



October 23, 2007

Maureen F. Gorsen  
Director  
Department of Toxic Substance Control  
P.O. Box 806  
Sacramento, CA 95812-0806

**Re: Green Chemistry Initiative**

Dear Director Gorsen,

We write to you today on behalf of CHANGE, Californians for a Healthy and Green Economy. Ours is a broad-based growing coalition of approximately 35 environmental and environmental justice groups, health organizations, labor advocates, community based groups, parent organizations, and others who are concerned with the impacts of toxic chemicals on human health and the environment, as well as the lack of a regulatory framework that seeks to prevent exposures to toxic chemicals. We thank you for your leadership initiating the Green Chemistry Initiative and would like to take this opportunity to join the *Conversation with California* by offering our perspective on what would make the program successful in addressing the critical human and environmental issues related to chemical use.

CHANGE seeks to fundamentally transform how chemicals are managed in order to protect our workers, children, public health, environment, and economy. We support the development of a green chemistry program that is rooted in a cradle-to-cradle understanding of how toxic chemicals impact human health and ecosystems. We also hope to see a green chemistry program that seeks to prioritize persistent and bioaccumulative chemicals for elimination and reduction.

To promote green chemistry, California must embark on a process of comprehensive chemical policy reform, as we firmly believe that the current federal regulatory structure centered on the Toxic Substances Control Act (TSCA) is ineffective. The Green Chemistry Initiative, has the potential to be a powerful agent of positive change that will result in protecting public health and the environment, as well as building a sustainable economy for the state. For that reason, CHANGE members are already participating in the Initiative's process, attending stakeholder meetings, speaking on panels, providing individual written comments, and participating on the blog. Its stated interdisciplinary approach, involving the Department of Toxic Substance Control (DTSC) and its sister agencies, provides the opportunity to overcome the historic silo structure of separate departments regulating different types of chemicals and the reluctance of one government agency to interfere with the jurisdiction of another. Success, however, will depend on the fundamental principles on which the program is based and the type of actions to which it

is committed. Given the current flaws in our regulatory structure, we believe firmly that the following key principles must be incorporated into the program's decision-making framework:

- Data requirements, analyses, and the decision making process should:
  - (a) Incorporate new science demonstrating the importance of low doses, as well as the significance of background exposures, synergistic effects, and the timing of exposures during the life cycle;
  - (b) Address effects of cumulative exposures;
  - (c) Protect the most vulnerable populations; and
  - (d) Consider environmental justice and worker impacts and
  - (e) Be based on a full cost accounting, including costs to communities.
- Assessment of chemicals should focus on their intrinsic hazards and move away from reliance on time-consuming risk assessment methods that can be readily manipulated. Assessments should integrate the concepts of "cradle to cradle" and alternatives assessment to look for the least hazardous options in all cases. Furthermore, they should be based on the most sensitive criteria, such as the need to protect vulnerable human populations, endangered species, or water quality, for example.
- Decisions about chemical use should incorporate a precautionary approach to protect the public and environment when data are incomplete or uncertain, and therefore be based on the assumption that chemicals are unsafe until reasonably demonstrated otherwise.
- Where safer alternatives exist for hazardous chemicals, use of these alternatives should be mandated.
- We must not wait to take actions now, even as we work to develop a sound, long-term chemicals policy. Many chemicals currently in use are known to be unsafe, and their use should be restricted or eliminated.
- Voluntary programs are not sufficient. There must be a robust framework for regulating chemicals that accompanies incentives to for the development of greener chemicals.

We hope the above principles are reflected in the recommendations you ultimately set forth next year. These principles are critical in demonstrating the Green Chemistry Initiative's commitment to cutting edge science and the effective protection of our communities and environment, while strengthening our economic competitive advantage in the world market. These principles are central to our ultimate support of the recommendations, and will make the difference between a true Green Chemistry Initiative and a mere green-washing effort.

