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Authors

Schwarzman, Megan
Wilson, Michael P.

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Megan Schwarzman
University of California, Berkeley

Michael P. Wilson
University of California, Berkeley

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Cooperation on Chemicals Policy: California and the European Union

Megan R. Schwarzman, MD, MPH and Michael P. Wilson, PhD, MPH
Center for Occupational and Environmental Health, School of Public Health
University of California, Berkeley
<http://coeh.berkeley.edu/greenchemistry>

Abstract

Each day, a total of 42 billion pounds of synthetic chemicals are produced or imported in the United States for use in industrial processes and products. While these substances are useful to society, they can also be toxic to humans and ecosystems; in some cases, toxicity can occur at very low exposure levels. The primary legal framework for managing this great mass of material, the Toxic Substances Control Act (TSCA), is now over 30 years old and is widely recognized as having failed as a vehicle for government, the public, or industry to assess the hazards of chemicals or control those of greatest concern.

As a consequence of the weaknesses of TSCA and other existing laws and policies, California faces a growing set of health, environmental and economic problems related to the design, use and disposal of chemicals and products.

Both the California Legislature and the Schwarzenegger Administration are contemplating new policies to transform the design, production, use, and end-of-life disposition of industrial chemicals and products. These efforts have been motivated by four key factors: (1) growing health and environmental problems related to chemicals and products; (2) sweeping new chemical and product management laws in the European Union (EU), notably the *Registration, Evaluation, Authorization and Restriction of Chemicals* (REACH) regulation (3) chemical and product management policies that have been only marginally effective at both the state and federal levels; and (4) global markets that are expected to favor cleaner chemical technologies, known as green chemistry.

In responding to these factors, California has the opportunity to establish a comprehensive, long-term approach to managing chemicals and products, one that motivates new investment in green chemistry innovation and links economic development to improved human health and environmental protection. This has the potential to 1) fuel global demand for safer substances, increasing the incentive for innovation in green chemistry, 2) contribute to improvements in human and ecological health, resource conservation and the development of clean technology in California, and 3) shoehorn the U.S. into a position of greater collaboration in international efforts for sustainability.

Likewise, the EU stands to benefit if California is able, in its own policies, to address problems and loopholes that have become evident in REACH. By addressing these weaknesses California may be able to assist EU member states as they work to improve REACH in subsequent negotiations. There are thus clear benefits to both California and the EU in improving the level of dialogue and understanding in the area of chemical and product management.

I. Introduction

Each day, a total of 42 billion pounds of synthetic chemicals are produced or imported in the U.S. for use in industrial processes and products.¹ Overall, global chemical production is growing at a rate of 3% annually, rapidly outpacing global population growth.² Despite the enormous scale and pace of chemical production, however, there is a striking lack of understanding about the effects of chemical substances on human health and ecosystems. In fact, the toxic and ecotoxic properties of the great majority of the 82,000 chemicals in commercial circulation in the U.S. today have never been evaluated.³

Chemical substances used in products and industrial processes are enormously useful to society, yet they can also be toxic to humans and ecosystems, sometimes at very low doses. Many chemicals come in direct contact with people—in the workplace, in homes, and through air, water, food and waste streams. Widespread chemical exposure is evidenced by extensive biomonitoring studies, which have detected hundreds of synthetic chemicals and pollutants in breast milk, umbilical cord blood and the tissues and fluids of adults and children.⁴ Eventually, most of the 42 billion pounds of chemical substances entering the market each day in the U.S. enter the earth's finite ecosystems.

While the mere *presence* of synthetic chemicals in people and in ecosystems does not necessarily imply harm, an expanding body of research suggests that adverse health effects could result from exposure to common chemical substances, particularly among vulnerable populations, such as the developing fetus and infant, and for people who are highly exposed, including workers and residents of contaminated areas.

