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Major Changes in the Chemical Industry

The chemical industry is in the process of revolutionary changes in matters that affect its relations with the public. At the local level, managers of large plants are seeking advice and interacting with community advisory panels. The industry is making sustained and successful efforts to reduce emissions to the environment. It is implementing many ways of lessening possibilities of injuries to plant personnel and to the public. The changes have come as a result of recognition of a drastic need to improve public perception of the industry.

Chemical plants were valued and welcomed in local communities for much of their history. They provided employment and added to the tax base. Their health and safety record compared favorably to those of other industries. But public perceptions and attitudes changed as concerns mounted about toxicity of chemicals and publicity given to Love Canal and other waste sites. Industry was slow to respond, and public attitudes became quite negative. Then came Bhopal in 1984, and it was obviously necessary to provide some assurance to neighbors of ability to respond to serious accidents. Community Awareness Emergency Response (CAER) teams were organized. This involved interactions of plant managers with local officials. The managers were impressed favorably by constructive cooperation. But attitudes of the general public remained negative, and restrictive state regulations were proposed and enacted. Federal legislation in 1986 required that emissions of many chemicals from plants be reported annually. The results for 1987 were announced in July 1988. They showed that huge tonnages of chemicals were being released to air, water, and earth.

The top management of major companies became convinced that their industry must become pro-active in improving its relations with the public. One of their major collective moves was to establish a "Responsible Care" program under the aegis of the Chemical Manufacturers Association. Its 182 member companies produce 90% of the nation's chemicals.

Three examples of the ten principles of Responsible Care can be paraphrased as follows: (i) Recognize and respond to community concerns about chemicals and plant operations; (ii) develop and produce chemicals that can be manufactured, transported, used, and disposed of safely; and (iii) operate plants and facilities in a manner that protects the environment and health and safety of employees and the public.

When the Responsible Care program was announced, it was greeted with cynicism. However, changes have occurred. Community action panels have been formed. They usually meet with plant management monthly or bimonthly, and their recommendations have affected plant operations. At present there are 160 of them, with the number likely to increase by another 100 this year.

Perhaps more impressive has been a reduction in emissions. With 1987 as a base, emissions were lowered 40% in the 3 years including 1990. The 1991 results will be announced in July and will show a further decrease. Monsanto is on track to achieve a 90% reduction in air emissions by the end of 1992.

Companies have been making continuing efforts to decrease possibilities of accidents and to limit their impact. They have responded to a lesson from Bhopal, which is the desirability of minimizing inventories of dangerous substances whether in process or in storage. For example, amounts of toxic intermediates have been decreased by modifications of processes. Large containers storing chlorine gas have been replaced by small ones with just-in-time delivery of the chemical.

In seeking to improve the safety of plants or to limit their emissions, the industry has available highly capable chemists, chemical engineers, and electronics specialists. Teams of them are formed to study various processes and procedures, and often they produce designs that when implemented decrease emissions or wastes or lead to improved recycling.

Large-scale improvements of plants cannot occur instantly. Illustrative of a problem faced in moving toward zero emissions is the situation at the Tennessee Eastman plant at Kingsport. In its 250 buildings there are 10,000 miles of piping accompanied by an enormous number of flanges, valves, and packings; some develop leaks. Much of the piping system is being replaced or enclosed, but that will take time. Companies have many problems in limiting emissions, but most are moving, and billions of dollars will be spent this year on improvements.—PHILIP H. ABELSON

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