### **Concrete Actions**

With these principles in mind, we would like to offer the following specific ideas on how to move the Green Chemistry Initiative forward. The fundamental goal of a comprehensive chemical policy, in our view, is to create a management scheme to ensure that we obtain health and use information on, evaluate, and ultimately remove the most pervasive and hazardous

chemicals from commerce. Such a policy will also promote the use of non-hazardous alternatives, ensure sustainable jobs and production models, and foster economic growth through research on and implementation of green chemistry in California.

Such a management scheme will, as we have noted, require data about the traits of chemicals. Additional information sources should also be considered, to create a systematic approach to understanding how chemicals are used and any effects that they do have. This would include development and use of biomonitoring data to understand what chemicals are ultimately getting into people's bodies; emissions data to understand what chemicals and products are being released into air and water; occupational monitoring data to understand what chemicals are affecting workers, and environmental monitoring to understand any effects reaching ecosystems and wild species. Such an integrated approach will provide the best basis for sound actions to prevent or eliminate hazards to people and environments.

In the near term, utilizing the decision-making criteria, California must restrict or prohibit the use of "bad actor" chemicals. In addition, the state should require the use of safer alternatives when available, promote green chemistry solutions through a variety of research and economic incentives and policies, prioritize the public interest, including "external" costs in financial considerations, and incorporate environmental justice principles and public participation in decision-making. The following provides specific details on these various aspects of a sustainable, comprehensive chemical policy for California.

### **1) Obtain data to support comprehensive assessment of chemical hazards**

Data on the wide range of hazardous impacts chemicals can have is important for assessments both for the control of unsafe chemicals and for the substitution of appropriate alternatives. This data is necessary to develop a credible basis for distinguishing between high, low, and non-hazardous chemicals, assessing the safety of alternatives, and ensuring that new chemicals coming to market will not cause harm to workers, the public, or the environment.

The audience for such information goes beyond the regulatory and management agencies and includes businesses and consumers. Only by knowing the extent to which a chemical may be hazardous can businesses make informed decisions about which chemicals to use in their manufacturing processes or products and consumers make informed decisions about how to avoid potential exposures.

California, therefore, needs to develop requirements to obtain hazard trait data for chemicals currently in use and those proposed for use and the means to make them accessible for a variety of audiences, including state agencies, businesses, and consumers. Use of a data matrix could be structured so as to make it possible to compare different chemicals and to clearly show which data are missing and need to be collected.

Data are needed about all of the hazardous impacts, or "hazard traits," that we know to be important. In addition to attributes such as persistence and the propensity to bioaccumulate, information on the following effects of a given chemical or class of chemicals should be obtained:

- Mutagenicity and genetic toxicity
- Reproductive effects, including reduction in fertility and birth outcomes, including, but not limited to, birth weight
- Developmental toxicity, including physical and metabolic birth defects that are present at birth or that manifest later, and effects on development of any kind, including, but not limited to, motor or cognitive effects that result from exposure at any point
- Cancer
- Immunological effects including allergic sensitization
- Neurological and neurodevelopmental effects
- Effects on organs such as liver, kidney, eye, blood, and heart
- Respiratory effects
- Endocrine disruption
- Other disruptions or perturbations of signaling and hormone systems
- Impacts on water and air quality and ecosystem health.

As noted by the National Academy of Sciences in its recent report,<sup>1</sup> current scientific knowledge supports further evolution of testing methods to allow for the detection of early evidence of effects and to allow for better ways to look at the potential for cumulative effects of mixtures. Considerable expertise on such issues exists in the Office of Environmental Health Hazard Assessment on these needs and issues. The California Environmental Protection Agency should be a leader in pushing for the investment in improved methods.

In addition, we advocate the following:

- Require companies to generate comprehensive safety and health data, based on the above listing of hazard traits for all chemicals in their products by 2016.
- Establish partnerships with other states to create an interstate clearing house of environmental safety and health data to prevent redundant research efforts and to move testing along as rapidly as possible.
- Develop a data audit system by which to evaluate the scientific validity of the information gathered on individual or groups of chemicals from external sources.
- Place fees on products or processes for which there is no or inadequate health and safety information.
- Require chemical producers to complete a full life-cycle analysis of products to foster cradle-to-cradle management.
- Create labeling requirements that will inform consumers of the potential health and environmental impacts of the chemicals contained in products.

