

Summary of Emerging Options

This document is a summary outline of all of the options which participants submitted through November 16, 2007. The emerging options include the input and comments from stakeholder meetings, symposia and forums, letters and emails, the Green Chemistry blog, and related venues. Each option presented in this record has been sorted into one of the broad categories defined below. Please note: a particular option may relate to more than one category; each option is sorted by its principal category for purposes of this document.

These options are organized into four groups known as challenge areas:

(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework

(2) Green Chemistry: Stimulating Green Chemistry

(3) Toxics by Design: Identifying Toxics in Products by Design

(4) Toxics by Accident: Identifying Toxics in Products by Accident

Each option presented in this Record falls into one or more of the categories defined below:

Category	Types of Options Included (Definition)
Data Collection and Use (Information)	Identify and address information gaps; obtain and use better data. Establish mechanisms to expand and share information (about chemicals, toxicity, hazards, risks, life-cycle assessments, etc.). Develop a
Economic Incentives and Markets	Use market forces (incentives and disincentives). Encourage corporate responsibility and accountability. Establish funding mechanisms.
Statutory and Regulatory Requirements, Enforcement	Establish and harmonize laws and regulatory requirements; require disclosure, reporting, testing, or standards; prohibit uses or ban harmful chemicals; use or expand compliance and enforcement (regulatory system). More specifically, assess risks or hazards via a pre-market evaluation; consider life-cycle of a product; establish metrics to determine effectiveness of risk or hazard reduction strategies. Reduce or restrict use through reduction measures, standards, process or engineering changes, and product stewardship.
Voluntary Measures	Develop chemical data, reduce use, and find safer substitutes through voluntary measures. Encourage public-private partnerships. Identify and use non-regulatory models to stimulate green chemistry.
Education and Outreach	Increase public awareness. Enhance curriculum and academia programs. Provide clear and meaningful information to consumers. Foster training and workforce development in green chemistry.
Research and Technology	Conduct research on chemicals (risks and hazards), analytical methods, chemical designs and processes, and safer alternatives. Support increased research and development of green chemistry technologies establish laboratories and technical centers.
Technical Assistance	Provide technical assistance to businesses. Establish networks (between government, industry, academia, and the public) to promote green chemistry tools. Publish guidelines and methodologies.
Recognition, Awards, and Certification	Establish certification programs (for products, processes, and businesses). Recognize and award worthy achievements. Encourage innovation and change through preferred purchasing.

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Category							
		Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-1	Establish baseline and enhance IT infrastructure to centralize and make accessible existing data with federal, state and local programs. Thus ensuring information gathered is accessible to others to facilitate use of existing data and programs.								
1-2	Develop a partnership and establishment of program w/academia.				X	X	X		
1-3	Foster participation in development of innovative alternatives through incentives for stakeholders. Do not regulate.		X		X				
1-4	Develop and establish <u>mandatory criteria</u> that must be addressed for all substances used in commerce. Take into account toxicity, effectiveness, volume used/reduction in use, long and short term health and environmental impacts (life cycle).	X	X	X					
1-5	Develop and establish <u>balancing criteria</u> for all substances used in commerce. Take into account long and short term costs/economics, "alternative analysis" and public acceptance.	X		X					
1-6	Prioritize and address chemicals by toxicity, risk and volumes used and/or released into commerce and the environment.	X							
1-7	Develop and use "global approach." Work with other states, countries and multiple organizations to ensure restrictions applicable to products are applicable to imports.			X					
1-8	Factor environmental, societal, environmental justice and economics into decisions.			X		X			
1-9	Foster outreach and education through partnerships to stakeholders.				X	X			
1-10	Mandate full disclosure of substances contained in products. "Green labeling" should be used with restraint.	X		X		X			
1-11	Mandate a surcharge on chemicals/products to support fund to address long term environmental impacts.		X	X					

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
		1-12	Research/develop new testing methods on relative toxicity and synergistic effects of substances.						X
1-13	Realign and leverage with existing federal, state and local mandated reporting activities to avoid duplication and waste of resources.	X		X					
1-14	Establish product safety organization OR partnership with University of California to develop checklist and review new products.			X	X	X			
1-15	Use "precautionary principle" shift burden to industry.			X					
1-16	Foster "Reuse needs" to be considered in product design.								
1-17	Standardize terminology/definitions to promote the necessary and real change towards creating more sustainable, social and environmental solutions.	X		X		X			
1-18	Prioritize protection from chemical harm in decision making. Use data on all toxicological endpoints including cancer reproductive effects developmental effect etc.	X							
1-19	Develop regulations to phase out use of substances known to pose added risks and/or environmental harm.			X					
1-20	Use REACH as Model.	X		X					
1-21	Foster "Reduce Energy/ Resource Consumption" through take back programs.			X	X	X			
1-22	Foster ongoing and continual progress rather than one time improvements.		X						
1-23	Advertise Green Businesses.		X			X			
1-24	Do not focus exclusively on chemicals in products and chemical inputs. Manufacturing and production processes using chemicals should also receive attention in order to address health and safety concerns of workers - and to address community concerns for inherent safety of chemical-using or producing facilities.			X			X		