As described in this paper, state and federal policies in the United States have largely failed to provide an effective framework for either managing the potential risks of chemicals and products or stimulating new investment in green chemistry innovation. This has produced a market in which products are unable to compete on the basis of safety, and neither consumers nor businesses can choose the safest products for their needs. At the same time, agencies lack sufficient authority to regulate substances of concern, and costly health and environmental damage caused by chemicals and products has continued largely unchecked.

The problems associated with industrial chemicals and pollutants are truly global issues; environmental contaminants do not respect national boundaries, nor are their effects confined to the areas that produce and use the highest volumes of chemicals and products. Global trade, the location of manufacturing, and the disposal of contaminated materials and hazardous wastes produce inequities in exposure to chemicals and pollutants that are felt most acutely among developing nations.

In light of long-standing regulatory failures in the U.S. and abroad, and in the face of increasing evidence of the presence of synthetic chemicals in people and their potential for harming both human and ecosystem health, calls for policy reform have recently gained footing. Sweeping new policies governing chemicals and products in the European Union (EU) are expected to shift global markets in favor of cleaner chemical technologies, including green chemistry: the design and use of chemicals, processes and products that are safer for human health and the environment.

In essence, green chemistry seeks to “design out” the health and environmental hazards posed by chemicals and chemical processes. This approach differs markedly from current chemical management practices which focus on reducing, rather than preventing, chemical exposures and environmental contamination. Green chemistry strategies target each stage of a product’s lifecycle to continually improve its biological and ecological safety, reduce its energy requirement and eliminate the production of hazardous and product waste.

To drive investment in green chemistry, scientists and policy makers in California are increasingly calling for transparency and accountability in the chemicals market and a fundamental shift in the regulatory structure from one governed by a “presumption of innocence” to a more precautionary approach.

II. Potential for Collaboration

The contrast between the existing U.S. federal chemicals policies (primarily the *Toxic Substances Control Act* of 1976, TSCA) and the new regulatory approach adopted by the EU (primarily the *Registration, Evaluation, Authorization and Restriction of Chemicals* regulation, REACH) offer an unprecedented opportunity for a two-way exchange between California and the E.U.

REACH is expected to drive global markets toward the design and use of safer chemicals and products. This will directly affect California industries and businesses and will draw attention to ineffectual state and federal regulations that have allowed health and environmental damage from chemical substances to continue unchecked. California has an opportunity to craft a fundamentally new approach to chemical and product management by leveraging the EU’s actions. Improvements for public health and the environment can thus open new opportunities for investment in green chemistry; it will also likely trigger action by other states and at the federal level in the area of chemicals policy reform.

Likewise, public and environmental health advocates in the EU will benefit if California is able, in its own chemicals policy, to address problems and loopholes that have become evident in REACH. If California can respond to the pressure created by both internal problems (health and environmental consequences of the current system) and external forces (EU requirements and global market demand) with a truly comprehensive approach to the management of chemicals and products, this will 1) fuel global demand for safer substances, increasing the incentive for innovation in green chemistry, 2) contribute to improvements in human health, resource conservation and environmental protection in California and worldwide, and 3) shoehorn the U.S. into a position of greater collaboration in international efforts for sustainability.

Of these, the third is of great importance globally, given the economic power of the U.S. and its reluctance to participate in international environmental protection efforts. To date, the U.S. has failed to ratify the Kyoto Protocol, the Convention on Biological Diversity, the Stockholm Convention on Persistent Organic Pollutants, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and the Biosafety Protocol. The present administration has likewise failed to participate actively in the United Nations Framework Convention on Climate Change. The EU’s Directorate General for External Relations identified the U.S. lack of commitment to international

environmental efforts as “a serious cause of concern for the EU,” one that “risks unwarranted and unaffordable delay in concrete action at a global level to address environmental problems.”⁵

California, meanwhile, has taken a leadership role within the U.S. in passing progressive environmental policies. As a national leader, the state has both the opportunity and the imperative to lead the nation toward greater participation in international, collaborative environmental protection efforts.

