

GREEN CHEMISTRY AND BEYOND: SUSTAINABILITY, SAFETY AND CONTINUAL IMPROVEMENT**INTRODUCTION**

Earlier this year, California kicked off its Green Chemistry Initiative with the stated goal of taking a collaborative approach to significantly reduce the impact of toxic chemicals on public health and the environment. The Soap and Detergent Association provides the following comments on behalf of its members so that California may consider new ways to manage chemicals towards the continual improvement of public and environmental health.

The Soap and Detergent Association (SDA) is the non-profit trade association representing manufacturers of household, industrial, and institutional cleaning products, their ingredients and finished packaging; oleochemical producers; and chemical distributors to the cleaning product industry (<http://www.cleaning101.com/>). SDA members produce more than 90 percent of the cleaning products marketed in the U.S. SDA members strive to meet the commitments of a sustainable industry: 1) advancement of social well-being, 2) advancement of human health and environmental quality, and 3) economic growth. Cleaning products have been an integral part of the dramatic advancements in public health and longevity, and the decline of communicable diseases throughout the world over the past two centuries. SDA and its members have been at the forefront of research on the environmental and human-health safety of their products for the past 50 years, and a culture of innovation and continuous improvement among its members has resulted in a robust industry that is a leading contributor to the public health across the country.

SUSTAINABILITYSocial Sustainability

SDA members are committed to contributing to a better quality of life for our consumers, business partners, employees and the communities in which we operate, and to maintaining a high level of product stewardship throughout the chain of commerce. As such, we believe that decisions of preferability and substitution should be based on the comparative life cycle impacts of a chemical and its potential substitute. While a safety-based characterization scheme may focus on toxicity, persistence and bioaccumulation, there are a number of other parameters which are relevant to the sustainable use of a particular chemical in a formulation such as raw material

sourcing and carbon footprint. All relevant aspects of sustainability should be taken into consideration for a potential substitution decision. Similarly, any plan to consider substitution of chemicals should require that the efficacy and benefits of that compound be considered as any diminution of efficacy may negatively impact public health and well-being through reduced hygiene and sanitation.

Environmental Sustainability

Cleaning products are chemical formulations, and generally each ingredient in a formulation will have some measurable toxicity. However, the use of cleaning products generally is well understood, leading to sound characterizations of exposures and risks. SDA members are committed to the enhancement of human health and quality of life through the responsible formulation, production and sale of cleaning products and ingredients, and their proper use. SDA members only market products that have been shown to be safe for humans and the environment, through careful consideration of the potential health and environmental effects, exposures and releases that will be associated with their production, transportation, use and disposal. In determining the safety of cleaning products, toxicity of ingredients to humans and wildlife is studied.

Economic Sustainability

The cleaning products industry is an important component of this nation's public health infrastructure and a contributor to the nation's economic well being. As such, it is important that the Green Chemistry Initiative not compromise this industry. SDA members are committed to innovating to improve products both in terms of performance and environmental impact. The Green Chemistry Initiative must ensure that product efficacy, performance, and usability are not undermined, and that the ability to innovate is not compromised. In fact, California is uniquely well positioned to foster innovation in Green Chemistry and product formulation. With a strong educational system including world-class research university and a robust high technology sector, California has the means to lead the world in developing and commercializing alternatives to high priority chemicals of concern. The Green Chemistry Initiative should include a significant component related to research and development of alternatives for high priority chemicals which leverages California's intellectual resource. Through such efforts, California could facilitate the development and application of chemicals that will reduce negative impacts to the citizens of California.

SUGGESTIONS FOR CALIFORNIAConfirming the Baseline Safety of Chemicals in Commerce

In order to affect the impact of toxic chemicals on public health and the environment, the inherent hazards and potential for exposure should be integrated into a risk framework, and risks should be managed appropriately. Currently, there are several national and international programs designed to evaluate and manage the risks of chemicals. California should leverage existing efforts and customize results to meet their needs. For example, in Canada, Environment Canada completed a prioritization exercise of 23,000 chemicals on their Domestic Substances List (DSL) in 2006. Using information from Canadian industry, academic research and other countries' data, Government of Canada scientists worked with partners in applying a set of rigorous tools to the 23,000 chemical substances on the DSL. They were categorized to identify those that were: inherently toxic to humans or to the environment and that might be persistent and/or bioaccumulative, and substances to which people might have greatest potential for exposure. From this exercise there were over 4,000 chemical substances identified as needing further attention, and about 19,000 (over 80% of the total) were set aside as not needing further action based on their hazard and exposure profiles. Among the chemicals needing further attention, 500 were high priority, 2600 were medium priority and 1200 were low priority, and most of the low priority chemicals were eliminated from consideration. Additionally, about 150 of the high priority chemicals were determined to not be used in Canada and were restricted from further use without an evaluation. In the end, Canada has moved forward to consider about 350 high priority chemicals and 2700 medium priority chemicals.