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-25	A working task group should be convened to explore nano-technology and balance the benefits and risks. The group would partner with industry to set priorities and quantify optimal R&D resources.								
1-26	Support development of a chemical risk analysis process such as that being implemented in Canada.	X		X					
1-27	Support mandatory reporting and enforcement of chemical use by manufacturers and distributors.	X		X					
1-28	Develop task groups to do expanded research and development of safer alternatives to priority chemicals in consumer products, including investment in green chemistry research.								
1-29	Need responsible producer management at end-of-life.			X					
1-30	Rethink the processes for allowing chemicals into the market.	X		X					
1-31	Educate the companies and consumers world-wide.					X			
1-32	Teach green chemistry and green design at schools.					X			
1-33	Design with intent of End of Life								
1-34	Design with intent of End of life 1) Take back 2) Producer responsibility with idea of economic change of design 3)Facilitate COUGE recycling 4) Design to be biodegradable 5) Design to last		X	X					
1-35	Develop a database of ingredients used in consumer products similar to the Skin Deep database that is currently available for cosmetics. In order to ensure accuracy, California would need the regulatory authority to regulate consumer products and to require disclosure of ingredients in consumer products.	X		X		X			

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-36	Establish mandatory requirements needed to fill gaps about chemicals. In addition to CMR data, we need other endpoints: neurotoxins, long-term toxicity, endocrine disruption, immunotoxicity. Industry should be responsible for developing these data, with government's role is to audit/verify.	X		X					
1-37	Develop an information clearinghouse on DTSC's website. This information would include hazard and use data as well as information about safe alternatives.	X	X			X			
1-38	Hold CEOs personally liable for adverse environmental and public health harm from toxic chemicals. They should also be held responsible for the veracity of information provided to the department under any new regulatory requirements.			X					
1-39	Legislate something similar to the State of Massachusetts (S-1268 & H-2275) The Act for a Healthy Massachusetts: Safer Alternatives to Toxic Chemicals	X		X					
1-40	Change state MSDS's requirements to be similar to the State of Pennsylvania MSDS requirements which are more informative than federal MSDS's.			x					
1-41	Develop Mentorship program that establishes Environmentally responsible companies as mentors to less compliant companies. Mentor to assist less fortunate companies and receive tax incentives commensurate with number of mentees.								
1-42	AUTOMATED, WEB-BASED ASSESSMENT OF "GREEN" CHEMICALS, PRODUCTS AND PROCESSES FOR PRODUCT DESIGN AND PROCUREMENT	X					X		
1-43	WEB-BASED MACS EMISSIONS AND HEALTH RISK ASSESSMENT MODULES	X							
1-44	An Automated Web-based System for Identifying Munition and Nonmunition Chemicals of Concern Chemical Homeland Security System (C-HoSS)	X							
1-45	Change policy to change Materials flow (i.e. eliminate special tax treatment for extraction of virgin materials and subsidies for agriculture.)		X	X					
1-46	Tax the use of virgin materials		X	X					

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
		1-47	Regulate mining, oil and gas nonhazardous solid wastes under RCRA. Eliminate special tax treatment for extraction of virgin materials and subsidies		X	X			
1-48	Establish depletion quotas on extraction and import of virgin materials/ Tax the production of virgin materials		X	X					
1-49	Establish requirements for product reuse, recyclability or biodegradability			X					
1-50	Mandate consumer separation of materials for recycling. Establish weight volume based disposal fees.		X	X					
1-51	Tax hard to dispose products. Establish deposit fund for packaging hazardous products.		X	X					
1-52	Establish a fee rebate based on energy efficiency.		X	X					
1-53	Tighten regulation of waste management at RCRA facilities			X					
1-54	Rethink the processes for allowing chemicals into the market.			X					
1-55	Regulation does not hurt the economy. It propels the industry to think in new ways.								
1-56	Change how we use Taxes and charges ; make the individual actor pay for the full cost . Example prorated based on emissions, lbs of waste disposed to encourage reuse and recycling. Include everyone ...from household wastes all the way up to the big chemical companies and corporations. " Pay by the Bag" approach.		X	X					
1-57	Government can help by avoiding recessions and making workers more adaptable through improvements in education and training.								
1-58	A dominant position in markets for an advanced technology can lock in control of a long stream of follow-on product and process innovations, making market entry much harder for technology "followers.		X						