As important economic partners, and with similar priorities, California and the EU have a history of collaboration on international issues, and the EU has publicly recognized the state as a policy leader and innovator in the US, particularly on environmental issues.⁶ During his most recent visit to California, EU Ambassador to the U.S. John Bruton, addressed members of the state legislature and signed a Memorandum of Understanding with the Chancellor of University of California, Berkeley, agreeing to support regulatory cooperation between California and the EU in areas such as biodiversity, climate change, green chemistry, and waste management.

In the 2004 Dromoland Summit, the EU and the U.S. launched the joint Initiative to Enhance Transatlantic Economic Integration and Growth, committing to regulatory cooperation and technological innovation to “expand economic opportunity, promote prosperity, and maintain the health and safety of our peoples.”⁷ California can set the bar for U.S. follow-through in participation in this Initiative.

Trade links between California and the EU are already robust: trade with and investment by the EU earns California \$63 billion annually and supports over one million jobs in the state.⁸ As an export market for California, the EU is twice as large as Japan and China combined,⁹ and California is the top U.S. exporting state to Europe. Given the size of these markets, Europe’s recent slate of directives addressing chemicals and products have significant implications for California’s businesses and industries. In substances and manufactured items that will be subject to the EU’s new environmental regulations, chemicals comprise 10% (\$2.4 billion) of California’s exports and computers and electronic products make up another 37% (\$9.2 billion) in 2006.¹⁰

III. Chemicals policy: United States

Weaknesses in the design of the federal Toxic Substances Control Act (TSCA) of 1976 have produced three overarching problems in U.S. chemicals policy, which we describe as the data gap, safety gap, and technology gap. Together, these three policy gaps have impeded proper operation of the chemical and product market; they have prevented adequate regulation of chemicals and products of greatest concern; and they have discouraged private and public investment in green chemistry research and development.

The Data Gap

TSCA does not require producers to investigate or disclose information about the hazardous properties of chemicals and products. As a result, there is a significant lack of information on the health or environmental effects of most of the 80,000 industrial chemicals used in the

United States.¹¹ These include 62,000 chemicals that were already in commercial use when TSCA was enacted (1979) and which were “grandfathered” into use without further review. 92% of the highest production volume chemicals in commercial use today consist of these substances.¹² In addition, the U.S. EPA has reported that 85% of *new* chemical notices submitted by companies since 1979 lack data on health effects, and 67% lack health or environmental data of any kind.¹³

All other federal statutes combined regulate just over 1,000 chemicals and pollutants.¹⁴ U.S. EPA has made limited progress in closing the data gap under the voluntary High Production Volume (HPV) Chemical Challenge, which encourages producers to submit “screening-level” information for about 3,000 chemicals produced or imported at more than one million pounds per year.¹⁵ Screening-level information, however, is not sufficient to inform either business or consumer decision-making in purchasing chemicals or products.¹⁶

Information on the identity of chemicals used in California is also lacking: there is no state-wide information database on the volume or location of chemicals or products produced or imported, no catalogue of their commercial or consumer uses, and virtually no record of their ultimate route of disposal or environmental fate.¹⁷

The data gap has produced a skewed market in the U.S. in which chemicals and products compete on all attributes *except* safety. As a result:

- Consumers are largely unable to choose products on the basis of their potential health and environmental impacts.
- Businesses and manufacturers do not have the information they need to identify and eliminate hazardous chemicals and products in their supply chains.
- Public agencies have insufficient information to identify chemical hazards of highest priority for human health and the environment.

Finally, without information on chemical hazards or uses, neither the market nor public agencies can stimulate or reward the development and commercialization of safer alternatives.

The Safety Gap

In addition to insufficient data requirements, TSCA failed to grant the Environmental Protection Agency (EPA) adequate means for investigating or regulating chemicals of concern. As a result, the EPA has been greatly constrained in controlling even known hazards; since the passage of TSCA, EPA has issued formal rules to regulate only five of the 82,000 chemicals in the TSCA inventory.