## **2) Take early action on “bad actor” chemicals.**

As discussed above, the collection of information is critical to any comprehensive chemical policy. California, however, need not and should not wait for data collection to conclude before taking action. While simultaneously implementing the data collection component of its chemical

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<sup>1</sup> Toxicity Testing for the Twenty-first Century: A Vision and a Strategy. Committee on Toxicity and Assessment of Environmental Agents. National Research Council. Washington DC: National Academies Press. 2007. 146 pp.

policy, the state's first priority should be to take early action to reduce or eliminate the use of "bad actor" chemicals.

In identifying chemicals on which to take early action, the state should consider both human health and environmental impacts. Early action should be directed toward eliminating impacts to the most sensitive populations, including vulnerable human populations and endangered species. Such action must account for the variety of impacts and routes of exposure for individual chemicals. Chemicals that are toxic, bioaccumulative, and persistent would be examples of good candidates for early action measures.

### **3) Require safer substitutes where available.**

DTSC and its sister departments should, through the Green Chemistry Initiative, use their regulatory authority to require the use of safer substitutes for toxic chemicals when such substitutes are available, and provide deadlines by which to develop non-toxic alternatives when they are not. They should also seek additional legal authority if needed. In many cases, the safer alternative to using toxic chemicals will be non-chemical solutions, such as sustainable agricultural or landscape practices that eliminate or reduce the perceived need for pesticides and chemical fertilizers, changes in some manufacturing processes, or changes in product design. Implementation of substitution policies will depend on the collection of data to demonstrate the hazard traits of the alternate substances.

### **4) Phase out chemicals that harm the health of humans or the environment or whose impacts are unknown.**

We look to the Green Chemistry Initiative to provide a mechanism by which to ban hazardous chemicals over time. We support a robust phase-out program, with specific timelines by which chemical producers and users must comply or face enforcement action. In cases where there is no toxicity information about or no evidence of the safety of a chemical, a chemical should be restricted from use until its safety can be reasonably but comprehensively demonstrated.

As indicated above, in establishing regulations that will phase out harmful chemicals, it is essential to consider health impacts beyond cancer and reproductive toxicity and to identify or establish protocols to determine a chemical's ability to contribute to, at the very least, developmental toxicity, genetic toxicity, neurotoxicity, immunotoxicity, endocrine disruption, and respiratory toxicity. In addition, we strongly suggest that the Department work with other agencies, such as the Office of Environmental Health Hazard Assessment, the State Water Resources Control Board, the Department of Fish and Game, and the Air Resources Board, to establish criteria to evaluate environmental impacts.

### **5) Support green chemistry solutions to the problems caused by toxic chemicals.**

We support a sustainable model of production for California that incorporates the 12 principles of green chemistry as articulated by John Warner and Paul Anastas<sup>2</sup>. The state can play a role in creating such a model by:

- Investing in research initiatives,
- Taking actions that encourage the growth of businesses employing green chemistry in California,
- Promoting producer responsibility, and
- Implementing purchasing policies that prioritize products and strategies that support green businesses and practices.

#### A. Building a Green Chemistry Curriculum

We encourage the state's investment into creating a green chemistry curriculum as a first step in developing the professional expertise and research needed to support and grow a sustainable economy. Fortunately, California is home to some of the premier universities and research centers in the world; institutions that have fostered great innovation and economic opportunity in high tech, agriculture, health care, and other industries. Our educational institutions can and must take the lead in advancing green chemistry research and making changes in chemistry, material science, and engineering curricula to include courses on toxicity and sustainable design. We strongly urge DTSC to include our university systems in the Green Chemistry Initiative and to communicate the need to expand opportunities for innovation and study to the Governor's office, our state legislators, and the academic community.

