Harvard Center for Risk Analysis

April 1997

Volume 5
Issue 4

Risk in Perspective

Forget Chemical Use, Let's Report Risk!

"Right-to-know information must be placed on a sound scientific footing."

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On October 1, 1996 the U.S. Environmental Protection Agency (EPA) issued a proposal to "expand its Community Right-to-Know initiatives to increase the information available to the public on chemical use." This expansion builds upon the Toxics Release Inventory (TRI) mandated by Congress in 1986. The TRI requires facilities in certain industries to report all emissions to air, water and land of chemicals on an official list of toxic substances. EPA makes this information publicly available as an electronic database. EPA has recently expanded the TRI program by expanding the list of toxic chemicals and increasing the types of industrial facilities that fall under the TRI. The new proposal would require reporting not just emissions, but how toxic substances are used.

This issue of **RISK IN PERSPECTIVE** argues that chemical use reporting should be replaced by chemical risk reporting. It is drawn from the author's prepared statement at the public meeting in Boston on October 16, 1996.

Use Does Not Equal Risk

Chemical use does not equal chemical risk. Different applications of a chemical pose different opportunities for exposure and risk. Chemicals vary greatly in their toxicity; a pound of one chemical can be much more dangerous than a pound of another. Simply knowing how many pounds are used provides no information about health or environmental risks. The state of Massachusetts already has a toxics use reporting requirement similar to the EPA's proposal at the federal level. As a member of the Massachusetts Toxic Use Reduction Act (TURA) Science Advisory Board (SAB), I've watched our group struggle at nearly every meeting with the distinction between appropriate and inappropriate use of a chemical.

As an example, the SAB was presented with a petition by Ken's Foods, Inc. to remove acetic acid from the state's list of toxic substances. The presence of acetic acid on the list means that Ken's has to report its use, pay a fee to the state, and undertake an annual toxics use reduction planning process requiring certification by a state registered toxics use reduction planner. The main use of acetic acid by Ken's Foods is as vinegar in salad dressing. This use of acetic acid poses essentially no risks and there are clear health benefits of eating salad. At the same time, other uses of acetic acid may pose significant risk. Knowing that Ken's Foods uses large amounts of a chemical on the state list of "toxic substances" provides absolutely no information about any danger involved. Some chemicals have hundreds of different uses, some with no associated risk, some with significant risk. What matters is how a chemical is used, not whether it is used.

Use Reporting Provides the Wrong Incentives

Firms have an incentive to search for substitute chemicals not on the list of toxic chemicals. In a small field study funded by the Massachusetts Toxics Use Reduction Institute, I was told many times that "getting off the list" was a major goal at many companies. Small and medium-sized firms in particular want simply to escape the burden and cost of reporting.

You can easily imagine the problems with list-driven chemical substitution. Although not on the list, a substitute chemical may be more toxic than the original. Even if less toxic, the substitute may be more volatile, may be required in greater quantities, or may be more easily absorbed. There may be greater exposure and, therefore, greater risk. Many chemicals on lists of toxics are there precisely because they are well characterized toxicologically. Few chemicals not on these lists are as well studied. This means companies often trade a known, and manageable, hazard for one much less understood.

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Finally, chemical substitution may lead to exchanges of different types of risk. In Massachusetts companies, I have seen very small chronic health risks from solvents exchanged for what are likely more substantial fire risks. I know of cases in which hypothetical low-dose cancer risks have been exchanged for more likely reproductive hazards of a chemical not on the list. Most troubling, it seems that often very small and hypothetical risks to the public are exchanged for higher and more definite risks to workers. Use reporting, by increasing costs and paperwork for firms, will encourage chemical substitution and may well lead to increases in risk.

Only through analysis of the risks associated with a particular application of a chemical, can the potential harm to health and the environment be assessed and reduced. With estimates of risk, substitute chemicals can be compared, alternative technologies evalated, and progress in pollution prevention monitored.

Sound decisions also require consideration of the many social and public health benefits of chemical use. Many chemicals on lists of toxics are used to make health enhancing products like safety glass, bicycle helmets, or pharmaceuticals. Vinyl acetate and butyraldehyde use at Monsanto's Springfield, Massachusetts plant consistently ranks near the top of the Massachusetts list of chemical use. These two chemicals are used in the production of safety glass. Safety glass has been identified by the National Highway Traffic Safety Administration as the most cost-effective improvement ever introduced in the history of automotive safety. It is required in every new car sold in the U.S. Perhaps the public should also have a right-to-know of the benefits associated with chemical use.

The Proper Language for Communication is Risk

The goal of right-to-know initiatives is to better inform citizens about the risks to health and the environment posed by facilities in their communities. The proposed chemical use reporting scheme, and indeed the entire TRI program, fails to do so.

The greatest failing of the TRI and the proposed chemical use reporting scheme is communication of useless information. TRI data, and data on chemical use collected under the Pollution Prevention Act and Massachusetts Toxics Use Reduction Act, are reported in pounds of each chemical. These measures are often combined across chemicals and reported as total pounds of toxic chemicals released or used. This is nonsense. The chemicals on the TRI list and the Massachusetts Toxics Use Reduction Act list vary more than 10,000 fold in their acute and chronic toxicity as well as toxicity to aquatic species. Exposure levels matter. But exposure is related to how a chemical is used, not whether it is used. Risk, the combination of exposure and toxic potential, is the appropriate measure of the dangers of chemical use.

In addition, the data from the TRI program are neither timely nor locally focused. TRI data are not released to the public until at least two years after they are first reported (unless a company releases the information voluntarily). It is hard to imagine that chemical use reporting will be any more timely. Finally, the information is not local. Data are sent to Washington and only occasionally find their way back to the community, often through the efforts of the reporting company. While data on a specific facility are available through the Internet, relatively few local citizens uncover this information.

As presented, the data do nothing to help communities understand risks to their families or their environment. Chemical use reporting will at best further confuse the public, and may mislead them.

Facility Risk Reporting

To help people understand the implications of chemical use in their communities they must receive information that is local, timely, and relevant. I believe that, instead of list-based toxics use reporting, we need a new nationwide program to encourage facilities to evaluate the risks of all chemicals they use. If these risks are significant, the local community should be informed.

Risk evaluations should be certified by independent agents, just like financial data are certified by accounting firms. This would provide firms with strong incentives to reduce risk and would provide firms and citizens both with useful information. It is time to put right-to-know on a scientific footing. We must focus on how chemicals are used, not whether they are used, and we must give communities timely, local, and relevant information about risks.