

February 10, 2011

To: Members of the Assembly Committee on Environmental Safety & Toxic Materials and Assembly Committee on Health

From: Assemblyman Bob Wieckowski
Chair, Assembly Committee on Environmental Safety & Toxic Materials

Subject: Green Chemistry Oversight Hearing

The Assembly Committee on Environmental Safety & Toxic Materials, along with the Assembly Committee on Health, will hold a joint hearing on February 15, 2011, to review the actions and policies of California agencies to require safer alternatives to toxic chemicals and reduce the production of toxic waste in California. The hearing will focus on the implementation of AB 1879 and SB 509 from the 2007-2008 California legislative session and the role that these bills play in the overall California Green Chemistry Initiative.

The Assembly Committee on Environmental Safety & Toxic Materials, along with Assembly Committees on Health and on Natural Resources, has held three oversight hearings on the State's implementation of the Green Chemistry statutes. August 3, 2010 oversight hearing on the Green Chemistry Initiative focused on the processes and standards contained in DTSC's informal draft regulations, Safer Consumer Product Alternatives, as released June 23, 2010.

The February 15, 2011 joint hearing will examine the state agencies' final regulations being proposed for adoption to establish the green chemistry program elements of AB 1879 and SB 509.

Part 1. Green Chemistry

Green Chemistry, as defined in Green Chemistry: Theory and Practice, is "the utilization of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products."¹ Green

¹ Paul Anastas and John Warner in Green Chemistry: Theory and Practice (Oxford University Press: New York, 1998).

Chemistry is a fundamentally new approach to environmental protection, transitioning away from managing toxic chemicals at the end of the lifecycle to reducing or eliminating their use altogether. Green Chemistry encourages cleaner and less-polluting industrial processes, while creating new economic opportunities in the design and use of chemicals, materials, products and processes.

Lack of a Comprehensive Chemical Policy. Despite environmental and occupational legislation in the 1970s, experts have concluded that chemical policy in the U.S. has not been protective of human health or the environment, nor has it promoted innovation in the chemical market. The federal Toxic Substances Control Act (TSCA), the most notable of the chemical policies, does not require producers to examine or disclose information about the hazardous properties of their products, creating substantive gaps in the understanding of the health and environmental effects of the great majority of the 83,000 substances listed in the TSCA Inventory. These substances come in contact with people - in the workplace, in homes, through the use of products - and many of them enter the earth's finite ecosystems at some point during their lifecycle. Only 1,000 chemicals and pollutants are regulated by any federal statute.

At the state level, California has lacked a comprehensive means to collect data on, evaluate or regulate toxic chemicals. Even as concern over health and environmental effects of toxics has risen, chemicals have been considered on a case by case basis or solely regulated when they are disposed. Over the years, several state agencies have been delegated limited authority to regulate specific chemicals in specific consumer products. Sometimes more than one agency has authority over the same chemical but in different products or at different parts of the product's lifecycle. This fractured approach has created a convoluted, ineffective process for identifying, evaluating and regulating chemicals in commerce.

According to the University of California, chemical and pollution related diseases among children and workers in California cost the state's insurers, businesses and families an estimated \$2.6 billion in direct and indirect costs per year. In 2004, more than 200,000 California workers were diagnosed with deadly, chronic diseases - such as cancer or emphysema - attributable to chemical exposure in the workplace. Over that same year, 240,000 cases of preventable childhood diseases related to exposure to chemical substances were diagnosed.²

Part 2. The California Green Chemistry Initiative.

In 2007, the Governor created the California Green Chemistry Initiative stating that "a comprehensive and unified approach is needed to ensure good, accountable policy." He continued, "I encourage the Legislature and all interested parties to participate in the development of this important initiative." In April 2007, the Department of Toxic Substances Control (DTSC) was directed to develop the Initiative. The goals of the Green Chemistry Initiative include developing a consistent means for evaluating risk,

² UC Centers for Occupational and Environmental Health (COEH), [Green Chemistry: Cornerstone to a Sustainable California](#), 2008.

reducing exposure, encouraging less-toxic industrial processes, and identifying safer, non-chemical alternatives.