California could focus on the 500 high priority substances identified in Canada's program. To address unique circumstances that might exist in California, the State could have a process to add substances to the high priority list, as necessary, based on hazards, uses and exposures to workers and consumers in California. Once the high priority chemicals are identified, use and exposure should be considered to determine whether there are impacts on human health and/or the environment. The State could work in coordination with other North American initiatives (e.g., Canadian Domestic Substances List prioritization, EPA and OECD High Production Volume Chemical programs, Security and Prosperity Partnership (SPP) of North America Regulatory Cooperation Framework) in order to assess the risks of the highest priority chemicals. In undertaking such programs, SDA urges the State to proceed with any

chemical assessments in a manner that would avoid unnecessary animal testing. In cases where real impacts exist, risk management strategies should be implemented in order to reduce those impacts, including use-specific restrictions where there are unacceptable risks.

Continual Improvement of the Safety Profile of Chemicals in Commerce

California can continually improve the safety profile of chemicals in commerce in the State by focusing on the high and medium priority chemicals in use, and using Green Chemistry and other tools to facilitate informed substitution with chemicals having an improved safety and life cycle profile.

There are a number of opportunities for California to apply its resources towards traditional Green Chemistry activities. California could leverage the universities in the State and the high-tech business sector towards the development of alternative chemicals for those of the highest priority, and development of alternative manufacturing processes for those with high discharges of hazardous waste. For alternatives identified, there should be a separate Life Cycle Assessment by an outside party, or state-funded Center for Excellence in order to confirm that there is no loss in performance with the alternative, to avoid unintended consequences, and to assist in commercialization. The State also could develop a Cooperative Extension-type program to assist companies in Cradle-to-Cradle product design/formulation and assist in adoption of new alternative chemistries and processes.

In order to facilitate informed substitution of high priority substances towards those with a more favorable environmental and human health profile, the State could develop database of chemical alternatives that compares a number of sustainability parameters: performance, price, human health and environmental (e.g., toxicity, bioaccumulation, persistence) including carbon footprint and source sustainability.

Additionally, the State could map the flow of chemicals in California using information drawn from existing sources such as EPA's Inventory Update Reporting (IUR), the data received by Canada during its data call-ins for high priority chemicals, and other contributions from the public.

In order to assess the performance of these programs and measure the impact of these reforms, the State should monitor metrics that will assess releases of chemicals to the environment and exposure to humans.

Increased Transparency and Access to Information on Chemicals in Commerce

California could expand access to information on chemicals for consumers, businesses and regulators by leveraging its preeminence in data management and mining in order to organize the world's chemical data. For example, the dossiers for the EPA High Production Volume (HPV) Chemical Challenge program, and the related European program are often difficult to find and the data difficult to extract. By partnering with the information technology sector (e.g., Internet search firms), the State could expand access to chemical information, support its local industry and raise awareness of chemical safety information currently available. Additionally, California could expand product-specific chemical ingredient disclosure for consumer products which currently do not have that requirement.

To increase transparency and improve the management of chemicals in the workplace, California should adopt the 16-section Material Safety Data Sheet (MSDS) described by ANSI Standard Z400.1-2004.

Recognition and Rewarding Success

As California's Green Chemistry Initiative unfolds, it will be important to recognize efforts and reward successes. The State could establish a registry for companies seeking to align their business practices with the Green Chemistry principles and acknowledge their intent. Similarly, the registry could accumulate examples of product development decisions and substitutions that have resulted in reduced waste produced and energy inputs. The registry could be the basis for recognition of successes in reducing impacts from chemical exposures similar to the Presidential Green Chemistry Challenge Award, but focusing on results achieved through implementation of a program or application of a new chemistry rather than development of a new technology.

SUMMARY

California's Green Chemistry Initiative should emphasize all three components of sustainability: the social benefits of chemicals and products, the economic contributions through innovation and improved performance, and the environmental and human safety. California can confirm the baseline safety of chemicals through a prioritization based on hazard and exposure, assessment of risk, and management of risks including use-specific restrictions where necessary. California can drive innovation, the benefits of products and the continual improvement of the

safety profile of chemicals by leveraging the State's expertise, and applying resources to the application of Green Chemistry research and development. California can expand access to information on chemicals in order to improve decision-making by taking advantage of their data management industries to organize the world's chemical data, and by increasing the disclosure of chemical ingredients in consumer products. Once California has implemented its Green Chemistry Initiative, it should recognize the efforts of those industries seeking to apply the principles of Green Chemistry and provide recognition to those that have had notable success.