In addition, TSCA does not require producers to assume responsibility for the health and environmental damage that can occur over the lifecycle of their products. There is thus little impetus to minimize the resulting externalized damage to health and ecosystems associated with the manufacture, use and disposal of chemicals and products.

Without sufficient data to inform the demand for safer products, or a system for product stewardship, public agencies are limited to regulating the use and disposal of existing chemicals and products, rather than taking preventive measures.

Even in this limited role, however, the EPA and other public agencies operating under TSCA are unable to act expediently because the statute requires the government to meet a high burden of proof that a chemical or product causes unreasonable harm to human health or the environment *before* an agency can implement protective measures.¹⁸

In satisfying this burden of proof, agencies must meet a standard of evidence that:¹⁹

- Requires health and exposure information that cannot be obtained from producers
- Often exceeds the limits of scientific knowledge
- Relies on estimates and assumptions that are easily contested
- Is limited to chemical-by-chemical assessments that poorly reflect actual exposures and can lead to substitution with another hazardous substance

TSCA effectively places public agencies, including the EPA, in a “logical paralysis:” to “prove” the presence of a public health risk, agencies need health and exposure information that the producers of chemicals and products are under no legal obligation to provide; to require this information, TSCA requires public agencies to first prove that a public health risk exists.

In the absence of sufficient health and environmental information, and without an effective legal framework for reducing the use of hazardous chemicals and products, hazardous chemicals and products are allowed to enter or remain on the market, and to be competitive against safer substances.

The Technology Gap

The difficult transition from concept to commercial application of cleaner technologies, such as green chemistry, often requires that a company conduct extensive research and development, make potentially large capital investments, and assume the risks of being a leader in an emerging field.

The market and regulatory weaknesses caused by the data and safety gaps, together with organizational and institutional inertia within industry and a lack of public and private investment in green chemistry research and education, all make companies reluctant to take on these risks. This is producing an emerging green chemistry technology gap that could place California producers at a disadvantage in this emerging global sector, while at the same time perpetuating the existing health and environmental problems resulting from the manufacture, use, and disposal of chemicals and products.

Implications of the Three Policy Gaps

Together, the data, safety and technology gaps have produced a flawed U.S. market for chemicals and products. In this market:

- The health effects of most chemicals are poorly understood
- Hazardous chemicals and products remain cost-competitive
- The costs of health and environmental damage are carried by the public and by workers
- Government regulation does not adequately protect the public or workers
- There is minimal industry investment in green chemistry and safer products

Not surprisingly, U.S. producers have not invested in green chemistry at a level commensurate with the scale and pace of chemical production: the industry's spending on research and development has decreased or remained flat since 2000, and over 90% of the highest volume chemicals used today were in use in 1979, when TSCA was implemented.²⁰

Industry leaders are more likely to improve their investments in green chemistry if they can be confident that the market favors these investments (the data gap is closed), the regulatory system favors these investments (the safety gap is closed), and there are other incentives to reduce costs or risks (the technology gap is closed). At present, U.S. chemicals policy does not directly address these issues, and the legacy of health and environmental problems continues to grow.

IV. Consequences of U.S. Policy Weaknesses

In addition to the market failures discussed above, the weaknesses of TSCA have resulted in a system of chemical and product design that externalizes health and environmental damage to the public. This has consequences both at home and abroad.

In California, these externalities include the following:

- Chemical and pollution-related diseases among children and workers cost insurers, businesses, the state, and consumers about \$2.6 billion in direct health care and indirect costs annually (2004 data);
- Toxic material is leaking into groundwater at 61 of the state's 85 largest hazardous waste sites;
- Local governments are struggling to manage nearly nine billion pounds of electronic and plastic waste each year.

In addition to their local effects, the manufacture, use and disposal of industrial chemicals and products have implications that reach far beyond state and national boundaries, affecting global biodiversity, human and ecosystem health.

