

Summary

The management, or in some cases mismanagement, of industrial waste present various levels of hazard to the public. Nonnuclear industrial waste range from being relatively harmless to being so extremely hazardous that the waste must be totally isolated from humans and the environment, destroyed or permanently detoxified. In developing regulations to implement the Resource Conservation and Recovery Act of 1976 (RCRA), the Environmental protection Agency (EPA) chose not to classify waste beyond a designation of hazardous or nonhazardous. Moreover, EPA has excluded types of waste, such as those generated in relatively small quantities and some chemicals with known chronic (long-term) toxicity, without making assessments of the levels of hazard they present to the public. The Office of Technology Assessment finds that a well-designed degree-of-hazard classification system might provide a strategy for cost-effective management of nonnuclear industrial waste. A quantitative classification system incorporating the degree-of-hazard concept is possible because the following two conditions are met:

- particular waste, management programs, and sites have important shared characteristics; and
- scientific criteria and data that describe hazards are either available or can be, in principle, obtained.

Alternatively, a qualitative degree-of-hazard approach without specific categories requires less effort to develop criteria and data, and its apparent simplicity may be attractive from a programmatic perspective. In the long term, such an approach could prove to be inefficient, since scientific information appropriate for classification may be needed in the future. In addition, much of the information obtained in a qualitative approach on a case-by-case basis often is not fully used, may be unnecessary, and often is not appropriate for classification.

The present state of knowledge, however, does not lead to an easy endorsement or condemnation of the use of a hazard classification

system for implementing the mandates of RCRA. While a system based on degree of hazard may appear reasonable and cost effective, degree-of-hazard classification should not be regarded as a panacea for the national problem posed by disposal of nonnuclear industrial hazardous waste. Moreover, it is not necessarily a radical departure from existing regulations. Classification by hazard could be incorporated incrementally into various segments of the current program. Hazard classification should be viewed as an evolutionary rather than revolutionary development for industrial waste management.

The objectives of a classification system are twofold:

- to identify with greater certainty industrial waste that pose the most severe threats to human health and environment; and
- to allow development of management strategies that reflect the differences in potential hazards of industrial waste.

Waste classification methods include technical criteria based on waste characteristics, ranking based on results of specified tests, grouping by particularly important characteristics (multiple discriminatory factors), and ordering the potential of facilities to contain or destroy the waste. Because of incomplete information and data about industrial waste streams, none of these methods can be implemented without first developing scientifically based criteria that reflect both real world exposures and intrinsic properties of waste. Although much of the preliminary investigative effort required to develop a degree-of-hazard classification system has been initiated in compliance with other environmental regulations, further evaluation of all schemes is needed.

The benefits of using degree-of-hazard classification in regulating industrial waste include concentration of regulatory action on waste that pose the greatest hazards; a more effective allocation of the resources of generators, disposers, and government; a means to establish

priorities for reduction of the waste stream by changing manufacturing processes, end product substitution or recycling of waste; a means to increase the public's knowledge about the variation in hazard posed by industrial waste; and finally a means to assure that the intent of RCRA is achieved.

A number of questions, however, require examination. There is concern about the costs to EPA for developing a classification system, and

also the cost to society for time that might be lost during a transitional period in implementation of RCRA. Uncertainties surround availability of appropriate data, the ability to establish scientifically based criteria, and increased complexity of regulations. Finally, the costs that result both from developing a degree-of-hazard system and from not designing a classification approach need to be determined.