The California Green Chemistry Initiative Final Report. After more than a year of extensive outreach, research and data compilation, DTSC issued the California Green Chemistry Initiative - Final Report in December of 2008.³ The report included six recommendations which were designed to fundamentally shift chemical policy away from end-of-pipe clean-up toward innovation of the design, manufacture and use of toxic-free, sustainable products. The six policy recommendations are:

- 1. **Expand Pollution Prevention** and product stewardship programs to more business sectors to refocus additional resources on prevention rather than clean up.*
- 2. **Develop Green Chemistry Workforce Education and Training, Research and Development and Technology Transfer** through new and existing educational programs and partnerships.*
- 3. **Create an Online Product Ingredient Network** to disclose chemical ingredients for products sold in California, while protecting trade secrets.*
- 4. **Create an Online Toxics Clearinghouse**, an online database of chemical toxicity and hazards populated with the guidance of a Green Ribbon Science Panel to help prioritize chemicals of concern and data needs.*
- 5. **Accelerate the Quest for Safer Products**, creating a systematic, science-based process to evaluate chemicals of concern and alternatives to ensure product safety and reduce or eliminate the need for chemical-by-chemical bans.*
- 6. **Move Toward a Cradle-to-Cradle Economy** to leverage market forces to produce products that are “benign-by-design” in part by establishing a California Green Products Registry to develop green metrics and tools (e.g., environmental footprint calculators, sustainability indices) for a range of consumer products and encourage their use by businesses.*

Part 3. Chemicals of On-going Concern.

The following chemicals are a few of those recently considered by the Legislature that continue to be of concern. These chemicals are among those which the Legislature or DTSC might wish to consider taking immediate or expedited action.

Polybrominated biphenyl ether (PBDE). To comply with California's flame retardant requirements, manufacturers commonly add flame-retardant chemicals, such as brominated flame retardants (BFRs) to plastics and other flammable materials. The most studied of the BFRs are the polybrominated diphenyl ethers (PBDEs) which

³ State of California, California Green Chemistry Initiative - Final Report, December 2008.

were first introduced into the market over thirty years ago. PBDEs are closely related in structure and behavior of polychlorinated biphenyls (PCBs). PCBs are known to have neurotoxic and carcinogenic action and were banned in 1976. Such similarity of the chemicals' molecular structures raises concern about potential biological hazards.

Bisphenol A. Bisphenol A (BPA) is a chemical that is used primarily to make polycarbonate plastic and epoxy resins, including in metal food and infant formula cans, polycarbonate baby bottles, and reusable plastic water bottles. The Centers for Disease Control and Prevention have detected BPA in the urine of 93% of 2,517 people that they tested, suggesting daily exposure to the chemical. BPA has also been found in follicular fluid, umbilical cord blood and breast milk, raising concerns about adverse health effects in children from the earliest stages of pregnancy. BPA exposure has been linked to neural and behavioral effects in fetuses, infants, and children and concern has been raised about the chemical's effects on the prostate gland, mammary gland, and activating an earlier age for puberty in females.

Phthalates. Phthalates are a group of chemical compounds that are mainly used as plasticizers (substances added to plastics to increase their flexibility), and in fragrances, perfumes, lubricants and wood finishers. The effects of phthalates vary in scientific studies on animals, but testicular injury, liver injury, and liver cancer have been associated with exposure to the chemical. Once in the system, phthalates disrupt hormones, development and the reproductive system.

Part 4. California Green Chemistry Legislation.

On September 29, 2008, Governor Schwarzenegger signed AB 1879⁴ (Feuer and Huffman) and SB 509⁵ (Simitian) to establish a broad Green Chemistry policy for the State of California and create a mechanism for public information and regulatory review of toxic chemical uses. These two bills directly coordinate with DTSC's final policy recommendations.

AB 1879 required DTSC, by January 1, 2011, to establish a process to identify, evaluate and prioritize chemicals and chemical ingredients in products that may be considered a “chemical of concern.” The bill also authorizes DTSC to take a range of regulatory actions to limit exposure to chemicals of concern. Additionally, the bill required DTSC to establish a Green Ribbon Science Panel to advise them on technical and scientific matters and establish a procedure for the protection of information that is claimed to be a trade secret. The proposed regulations from November 2010 have been withheld from submission to the Office of Administrative Law and are being reconsidered.

SB 509 required DTSC, by January 1, 2011, to establish a Toxics Information Clearinghouse, a decentralized, web-based system for the collection, maintenance, and

⁴ Assembly Bill 1879 (Feuer), Chapter 559, Statutes of 2008.