#### B. Encouraging private investment and green chemistry based businesses

In addition to encouraging university-based research, the state can create incentives for private research initiatives. The Green Chemistry Initiative should explore ways to attract and encourage the growth of businesses employing green chemistry principles in California. Examples of such actions include creating a conduit or clearing house for the sharing of green chemistry research and implementation strategies, brokering relationships between the research and commercial communities, reaching out to the venture capital community and engaging them in the process of supporting green chemistry in the state, and promoting a program of innovation awards and contests.

#### C. Producer Responsibility

We also encourage the Green Chemistry Initiative to develop regulations to require extended producer responsibility; companies that make or sell products in California containing hazardous chemicals must take them back at the end of their life cycle and ensure their proper disposal. Such a policy shifts the burden and cost of disposal away from the public and government agencies. It also incentivizes recycling of materials and the use of less toxic chemicals that are more easily reused or disposed of. Programs, such as the Green Dot program in Europe, could serve as models for what we do in California and should be considered.

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<sup>2</sup> P. Anastas and J. Warner, *Green Chemistry: Theory and Practice*, Oxford University Press: New York, 1998.

#### D. State Purchasing Policies

We strongly urge the Green Chemistry Initiative to evaluate the State of California's purchasing policies and create a green purchasing program. Currently, all new construction in the state must be LEED (Leadership in Energy and Environmental Design) certified to ensure "green building" practices are being implemented. The state should do the same thing with its other purchases, such as cleaners, computers, carpeting, furniture, etc., as well as processes such as landscaping and pest control.

#### **6) Create a system of "carrots and sticks" to ensure the development and use of non-toxic chemicals in commerce.**

We support the use of incentives in order to attract venture capital investments in green chemistry pursuits, encourage the growth of such efforts in California, and persuade our current businesses to embrace change. It is our expectation that the industry stakeholders will provide the Green Chemistry Initiative with suggestions in this regard. We believe, however, that regulations and their enforcement will be key, if not the most important, drivers of change in our state. As we have already said, we view the Green Chemistry Initiative as a program through which DTSC and its sister departments can establish both incentives and a clear regulatory framework to require the reduction of toxic chemicals in commerce, an action that will drive the development and implementation of green chemistry solutions.

We support creating economic penalties as part of the regulatory program for companies using toxic chemicals in their products and processes over a specific period of time, followed by a ban once that time period is exceeded.

#### **7) Develop, implement, and enforce regulations in the public interest without undue influence from parties advancing private interests.**

While we see green chemistry as providing economic benefits to our businesses and communities, we believe that decisions about chemical use, policy, and management must emphasize public interests rather than only economic interests. We, therefore, urge the Green Chemistry Initiative to create a public advisory committee, in addition to the science advisory group, to advise DTSC and its sister departments on what best serves the public interest, including sustaining healthy communities, a protected environment, and safe workplaces.

#### **8) Reduce impacts of chemical exposure on the most affected communities and promote environmental justice.**

DTSC, through the Green Chemistry Initiative, should incorporate principles of environmental justice into its policies by beginning its evaluation of chemicals and their potential health and environmental impacts, looking at the burdens born by highly impacted communities, and when developing policies, ensuring they actually benefit these communities directly. These communities are often more vulnerable because of local pollution, inaccessibility to less toxic

products and food, workplace exposures, inadequate health care, or age. Consequently, these communities include:

- The developmentally vulnerable, such as children, fetuses, and pregnant women;
- Communities bearing a disproportionate exposure to toxic chemicals, including environmental justice, fence line and rural communities, subsistence fishers, people of color, farm worker communities, and low income communities; and
- Workers exposed to toxic chemicals on the job, such as industrial, service workers, as well as farmworkers and their families.

**9) Use full cost accounting when making decisions regarding chemical use and management.**

Traditionally, the analysis of the cost of using toxic chemicals or creating safer alternatives has centered on the research and development investments companies will have to make to reformulate their products or implement greener processes. Little or no regard has been given to such externalities as the cost to communities from a degraded environment, health care, economic decline, education for developmentally impacted children, environmental clean up, disposal of toxic materials, worker exposures and lost work days, and even premature death.

The costs to industry of reducing toxic chemicals in products and processes, as well as other actions, such as environmental remediation and worker compensation should be only one factor since the state, municipalities, and local communities have had to bear the external costs of pollution for years.

