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3M's Pollution Prevention Pays

An initiative for a cleaner tomorrow



Pollution Prevention Pays

Managing for a better environment

POLLUTION PREVENTION PAYS: THE 3P PROGRAM

The Pollution Prevention Pays program — 3P — is an approach that prevents pollution at the source — in products and manufacturing processes — rather than removing it after it has been created. While the idea itself was not new when 3P was started in 1975, the concept of applying pollution prevention on a company-wide basis and documenting the results had not been done before.

In its first 15 years — 1975 through 1989 — 3P has cut 3M pollution per unit of production in half, prevented more than 500,000 tons of pollutants and saved more than \$500 million.

THE 3P RECORD 1975 - 1989			
Pollutant Prevented	U.S.	International	Total
Air pollutants	112,000 tons	11,000 tons	123,000 tons
Water pollutants	15,300 tons	1,100 tons	16,400 tons
Sludge/solid waste	397,000 tons	12,000 tons	409,000 tons
Wastewater	1 billion gals.	.6 billion gals.	1.6 billion gals
Approved 3P projects	785	1,726	2,511
Savings	\$426 million	\$74 million	\$500 million

The figures above represent savings only from the first year of each project. Projected over a period of several years, the pollution prevented becomes even more significant.

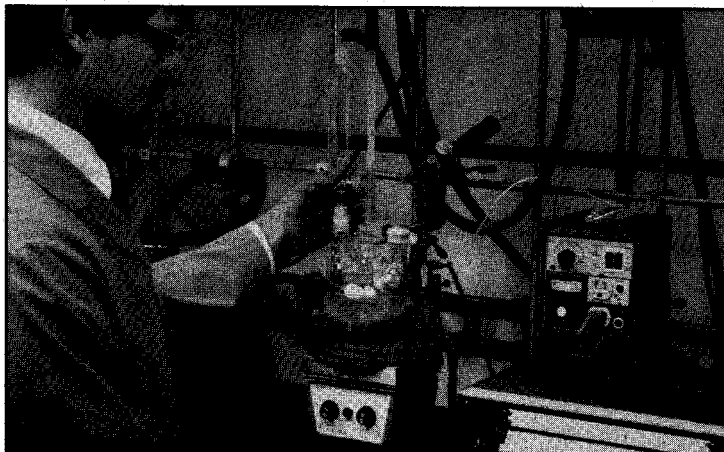
3P was established because it is more environmentally effective, technically sound and economical than conventional control procedures. Natural resources, energy, manpower and money all are used in building conventional pollution controls, and more resources are consumed to operate them. Conventional control only constrains the problem temporarily; it does not eliminate the problem, which is the objective of the 3P approach.

3P has been recognized the world over for its achievements. This environmental/conservation initiative has been praised by environmental organizations, officials of many governments and by the United Nations. It has been copied by a number of companies. Among 3P's environmental achievement honors are top awards of the National Wildlife Federation's Corporate Conservation Council and the World Environment Center.

Reducing Pollution at the Source

The prevention approach to pollution abatement is standard practice at 3M, consistent with available technology and economic feasibility. It seeks to eliminate pollution at the source through:

- **Product reformulation.**
- **Process modification.**
- **Equipment redesign.**
- **Recycling and reuse of waste materials.**



3M scientists have developed new pollutant-free products and reformulated existing ones to eliminate pollution. Laboratories are playing the key role in helping 3M achieve its waste minimization goals of the 1990s.

3P Administration and Recognition

All 3M employees are encouraged to participate in the 3P program. It is administered by a 3P Coordinating Committee which represents 3M's engineering, manufacturing and laboratory organizations; the corporate Environmental Engineering and Pollution Control Department; and the Industrial Hygiene Group.

A project must meet four criteria to receive formal recognition under the 3P program:

- **Eliminate or reduce a pollutant.**
- **Benefit the environment additionally through reduced energy use or more efficient use of manufacturing materials and resources.**
- **Demonstrate technical innovation.**
- **Save money. This may be through avoidance or deferral of pollution control equipment costs, reduced operating and material expenses, or increased sales of an existing or new product.**

Innovation in Action

3M's innovative technical employees have conceived and implemented more than 2,500 pollution solutions under the 3P program. Some examples:

- A resin spray booth had been producing about 500,000 pounds annually of overspray that required special incineration disposal. New equipment was installed to eliminate excessive overspray. The new design reduced the amount of resin used, saving more than \$125,000 a year, on a \$45,000 investment in equipment.
- Riker, 3M's pharmaceutical unit, developed a water-based coating for medicine tablets as a substitute for a solvent solution coating. The change cost \$60,000 but 3M eliminated the need to spend \$180,000 for pollution control equipment, saved \$15,000 a year in material costs and prevented 24 tons a year of air pollution.

International 3P projects have ranged from improved control of coating weight at a facility in Wales and the recycling of wastewater in a plant in West Germany, to a variety of combustion control and heat recovery processes in Japan.

A new way to coat medicine tablets at 3M Riker reduced air pollution and operating costs.