⁵ Senate Bill 509 (Simitian), Chapter 560, Statutes of 2008.

distribution of information on chemicals used in daily life.⁶ SB 509 also required the Office of Health Hazard Assessment (OEHHA), by January 1, 2011, to evaluate and specify hazard traits and environmental and toxicological end-points for the Clearinghouse.⁷ DTSC is required to evaluate and prioritize the chemicals using the criteria provided by OEHHA. A public hearing on the proposed OEHHA regulations is slated for January 31, 2011 and the notice and comment period ends February 15, 2011.

Part 5. California Green Chemistry Regulations.

Summary of Proposed DTSC November 2010 Regulations. DTSC completed a two-year process of stakeholder and public involvement and issued the draft regulation on June 23, 2010. The Proposed Regulation was submitted to state Office of Administrative Law (OAL) September of 2010 and includes changes made as a result of that consultation. The Green Chemistry Proposed Regulation for Safer Consumer Products were submitted to the state Office of Administrative Law to begin the official rulemaking process

DTSC significantly altered the Safer Consumer Product Alternatives R-2010-05 regulations in November, 2010 and a 15 day public comment period was commenced. Specifically, DTSC removed article sections after interested groups expressed concern. These post-hearing changes were made without the advisement of the Green Ribbon Science Panel and have removed many Panel recommendations.

In December of 2010 Cal-EPA Secretary Adams requested a re-evaluation of the DTSC green Chemistry Regulations that are currently pending before the OAL.⁸

The Berkeley Center for Green Chemistry identified three critical gaps in the new regulations; (1) The Data Gap, (2) The Safety Gap, and (3) The Technology Gap.

1. The Data Gap: Public disclosure of information on the use of chemicals in products and their hazardous characteristics would be stagnated because the regulations limit the number of chemicals designated as Chemicals of Concern. Very little new information would become available.
2. The Safety Gap: The November regulations would severely restrict the DTSC's ability to systematically identify and address chemicals in products that pose threats to human and environmental health. The revised regulations use an extremely high evidentiary standard for designating a chemical as a Chemical of Concern. The changes also create a reactive approach as opposed to a proactive approach; Action would be taken after a threat has been demonstrated instead of identifying and prioritizing hazards and alternatives before a threat occurs.
3. The Technology Gap: The proposed regulations as amended would not promote the innovation of safer products. Most of Article 5 of the regulations on

⁶ H&S Code 25256. .

⁷ H&S Code 25256.1.

⁸ Letter to Assemblyman Mike Feuer from Cal-EPA Secretary Adams, December 23, 2010.

"Alternatives Assessments" has been removed. With the signal that there will be a policy shift toward green innovation removed from the regulations, it is unlikely that any reactionary investment in green chemistry research, education, or development will occur.

Summary of Proposed OEHHA Regulations. In December 2010, OEHHA released its proposed regulations that seek to implement the mandate of SB509 and as codified in H&S Code 25256.1. The regulations identify four general categories of hazard traits: (1) Toxicological Hazard Traits, (2) Environmental Hazard Traits, (3) Exposure Potential Hazard Traits, and (4) Physical Hazard Traits.

Endpoints and other relevant data for each toxicological and environmental hazard trait are included in the specific hazard traits listed in categories 1 & 2. Endpoints are the kinds of adverse health and environmental impacts that are observed in scientific studies (for example, the endpoint "decreased fetal weight" as an indicator of a hazard trait). The regulations show how endpoint and other relevant data may be used as evidence in evaluating whether a chemical has a hazard trait, and whether a chemical has an exposure potential or physical hazard trait.

1. **Toxicological Hazard Traits:** The first subcategory pertains to carcinogenicity, developmental toxicity, and reproductive toxicity. The second subcategory pertains to other toxicological hazard traits and includes cardiovascular, endocrine, respiratory, and musculoskeletal toxicity, and neurotoxicity.
2. **Environmental Hazard Traits:** Traits include impairment of waste management organisms, loss of biodiversity, various impairments to wildlife, and domestic animal toxicity.
3. **Exposure Potential Hazard Traits:** Traits include ambient ozone formation, bioaccumulation (of chemicals in tissue of organisms), environmental persistence, and global warming potential.
4. **Physical Hazard Traits:** Traits listed are combustion facilitation, explosively, and flammability.

OEHHA chose to define "chemical substance" broadly. The definition includes: chemical elements, compounds and mixtures, particulate matter, metabolites of a chemical, and degradation by-products. The definition casts a wide net because chemicals used in consumer products can break down into other chemicals or substances that are also hazardous.

The proposed OEHHA regulations impose no requirement on any person or business because they only identify hazard traits, endpoints, and other relevant data. DTSC is to use the information in developing the Clearinghouse.