**10) Support activities that increase the capacity of individuals and communities to act in their own interest to reduce their exposure to toxic chemicals.**

All community members have the right to participate in the decision-making processes that affect their environment, health, and economic well being, no matter what their income level, cultural background, or level of education. To ensure that the public has both the opportunity and capacity to participate in decisions around chemical use and green chemistry, DTSC and its sister departments should, through the Green Chemistry Initiative, do the following:

- Support organizations and activities that foster a democratic government and public participation in both statewide and local decision-making, such as outlined in the CalEPA Environmental Justice Advisory Committee report. This should include workshops that are accessible to communities, working with trusted community groups to organize outreach workshops and educational forums on green chemistry issues.
- Provide grants and other support to groups engaged in grassroots outreach, education, and other actions that reduce actual exposure to and risk from chemical use in products or processes.
- Apply revenue from the aforementioned fees imposed on companies that use toxic chemicals to partially support community education about producer responsibility and the principle of “polluter pays”.

- Make information about chemicals to which the public and workers may be exposed more accessible and understandable, including mandatory labeling, indicating the presence of chemicals that may be hazardous.

**Final Note: Supporting other efforts to reform state chemical policy and promote green chemistry.**

In addition to the ten actions we have outlined above, the members of CHANGE believe that building a new environmental, health, and economic model based on green chemistry will be the result of capitalizing on diverse government mechanisms to initiate change. We see the establishment of the Green Chemistry Initiative as one pathway toward fundamental and necessary reform. Other decision-making processes, however, must and will occur, including legislative initiatives. This year, a diverse suite of bills was introduced in the state legislature, including two that would have, if they had succeeded, increased the information on the health and environmental impacts of chemicals and their use in California.

These efforts should not be seen by DTSC, Cal EPA, or the Governor's office as competing with the Green Chemistry Initiative, but instead as corresponding measures to advance its goals. Consequently, we see opposition to such legislation as both inappropriate and, in fact, detrimental to establishing a greener, safer model for the state. We therefore strongly support the efforts of those government agencies involved with the Green Chemistry Initiative to continue their work with legislators and other leaders around the state in order to establish a "blueprint for keeping California in the forefront of protecting health and the environment in a robust economy".

**Conclusion**

With the Green Chemistry Initiative, California is poised to make crucial decisions about the future of its economy and the health of its people. We deeply appreciate the Governor's commitment to adopting policies to ensure that chemicals used in California are safe. We have an unique and historic opportunity to protect public health, improve environmental quality, and strengthen our state's economy. California can again stake out a leadership position in green chemistry innovation as we have in other key sectors such as energy conservation, electronics, biotechnology, and stem cell research.

This letter has been drafted, in part, as a response to a question you recently asked in a small group discussion at one of the Green Chemistry Initiative stakeholder workshops: "What does government need to do?" Doing nothing, or continuing with a failed chemicals regulatory structure, means rising rates of disease among our workers and the public and accompanying soaring health care costs; increased environmental contamination with skyrocketing remediation costs; and the lost economic opportunity, worth billions of dollars, for California to develop an innovative and homegrown green chemistry industry that meaningfully responds to growing international regulation and builds a competitive advantage in the world marketplace.

To succeed, we need the courage to take substantive steps that will enable the Green Chemistry Initiative to reach its potential. In our view, these steps must include acquiring comprehensive

data on the hazard traits of chemicals used in California; mandating the substitution of safer alternatives when available; sunseting the use of known dangerous chemicals; assessing the impacts of chemical use through a wide lens life cycle analysis rather than relying solely on narrow risk assessment criteria; investment in chemicals testing and assessment methodologies that accurately reflect new scientific knowledge while also meeting policy needs; embedding environmental justice into all decisions; and promoting public participation in this important state initiative.

We thank you again for your leadership on initiating this conversation with California and we hope our comments will be useful as DTSC moves the Green Chemistry Initiative forward. We look forward to continuing a dialogue with you.

Sincerely,

Members of the CHANGE Coalition

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