent cost of $50,000 per year, with the purchase of the new parts washers at $117K, and current soap costs of $8K per year, the project had a calculated payback of approximately 2.5 years. With the addition of the P2 SEP penalty mitigation, the payback was shortened slightly. These calculations do not take into account the extra savings in labor described below.

The employees, while at first resistant to the change in cleaning technique, now prefer the new aqueous based cleaning units because they are fully automatic. They can load the machines, then do something else while the machines do the cleaning. The old cleaning method was much more labor intensive, because each part had to be scrubbed with a brush and the solvent to remove oil and grease.

Added labor savings result from reduced paperwork: because they no longer deal with large volumes of solvent, the environmental staff has less paperwork associated with managing the solvents and solvent waste at the facility.

The aqueous cleaning units also remove the explosion and fire hazard previously posed by the solvents. Mead is self-insured, but often companies can reduce their insurance costs by eliminating fire and explosion hazards.

The parts washer project has reduced hazardous waste generation at Mead to the point where the mill is close to attaining small quantity generator status (SQG) for its hazardous waste. Mead has been a large quantity generator (LQG) for many years. If Mead can drop to SQG status, it would lighten the regulatory burden of the company and decrease the amount of work for Ohio EPA associated with oversight of an LQG. OPP and Ohio EPA's Division of Haz-ardous Waste Management are working with Mead to realize this goal.

The project to increase combustion efficiency of the #6 boiler is not fully complete at the time of this publication, but is scheduled to be completed in the time-frame required by the Orders. Upon completion, the project is expected to result in

the reduction of carbon monoxide emissions by 1900 tons per year and nitrogen oxide emissions by 5 tons per year.

Conclusions

This P2 SEP allowed Ohio EPA and Mead to settle an enforcement case in a timely manner, to the satisfaction of both parties. Since the negotiations were not contentious, the cooperative relationship between DAPC and Mead was reinforced, and litigation was avoided.

Remedying Mead's compliance problems without litigation saved both Ohio EPA and Mead time and money.

The P2 SEP created environmental and health and safety benefits for Ohio, as well as financial benefits for Mead.

In addition to the compliance and deterrence benefits of enforcement, this settlement realized a decrease in air emissions and the elimination of a hazardous waste stream. Mead went *beyond* compliance with permitted air emission standards for VOCs.

When companies embrace pollution prevention concepts, and implement P2 projects, the benefits can have positive effects on the environment and the company's bottom line.

As illustrated by this case study, pollution prevention can help companies see the advantages of source reduction or water and energy conservation, because waste usually represents lost raw materials.

Ohio EPA, Mead, and Ohio's environment, citizens, and economy all benefited from this P2 SEP (see conclusions presented above).

This is the 64th in a series of informative 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 (OPP) was created to encourage multi-media pollution prevention activities within the state of Ohio, including source reduction and environmentally sound recycling practices. OPP analyzes, develops, and publicizes information and data related to pollution prevention. Additionally, OPP increases awareness of pollution prevention opportunities through education, outreach, and technical assistance programs directed toward business, government, and the

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