



## **Dow Chemical (B): Waste Reduction at Bayside**

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During the late 1980's Dow Chemical Company had developed a reputation for effective waste reduction initiatives among chemical producers. Its WRAP program (an acronym for Waste Reduction Always Pays) was well known outside the company for motivating employees to work on reducing pollution and for saving the company money. (For details on the WRAP program, refer to the case Dow Chemical Company (A): The WRAP Program.) The program had been implemented successfully in Dow's Louisiana Division, but plants in other divisions did not always have an easy time imitating the WRAP model.

The Bayside Division was another of Dow's five divisions. Located in Maryland along the Chesapeake Bay, the site was home to about a dozen plants, which produced a combination of commodity and specialty chemicals. The various plants were managed somewhat autonomously because there were many more differences in process technologies, volumes, and ultimate markets for the chemicals produced on the site than there were in other divisions.

There was no program quite like the WRAP program at Bayside. On the other hand, Bayside was able to use its statistical process control (SPC) program to promote waste reduction. Although all of Dow's divisions pursued

continuous improvement in several ways, Bayside had made a somewhat deeper commitment to SPC, and it was covered in the training received by many of the operators. One part of the training program required operators to apply SPC to some waste stream at their plant and to propose a waste reduction project.

One of the plants at the Bayside Division also had a “suggestion box” system for identifying waste reduction projects. The use of a suggestion box was the idea of the plant superintendent, who had seen the concept work successfully in a previous assignment. In this system, suggestions were collected each day. Every month, suggestions were reviewed by an oversight committee consisting of an engineer and number of shop floor employees. The committee authorized funding for projects and also gave a small prize to the best suggestion. Typically, the suggestions came from operators. This role of engineers was to assist with some of the technical aspects of the project, but the primary responsibility rested with shop floor employees. In addition, there was no auditing of the proposals. This feature meant that the program manager (and the evaluation committee) spent only modest amounts of time administering the program.

Occasionally, suggestions came directly from engineers. For example, at the time that elimination of chlorofluorocarbons (CFC’s) was proposed, the use of CFC’s was not controversial, and the public was not well-informed about damage to the earth’s ozone layer. As a consequence, the use of CFC’s was not being measured and therefore did not appear in the systems that tracked and evaluated plant performance.

Funds for implementing waste reduction projects were approved by plant managers. In the Bayside Division, these managers had access to an investment budget that was determined during the annual budgeting cycle. The Bayside Division had a budget that was allocated to individual plants. Normally this allocation was set to a certain fraction of the capital base at the given plant, modified slightly based on what had happened in the previous year. This budget had to be allocated among several activities, such as equipment purchases, facilities modernization, information systems, and the like. In effect, a certain amount of competition existed for limited funds, and the waste reduction projects were part of that competition. Once this budget was consumed, it was very difficult to obtain additional investment funds.

Compared to the projects generated by the WRAP program at the Louisiana Division, Bayside Division projects tended to be smaller (investments invariably under \$200,000), less complex, and more likely to involve changes in housekeeping (e.g., materials and handling) than changes in process design.