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CHEMICALS: Calif. initiative seeks to spur innovation, green alternatives

Sara Goodman, *Greenwire* reporter

California has launched an initiative aimed at promoting development of safer chemicals with policies to spur green design, manufacturing, use and disposal.

"Academically and in public policy thinking circles, people are at the brink of the third wave of environmental protection," said Maureen Gorsen, director of California's Department of Toxic Substances Control. "All of our laws came as a reaction to a problem just discovered. To redesign environmental protection from the beginning is a challenging assignment."

About 42 billion pounds of chemical substances are produced in or imported into the United States each day, with an additional 1,000 new chemicals introduced each year, according to a report by the University of California, Berkeley, and the University of California, Los Angeles.

So there are a rising number of U.S. sites contaminated by hazardous waste. U.S. EPA estimates that 217,000 new sites will be designated by 2033, a 180 percent increase from today's 77,000 sites. More than \$1 billion is spent on efforts to clean up hazardous waste under the federal Superfund program, the report says.

Such numbers spurred California to action.

"We realized hazardous waste never goes away," Gorsen said. "Everything we've been doing here is focused on making sure that stuff getting thrown out doesn't impact environmental or public health. Pollution prevention has always been a nice add-on ... but shouldn't we be reducing the amount of hazardous waste or eliminating it altogether?"

In the Green Chemistry Initiative, which began in April 2007, Gorsen's department was tasked with figuring out an environmental policy that focused on design instead of cradle-to-grave waste management.

It is now at the end of its second phase, culling the more than 800 responses and policy suggestions the department has received since the initiative was launched. Gorsen said she hopes to get draft policy recommendations to the state secretary for environmental protection by the end of the month.

"We can now, at the molecular level, design a product so it doesn't last as waste in the environment forever," Gorsen said. "Everyone wants to know more about what's in a product and to be able to identify safer alternatives as well as stimulate innovation in

greener inventions."

'Locked into a logical paralysis'

But under current federal chemical policy, it is virtually impossible to assess a chemical's toxicity and potential for damaging human health or the environment, the UCLA-UC Berkeley report concludes. At the same time, the policy inhibits serious investment into safer alternatives.

The roughly 82,000 chemicals in the market are governed by the federal Toxic Substances Control Act. But under TSCA, manufacturers are not given sufficient incentives to develop alternative chemicals because of some major gaps in the policy, said Michael Wilson, assistant research scientist at UC Berkeley and a co-author of the report.

"EPA is unable to assess risks, so hazardous substances are competitive in the market and in widespread use," Wilson said recently at the 12th Annual Green Chemistry and Engineering Conference in Washington. "This creates barriers to developing green chemistry."

Multiple studies over the last two decades -- including reports by the Government Accountability Office, the National Academy of Sciences, EPA and the Congressional Office of Technology Assessment -- have concluded that TSCA is unable to effectively assess the hazards of chemicals in commerce or control those of greatest concern.

When TSCA was implemented in 1979, there were about 62,000 chemicals sold commercially in the United States. They were grandfathered in under the law, meaning producers were not required to disclose information on their toxicity levels and they were generally considered to be safe unless EPA could prove otherwise.

But this burden of proof on the government has led to an almost impossible situation for regulators, Wilson said. The government must prove a chemical poses a health threat before it can act. However, it needs proof before it can require companies to provide more information about the chemical.

"It's TSCA's Catch-22," Wilson said. "EPA is locked into a logical paralysis" that has resulted in the evaluation of the safety of 200 chemicals and a ban on five.

Because TSCA does not require chemical producers to generate and disclose information on the health and environmental safety of their chemicals, there is a data gap that has led to thousands of chemicals for which there is not sufficient information about toxicity levels or environmental impacts being in commercial circulation, Wilson said.

The lack of data means that public policymakers and consumers do not have the tools needed to assess the hazards posed by certain chemicals, so they make public policy and purchasing decisions based primarily on function, price and performance, with little attention paid to human health safety and environmental impacts, the UC Berkeley report

concludes.

"The U.S. market does not have enough information for policymakers and consumers to favor safer substitutes," Wilson said.

Promoting innovation

The report concludes that three policy gaps created under TSCA -- data, safety and technology gaps -- are responsible for the obstacles preventing green chemistry innovation. It stresses that policy measures focusing on filling in those gaps must motivate producers to look toward developing safer alternatives.

Industry spending on research and development has fallen or remained flat since 2000, while more than 90 percent of the highest-volume chemicals used today were in use in 1979, when TSCA was first implemented, the report says.

Because of this, developing policy that involves all stakeholders, including chemical manufacturers, suppliers, environmental groups and consumers, is critical to closing the gaps, according to Megan Schwarzman, a research scientist at UC Berkeley and co-author of the report.

Chemical producers therefore need to be confident that the market and the regulatory system will favor green chemistry initiatives before they will be willing to make the investment, Schwarzman said.

In addition, Gorsen credits innovative leadership for creative policymaking.

"The only reason this [initiative] is possible is because of the visionary leadership of the governor," she said of Gov. Arnold Schwarzenegger (R). "You don't get state agencies getting to think outside the box unless ... they have the license to go outside box."

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