Issues in Hazardous Waste Management: Discussion*

Jon M. Conrad

In the article by Metcalf, Dudek, and Willis we have an interesting study of industry response to hazardous waste disposal via various media. Using mixed integer programming they show the adjustments a firm will make to different standards and disposal costs for sludge and wastewater. They provide firm level evidence (in this case for an electroplating firm) of the futility of a piecemeal approach to residuals management which may only chase residuals to the least regulated medium. Specifically, with pretreatment regulations sludge production increases significantly with a cross media transfer of about 25% of total residual metals to land-based sludge disposal. Indirect dilution becomes the optimal firm response to pretreatment standards and high sludge disposal costs (which could result from a tax on sludge).

Perhaps the most important conclusion from the Metcalf, Dudek and Willis paper is the need for multiproduct firm level analysis in order to predict the impact of different direct regulations and economic incentives (for example, effluent charges). With knowledge of firm level response we may have a better chance to guide residuals to those media, or to recycling, so as to minimize the cost of achieving ambient standards à la Baumol and Oates (1975).

The paper by James Opaluch presents some conjectures on the role of liability rules in attaining the optimal future distribution of stochastic externality. I have some personal reservations about the effectiveness of strict liability (see Conrad 1980) in that the incentive for optimal prevention provided by strict liability will also depend on (1) detection, (2) documentation of damages and, in all likelihood, (3) litigation. The fact that we are typically dealing with low frequency occurrences, for which objective probability assessment is difficult, means that the initial investment in preventing a stochastic mishap will be difficult to evaluate from either a private (liability) perspective or from the socially optimal point of view.

Perhaps the most interesting aspect of the Opaluch paper is the stochastic simulation analysis which is the first attempt this discussant has seen at attempting to calculate the social cost of anchoring. Anchoring is a bias resulting from overly conservative adjustment of priors to observed data. The simulation results show excessive oil spills resulting from an overly optimistic view of limited prevention and slow reaction to observed spill frequency. I suspect this explanation goes a long way in explaining what some regard as an excessive number of spills in U.S. coastal waters. Another factor might be an overly optimistic view of the effectiveness of recovery actions once a spill has taken place.

The analysis of bias-producing decision heuristics is an important area of future research. The cost of such heuristics, as they are employed by externality producing firms or reaching individuals, will be important in formulating environmental policy for managing hazardous wastes.

The author is Associate Professor of Agricultural Economics at Cornell University.

References

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