California launches nation's first green chemistry program

With Gov. Arnold Schwarzenegger's (R-CA) signature on September 29, California became the first U.S. state to approve two laws that will move its regulatory scheme toward a comprehensive chemicals policy. The legislation is intended to improve public and environmental health protection and encourage green chemistry—the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances.

A broad coalition of business and environmental groups, including the Chemical Industry Council of California (CICC) and the Environmental Defense Fund (EDF), praised both laws and the process. But other experts say that these first steps fall short of establishing a green chemistry program.

Paul Anastas, director of the Center for Green Chemistry and Green Engineering at Yale University and former member of California's Green Chemistry Initiative Science Advisory Panel, criticizes the new laws. "The panel emphasized the need to support research and development of safe chemical products and processes, to support green chemistry education, and to provide incentives for industries to rework existing processes," he says. "These recommendations are not included in the new laws."

The laws do not incorporate the comprehensive approach adopted last year by the EU. The sweeping Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) program puts the onus on companies to provide data proving that their products are safe for particular uses.

No program similar to REACH exists in the U.S.; the law designed to regulate chemicals, the Toxic Substances Control Act has numerous shortcomings.

DUNCAN MCINTOSH, OFFICE OF THE GOVERNOR

Gov. Schwarzenegger signed the state's two new green chemistry laws at Nelson Nameplate Co. Above, he walks past the company's aqueous sheet cleaning system, which was designed with green chemistry principles.

The new laws (AB 1879 and SB 509) give the California Department of Toxic Substances Control (DTSC) 2 years to identify and prioritize "chemicals of concern," a term that is currently undefined in the laws but is likely to include substances that are considered to be toxic, persistent, and bioaccumulative. The laws mandate a Green Ribbon Science Panel to advise California officials on implementation efforts, and they will expand the role of the Environmental Policy Council, which comprises leaders of all of the state environmental departments. The legislative package includes a new online Toxics Information Clearinghouse for businesses and consumers.

A 2006 University of California report commissioned by the legislature established the framework for the bills and called on the state to move away from a chemical-by-chemical approach and toward a more comprehensive policy.

"We found that chemical markets have great information about function, price, and performance, but the hazard piece is undervalued," says Michael Wilson, a public-health researcher at the University of California Berkeley and a coauthor of the 2006 report. "These bills do not contain new data requirements, but they are a very solid start that we expect will continue to evolve."

John Ulrich, executive director of CICC, says that he likes both bills. "The concepts of green chemistry are not at all inconsistent with what the chemistry industry practices."

Perhaps the biggest concern is that the new laws do not require companies to provide chemical data, says Daryl Ditz with the Center for International Environmental Law, a nonprofit legal and policy group. This places a very heavy burden on DTSC, which must conduct lifecycle assessments on existing chemicals and their alternatives. "This is 180 degrees different from REACH, which puts the burden on industry," Ditz notes. "This whole elaborate process could result in paralysis by analysis."

Life-cycle analysis provides a way to evaluate alternatives and avoid unintended consequences. For example, in 1979 the U.S. EPA approved the use of methyl-*tert*-butyl ether as a gasoline additive, but researchers later determined that it can contaminate groundwater.

—REBECCA RENNER

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