Many synthetic chemicals and pollutants are transported in air and water, contaminating areas thousands of miles from their source. This is particularly evident in polar regions, where humans, wildlife and ecosystems contain some of the highest levels of contamination measured. Most of these contaminants, such as polychlorinated biphenyls (PCBs), the pesticide dichlorodiphenyltrichloroethane (DDT), and the newer polybrominated diphenyl ether flame retardants (PBDEs) are traceable to sources in Europe and North America.²¹

Because of their physio-chemical properties, these and other pollutants persist in the environment and bioconcentrate, accumulating in the food chain, with the result that highly contaminated arctic mammals are demonstrating disturbing reproductive and other health effects related to chemical exposures. In combination with other stressors, such as climate change and habitat loss, this chemical contamination could contribute to long-term decline of species, together with continuing ecosystem degradation.²²

Widespread environmental contamination by plastic materials illustrates a related failure of the chemical and product management system. Plastic products are manufactured out of non-renewable materials, contain substances that are toxic to biological and ecological systems and are designed and packaged for disposal rather than re-use. The resulting pollution presents unique environmental hazards.

Plastic debris has accumulated in The North Pacific central gyre, a region of the Pacific Ocean between California and Hawaii in which ocean currents and wind patterns have collected plastic into an area approximately twice the size of Texas. Researchers estimate that the mass of plastic particles in the gyre is about six times greater than that of plankton and that this ratio will grow ten-fold over the next ten years.²³

Due to their small size, ocean plastic particles are not recoverable; they are likely to remain in the marine ecosystem for hundreds of years. Plastic debris has been found in the stomachs of 43 to 86 percent of seabirds and marine animals studied.²⁴ Ninety percent of the mass of floating debris in the world's oceans – and 99% of the material on the world's beaches – consists of plastic products and the pellets used to manufacture them. Nearly all of this material comes from urban areas.²⁵

The environmental problems in the arctic and in the Pacific Ocean make visible the impacts of chemical and product management practices in populous nations on human and ecosystem health worldwide, including in areas remote from the source of contamination. This underscores the need for an international approach to chemical and product policies that can only be accomplished by cooperation among nations to a degree commensurate with the enormous pace and scale of chemical and product manufacture, consumption, and disposal.

The EU has responded with policy measures that 1) establish means for managing new and existing chemicals and products (REACH); 2) take immediate action on chemicals of high concern (RoHS and Cosmetics Directive); and 3) set up a framework for product stewardship and extended producer responsibility for electronic and electrical equipment (WEEE).

These policies are expected to shift the market for chemicals and products to favor investment in green chemistry and other cleaner technologies.

V. Chemicals policy: European Union

Since 2004, the EU has passed a set of directives targeting the management of chemicals and products produced or imported into the region. These are:

1. The Cosmetics Directive, prohibiting the use of 1,000 known or suspected carcinogens, mutagens, or reproductive toxicants in cosmetics (2004);
2. The Waste Electrical and Electronic Equipment (WEEE) directive, requiring producers to take back products at the end of their useful life (2005);
3. The Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) regulation, prohibiting the use of lead, cadmium, mercury, and certain flame-retardants in all electronics sold in the EU; and
4. The Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) regulation, requiring that producers provide hazard and exposure information on over 10,000 chemicals and apply for authorization for the use of “substances of very high concern”.

The last of these, REACH, is the most comprehensive chemicals management regulation in the world. Its basis in the precautionary principle—the premise that action should be taken to reduce potential health threats even where definitive proof of harm is not yet available—also makes it the most progressive regulation in protecting human health and the environment from the adverse effects of hazardous chemicals.

