



# Risk in Perspective

## Optimal use of "Toxic Chemicals"

***"All TUR legislation should include a significant-risk requirement designed to focus scarce public and private sector resources on specific industrial processes and applications that are known or suspected to cause significant risks."***



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A new concept in environmental policy is "toxics use reduction" (TUR). The basic idea is to protect human health and the environment by reducing the use of chemicals judged to be toxic. Massachusetts and Oregon were the first states to enact TUR laws, and other states are considering similar laws. National TUR legislation is also likely to be debated in the years ahead. This issue of RISK IN PERSPECTIVE offers an evaluation of the TUR concept using the principles of risk analysis.

### The Case for TUR

Proponents of TUR believe that toxic chemicals are bad and that less of a bad thing is a good thing. According to Dr. Kenneth Geiser of the University of Massachusetts at Lowell, an advocate of the Massachusetts TUR legislation, "these laws bypass debates over acceptable levels of toxicity and the risk of specific levels or releases. They rest on a simple argument: the use of every toxic chemical should be reduced or eliminated."

TUR laws establish planning procedures that are designed to encourage commercial firms to identify new production strategies that are less reliant on toxic chemicals. By reducing the use of such chemicals, TUR can theoretically result in less exposure to workers and consumers, diminished air and water pollution, fewer transport and storage accidents involving chemicals, and fewer waste disposal problems. In addition to protecting the environment, TUR may also offer potential economic savings to users in the form of lower chemical costs, more economical and productive ways of doing business, fewer pollution control expenditures, and diminished health and environmental liabilities.

Some proponents of TUR see it as a first step toward banning toxic chemicals. At a recent conference sponsored by Resources for the Future, Dr. Barry Commoner argued that the best way to keep toxic chemicals out of the environment is to stop producing and using them. He cites as success stories the bans of DDT and PCBs in the 1970's and the phaseout of lead in gasoline in the

1980's. Commoner argues that these examples should serve as models of sustainable industrial development.

### Toxic Versus Nontoxic?

In practice, TUR laws define "toxic chemicals" by legislative mandate. The Massachusetts TUR list started with 300 chemicals and now includes over 900 chemicals that are targets of use-reduction planning efforts.

From a scientific perspective, the phrase "toxic chemicals" is a misnomer. There is no such thing as a chemical which is free of harmful effects at any dose. Drinking 1.5 quarts of water per day is normal and healthy while drinking 15 quarts of water per day would be lethal. Similar types of statements can be made about sugar, salt, aspirin, alcohol and any other chemical compound.

Since all chemicals can be toxic under certain circumstances, it is reasonable to question the rationale for a chemical's inclusion on or exclusion from a list of "toxic chemicals." Indeed, without considering the likelihood and degree of human exposure and ecological risks resulting from specific applications of chemicals, there is no defensible method for determining which chemicals should be included on TUR lists. Scientists at the Harvard Center for Risk Analysis have examined the various lists proposed by TUR advocates and can find no sound and consistent technical basis for the lists that have been generated.

A key problem is that a particular chemical may cause significant risk or no risk depending upon how it is used in commerce. The phaseout of lead in gasoline was a success story because this particular use of lead posed serious and widespread risks to children, adults, and the environment. The use of lead-acid batteries in automobiles is currently being reduced, although EPA estimates that the health and environmental risks of this application are not particularly great. Other applications of lead, such as its use in chimney flashing, pose relatively little danger to the public.