3P PLUS: ENVIRONMENTAL INITIATIVE FOR THE 1990s

As successful as 3P has been, 3M is doing even more in the environmental arena.

In June 1988, 3M set challenging new goals to spur development of new and environmentally better ways to manufacture its products. 3M intends to cut all hazardous and non-hazardous releases to the air, water and land 90 percent and to reduce the generation of waste 50 percent by the year 2000. This is from the base year of 1987. The ultimate goal is to reduce emissions to as close to zero as possible.

3M will achieve its goals primarily through an updated and expanded 3P program called 3P Plus. 3P Plus focuses on long-term scientific research and stepped-up efforts to reduce sources of pollution in the manufacturing process — the classic pollution prevention approach.

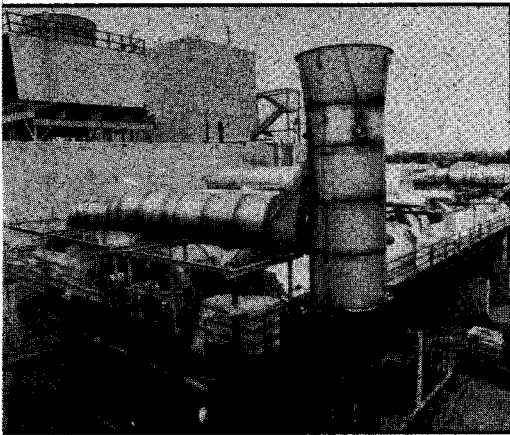
This new voluntary effort will take 3M from a position of compliance with governmental environmental protection regulations to being substantially under the limitations established by the regulations.

Air pollution is a particular challenge to 3M because of the kinds of products it makes. Many coating processes, for example, require use of solvents, which evaporate and become air emissions. 3M scientists have found ways to eliminate or reduce the use of solvents in making a number of products. However, solventless processes that work well for some products do not necessarily work for others. Thus, research continues to be an important part of 3M's efforts to achieve its goals.

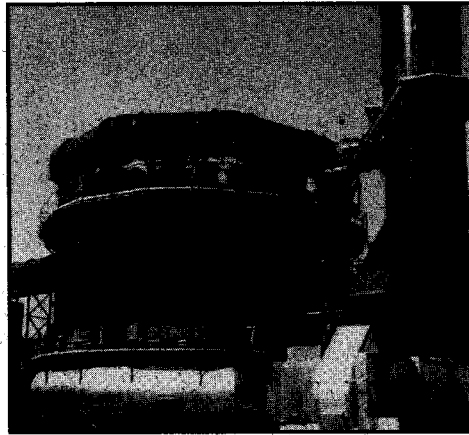
Air Emissions Reduction Program

As an intermediate step towards reaching the goals of 3P Plus, 3M has initiated a program employing the most advanced pollution control technology available to reduce air emissions at its facilities worldwide. The \$150 million program will further cut air emissions at existing and new facilities. The pollution control installations are scheduled for completion in the United States in 1992 and at international locations in 1993.

The installations include thermal oxidizers, which burn solvent emissions and convert the waste heat to energy, and solvent recovery systems, which capture solvents in air emissions and recycle them into manufacturing processes. The Air Emissions Reduction Program is expected to reduce emissions by 70 percent or more.



Air emissions are captured and recycled by this solvent recovery unit at 3M Hutchinson, Minn.



This thermal oxidizer burns air emissions at the 3M St. Paul Tape facility.

3P PLUS ENVIRONMENTAL QUALITY TARGETS

- By 1993 • 70 percent reduction in air emissions.
- By 2000 • 90 percent reduction in environmental releases to air, water and land.
- 50 percent reduction in generation of waste.

Organizing To Minimize Waste

To help achieve the goals of 3P Plus, waste minimization teams have been established in product operating divisions to identify and to capitalize on source reduction and recycling opportunities. Teams are made up of representatives of engineering, manufacturing, laboratories, packaging engineering, marketing and other units, ensuring as broad a perspective as possible.

Supporting the operating units is a newly established pollution prevention staff in the Environmental Engineering and Pollution Control Department. This group is essentially the program facilitator. Its job is to make 3P Plus happen.



Pollution Prevention Pays

3M CORPORATE

ENVIRONMENTAL POLICY

3M will continue to recognize and exercise its responsibility to:

- Solve its own environmental pollution and conservation problems.
- Prevent pollution at the source.
- Develop products that will have a minimum effect on the environment.
- Conserve natural resources through the use of reclamation and other appropriate methods.
- Assure that its facilities and products meet and sustain the regulations of all federal, state and local environmental agencies.
- Assist, wherever possible, governmental agencies and other official organizations engaged in environmental activities.

— Adopted by Board of Directors
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**Environmental Engineering and
Pollution Control Dept./3M**
P.O. Box 33331, Bldg. 21-2W
St. Paul, MN 55133 • (612) 778-4791

The 3M logo, consisting of the letters '3' and 'M' in a bold, sans-serif font.