Key Strengths

Under REACH, producers and importers of chemicals and articles are required to register with the European Chemicals Agency (ECHA) any products produced or imported at more than one ton per year. Further data requirements and oversight are determined based on the volume of use and further evidence of particular hazard. Key benefits of REACH include:

- Equivalent data requirements for new and existing chemicals
- Information transparency in the supply chain: health and safety information on chemicals passes from chemical producers to the businesses and consumers who purchase chemicals; “use” information flows back up the supply chain from business end-users.
- Data requirements apply also to chemicals in mixtures and in finished articles.
- Information requirements increase with increasing production volume; additional opportunities to evaluate chemicals and require their authorization or restriction are based on inherent hazard properties.
- Creation of a candidate list of Substances of Very High Concern (SVHC), consisting of known and suspected carcinogens, mutagens or reproductive toxicants (CMRs), persistent or bioaccumulative toxicants (PBTs), very persistent or bioaccumulative substances (vPvBs) and other substances of “equivalent concern,” such as substances suspected of causing disruption of the human endocrine system.

Potential Weaknesses

In both its scope and its basis in the precautionary principle, REACH is truly a landmark regulation. However, concessions made to chemical producers in the design of REACH have introduced potential loopholes that could undermine the regulation's effectiveness.

- *Data requirements*—Substances produced or imported in quantities less than 1 ton/year (a total of about 70,000 substances) will not be subject to registration, the most basic requirement under REACH. Only rudimentary data are required for substances produced or imported at a volume of 1-10 tons/year (approximately 17,500 substances, or 60% of those that are subject to registration)
- *Dossier review and validation*—An electronic check will confirm the completeness of all dossiers submitted by chemical producers; however, only 5% of dossiers will be reviewed for compliance, a more thorough review of the data's relevance and accuracy. While the burden of providing information has been shifted to producers, the government will face an enormous task of evaluating the data quality.
- *Management of substances in articles*—Disclosure requirements for chemical substances in articles (such as furniture, electronics, building materials or automobiles) depends on their percent of the article's total weight, a process that may shield many potentially hazardous substances from transparency in the market.
- *Substitution vs. "adequate control"*—Many substances, most notably those that disrupt the endocrine system (EDCs), can cause health effects at extremely low doses. The notion that a safe threshold can be established and that "adequate control" can be achieved for substances of this nature is fundamentally flawed.
- *Public access to information*—Decisions about how chemical ingredient and hazard data will be available and what data is permitted to be guarded as confidential business information will determine much about the transparency and ultimate effectiveness of the regulation.

It remains to be seen how each of these issues is resolved as REACH is implemented. The ability of the regulation to institute lasting protections for human health and the environment hinges largely on these questions.

Core Distinctions between U.S. and EU Chemicals Policy

Policy Area	Treatment by TSCA	Treatment by REACH
Burden of proof & level of evidence	Government agencies must prove risk before restricting use	“No data, no market” Tiered data requirements
Legacy of chemicals in use	Existing chemicals “grandfathered” assumed safe	All substances subject to the same volume-based data requirements
Evaluation of new chemicals	Pre-manufacture notification, but no minimum data set	Same requirements as for existing chemicals
Prioritizing substances	No screening criteria Case-by-case	Substances of very high concern (SVHC) candidate list
Supply chain transparency	None (MSDS under OSHA)	Two-way flow of information
Access to information	No general disclosure Extensive CBI claims permitted	Much public access required Clear designation of CBI

VI. Opportunity for Policy Collaboration

It is projected that implementation of REACH will make a large body of previously unavailable chemical hazard information accessible to the European Chemicals Agency and to residents of the EU, as well as to NGOs and foreign governments. Coupled with the directives that require product stewardship (WEEE) and restrict some hazardous substances (RoHS and the Cosmetics Directive), this unprecedented influx of information is widely expected to alter global markets; it has the potential to place human and environmental safety at the center of purchasing decisions at all levels in the chemical and product supply chain.

While it will be many years before all aspects of REACH are implemented, some elements of the regulation are predicted to trigger more immediate changes. In particular, the development of a candidate list of “substances of very high concern” will likely prompt producers to seek out substitutes for chemicals that appear on this list well in advance of their evaluation and restrictions being placed on their use by the chemicals agency (ECHA).

