Making Pollution Prevention Pay

by Dr. Robert P. Bringer

Pollution Prevention Pays. That phrase was put into capital letters in 1975 when the 3M Company made it an integral part of its worldwide manufacturing operations and environmental policy.

And 3P—short for Pollution Prevention Pays—has, indeed, paid off.

Now 10 years old, the 3P program in the United States can point to these totals for pollution prevented annually:

- Air pollutants—85,000 tons.
- Water pollutants—10,000 tons.
- Wastewater—590 million gallons.
- Sludge/solid waste—142,000 tons.

Most of 3M's manufacturing is done in the United States, at plants in 37 states. But the company also has manufacturing operations in 30 foreign countries on six continents and, too, 3P is helping the environment. Overseas, the totals of pollution prevented annually are 8,000 tons of air pollutants, 400 tons of water pollutants, 400 million gallons of wastewater and 3,000 tons of sludge and solid waste.

The environment hasn’t been the only beneficiary of 3P. Worldwide, the program has achieved savings of more than $200 million in the past decade, 80 percent of it in the United States.

The savings are the result of pollution control equipment purchases that were eliminated or delayed, raw materials saved and operating costs reduced, energy saved, and sales retained on products which might otherwise have been taken off the market as environmentally unacceptable.

"Pollution Prevention Pays" became a part of 3M manufacturing operations at a time when many new and complicated environmental laws and regulations were being generated by the states as well as the federal government. The new requirements were generally viewed by industry as a no-alternative mandate. The conventional response was to install costly add-on pollution control equipment in order to filter out contaminants at the end of the manufacturing process.

The company looked beyond the negatives of cost and paperwork in this new regulatory climate and found a positive side, an alternative way to show concern for the environment: Don’t create pollution in the first place. Eliminate or minimize pollutants at the source, in the manufacturing process.

As a result, 3P was born. Today, ten years later, it keeps growing, reducing pollution, conserving resources, saving money and spawning innovative technology.

The pollution-prevention approach is not unique and does not, of course, displace pollution control as an important strategy to ensure continued environmental compliance by the firm’s numerous and widespread manufacturing activities. But as an organized company-wide program, 3P has been an increasingly profitable and valuable ally in the firm’s environmental management strategy. The program seeks pollution prevention answers in four areas:

1. Can the product be formulated with substitute, non-polluting raw materials?
2. Can the process be changed?
3. Can the equipment be redesigned?
4. Can materials be recycled and reused?

Technical employees in manufacturing, engineering, and product research laboratories have provided the answers. Since 1975 more than 1,200 proposals have won the coveted designation, "Approved 3P Project."

A proposed 3P project has to eliminate or minimize a pollutant, save resources and money, and also show a technical achievement. Projects are judged by a committee of technical peers. It’s a tough jury. More than half the proposals submitted fail to win approval.

The savings don’t have to be dramatic or the technology complicated to win recognition. Here are some examples:

- Removing a chemical discharge solved a water pollution problem and simultaneously created a new revenue-producing product.
- A hazardous waste was minimized, materials were saved and clean-up time reduced simply by using a shallower pan for a coating solution.
- By substituting an aqueous for a solvent-based coating for medicine tablets, the need for costly pollution control equipment was eliminated.
- Energy-rich solvent-filled air was rerouted from the stack and incinerated in a converted boiler and now provides a fifth of the manufacturing plant’s normal steam needs; air pollution was prevented and the energy bill reduced.
- A process modification to reclaim and reuse a solvent cost $4,000 to install and saved $12,000 the first year.

"Pollution Prevention Pays" has provided benefits beyond the more obvious ones of protecting the

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environment, wiser use of resources, money saved and technology advanced. A significant, though not readily apparent plus is the fact that pollutant-free products don't create cleanup or disposal problems for the consumer. When pollution is exported, it means that ultimately more resources, time and money have to be spent to deal with it.

Facilitating compliance with environmental regulations is a second benefit. With the 3P touch, air and water quality standards are not only met but often are exceeded.

The 3P success story has contributed to an increasing awareness in the industrial community of the possibilities and rewards of pollution prevention. The firm has shared its experiences, including how to organize a comprehensive company-wide 3P program, with hundreds of inquiring private and public organizations in the United States and abroad.

A fourth benefit is that the 3P track record has given us improved credibility with legislative and regulatory bodies. This facilitates technical conversations with the agencies, enabling us to share experience and expertise in a manner that contributes to meaningful and reasonable environmental protection measures.

Finally, because 3P applies to both conventional pollutants such as suspended solids in water and nonconventional pollution such as toxic substances, it has helped position the company to deal with environmental issues no less complicated or demanding than those industry and government have faced in the past. Major ones for the foreseeable future include hazardous waste and toxics control.

The challenges are complicated, but I'm encouraged to see a moderation in the combative climate that, in the past, too often accompanied the resolution of environmental problems. There seems to be a change in attitude from confrontation to cooperation between government and industry, and I think positive industry programs such as 3P have helped bring about the change. Government is now more interested in the technical knowledge of industrial professionals concerning the development of environmental regulations. Where such information was once regarded with suspicion and as self-serving, it is now accepted as valuable input.

When cooperation and understanding replace conflict, technical solutions to environmental problems aren't all that difficult.

Answers to pollution questions don't always have to be hammered out in the public arena, of course. Many are to be found in industry's own house, as 3M's Pollution Prevention Pays program has demonstrated.

The 3P approach, while not a solution to all of 3M's cleanup needs, will continue to solve pollution puzzles to help the environment and many firms throughout business and industry. Its ultimate goal is to eliminate industrial pollution entirely. That's utopian, certainly, but still a goal worth striving for.

Solvent-rich air from a manufacturing process at a 3M Company plant in St. Paul, Minn., is rerouted through this big pipe to a modified boiler, where it provides supplementary fuel. This solves an emissions problem, eliminates the need for pollution control equipment, and reduces energy costs.