California’s strong economic ties with Europe make engagement with these policies unavoidable: multinational businesses must comply with EU regulations or risk losing critical markets, while regions outside the EU (including the U.S.) face the prospect of becoming markets for goods prohibited under the new regulations.

Particularly in light of the lack of federal action on chemicals policy, California has an opportunity to take a leadership role in formulating long overdue changes in the management of chemicals and products. As noted above, this will 1) fuel global demand for safer substances, increasing the incentive for innovation in green chemistry, 2) contribute to improvements in human health, resource conservation and environmental protection in California and worldwide, and 3) shoehorn the U.S. into a position of greater collaboration in international efforts for sustainability.

Likewise, each of the weaknesses of the REACH presents California with an opportunity to learn from the EU and fashion policies that avoid these pitfalls. It is not unreasonable for California to find solutions that will strengthen chemicals policy in the state and will also improve the likelihood that EU health and environmental advocates will successfully correct these weaknesses in negotiations over REACH in subsequent years.

California is a natural point of contact for the EU, given the state's track record of tackling complex issues with comprehensive policy reforms that link economic development with improvements in human health and environmental protection.

California's success in reducing vehicle emissions, for example, has improved the state's air quality and has stimulated innovation in lower-emission technologies nationwide. In addressing climate change, the state enacted legislation in 2007 that is expected to generate 89,000 new jobs in clean energy technologies by 2020.

Energy-saving policies initiated in the 1970s altered the course of California's electricity consumption. The state now uses 50% of the electricity per capita compared to the nation as a whole, markedly reducing greenhouse gas emissions and saving a total of \$56 billion for individuals and businesses through 2003. Changing the course of California's chemical industrial system will likewise require a multi-pronged, sustained approach; doing so could produce similar gains in economic growth, human health and environmental protection.

Both the California Legislature and the Schwarzenegger Administration have now taken important steps toward leadership in the area of chemicals policy. In 2004, the Legislature commissioned a report from the University of California on chemical management in the state and in 2006 introduced chemicals policy bills in response to the report's findings. In 2007, the California Environmental Protection Agency launched a Green Chemistry Initiative to motivate new industry investment in the design and manufacture of safer chemicals and products.

California Actions

Although some leading businesses have adopted sustainable practices, the vast potential of green chemistry remains untapped. A comprehensive chemicals policy that addresses the data gap, safety gap and technology gap will:

- Provide businesses and consumers with sufficient health and environmental information to choose the safest products for their needs
- Ensure that the manufacture and use of chemicals and products does not come at the expense of human health and the environment
- Motivate investment, entrepreneurship and employment in green chemistry
- Improve California businesses' health and environmental stewardship
- Apply the resources of the state's universities to green chemistry development
- Support California businesses in remaining competitive in the global market

- Prevent the sale in California of hazardous products that are prohibited outside the U.S.

Specifically, California should consider the following actions:

1. Through a memorandum of understanding between the California Environmental Protection Agency and the European Chemical Agency in Helsinki, ensure access to chemical and product information generated and submitted under REACH. This will enable California to address several key issues that will need to be resolved, including the treatment of confidential business information (CBI) and the development of an appropriate information technology (IT) infrastructure to ensure full access to the information.
2. Develop criteria for identifying and assessing chemicals of concern based on their hazard properties and on evidence of widespread human exposure (biomonitoring data).
3. Identify weaknesses of REACH and California strategies to correct them.
4. Develop a statewide map of chemical and product distribution and use, relying on chemical producers, importers and product manufacturers to disclose production and use information in a bi-directional manner throughout the supply-chain.

The EU has taken a position of global leadership in the implementation of sweeping new laws governing the design, production, and use of chemicals and products. California faces the choice of joining the EU in this position or ceding this opportunity to another U.S. state. By moving forward with a comprehensive, modern approach to chemicals and product management, California could enjoy the “first mover” advantage and could reduce the growing costs of health and environmental damage. California leadership that addresses the weaknesses of REACH will give EU government leaders a footing for improving REACH in subsequent negotiations.

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