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-59	It might actually be to the economic advantage of manufacturers to be second rather than first—to absorb the spillovers from investments made initially by competitors (foreign or domestic) and thus start production further along the technological learning curve.		X						
1-60	Where technology policy is concerned, the hands-off approach is radical for it risks the most; the only prudent approach is to err on the side of government involvement in the sponsorship of new technologies.								
1-61	The government is a significant consumer of technology in its own right as it goes about providing for our common needs. In areas ranging from national defense to infrastructure, like any other large customer the government must open our wallet to get the technology it needs. Very often that means sponsoring research and procurement that launch new industrial capabilities.		X						
1-62	Transforming Technology takes a major step forward by analyzing the types of policy change needed to realize modern technology's potential								
1-63	Environmental regulation needs to be overhauled to promote long-term innovation and pollution prevention; more effective economic incentives for investments in clean technologies are long overdue; current measures of industrial productivity need to be reconceptualized so they recognize environmental costs; and altogether more attention needs to be paid to how clean technologies can be transferred successfully from country to country			X					
1-64	The need, in short, is for technological systems that are environmentally "closed"—that is, detached as much as possible from natural systems								
1-65	The existing damage won't stabilize and decline until pollution per unit of output and materials consumption per unit of output—factors that are at their core technological—decline rapidly enough to outweigh growth in economic output.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-66	"Technological transformation for environmental sustainability" is thus a process that reduces environmental damage per unit of output (or value-added) fast enough to outpace production increases								
1-67	Technology is not the limiting factor: technical solutions available right now could make dramatic environmental improvements at small or negative cost. Lack of information, lack of capital, management failures, and short-sighted or obsolete public policies that impede environmental improvements								
1-68	Government subsidies can be introduced as temporary measures, being phased out when wider policy goals are achieved.		X						
1-69	Timing is important. A recession is a bad time to introduce a new tax.		X						
1-70	'Feebate' scheme to reward or penalize consumers of specified chemicals		X	X					
1-71	Fiscal instruments (tax changes) and regulations (emissions standards) work best in parallel.		X						
1-72	Tax exemptions seem to have a psychological effect on taxpayers that is out of proportion to the benefits received.		X						
1-73	In 2000, the U.S. Army Defense Ammunition Center (DAC) began working with Chemical Compliance Systems, Inc. (CCS) to use CSS's extensive centralized Relational Chemical and Product Databases as the basis for a series of integrated, web-based modules within what has become the Munitions Analytical Compliance Suite (MACS). (CCS's centralized databases included over 650 regulatory lists.) MACS includes eight modules. In a few months, the 9th and 10th automated modules the Emissions Risk Assessment and Human Health Risk Assessment—will be added. The most comprehensive of the MACS modules is the "Green" Munitions Analytical Compliance System (G-MACS).	X					X		

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-74	Chemistry has enabled the development of countless products that consumers use each and every day, and consumers want to understand what impact these products may have on the environment and on their health. Industry shares this desire, and continues to strive to develop, produce and market products that are both beneficial and safe for people and the environment.					X			
1-75	.. the question is not just, "How do we control toxic substances?", but also how do we successfully manage both toxicity and exposure--risk--while providing the solutions society needs?			X					
1-76	Risk assessment methods that integrate knowledge regarding potential hazards of chemicals with an understanding of their uses and exposures;								
1-77	Product stewardship and risk management programs that establish mechanisms to assure exposures remain in the safe region for typical uses and foreseeable misuses; and			X					
1-78	Laws and regulations that: • are science-based, • balance potential risks with benefits, • factor in existing scientific knowledge as well as reasonable uncertainties, and • consider the degree of risk to people and the environment.			X					
1-79	Find a way to successfully manage both toxicity and exposure (i.e., risk) while providing the solutions California needs.			X					
1-80	What if you could have a plastic polymer that you could recycle with the efficiency and a robust system similar to paper and aluminum? Polylactic acid can be hydrolyzed from PLA back into Lactic acid and repolymerized back into PLA. This process does not need complex chemistry to separate copolymers because PLA is a homopolymer and would yield only lactic acid.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-81	The end-of-life vision for NatureWorks Biopolymer in the long term is to maintain a journey to zero waste – keeping the Biopolymer, regardless of form, out of the landfill and being to able to recycle into the same use or higher valued use if possible.								
1-82	Look at other industries/partnership (e.g. military- “green munitions”) in order to make info (CCS tools) available				X			X	
1-83	Hazard is largely inherent to a chemical, and doesn’t fundamentally change over space or time, whereas any exposure information necessarily represents only a “snapshot” in both space and time.								
1-84	A chemical’s hazard is relatively intrinsic, largely or entirely independent of how the chemical is used, where or how it enters the environment, or other factors that vary with time and place. Hazard data are therefore relevant (i.e., necessary though not sufficient) in characterizing risk whatever the use of a chemical, and hence are useful in understanding any and all potential uses of or exposures to a chemical -- and what kind of exposure-reducing efforts may need to be taken.								
1-85	Conditions that determine exposure can and often do differ enormously for every setting and point in time that a chemical is present. And even if a “snapshot” of current exposure were able to be assembled, the next new use or activity leading to a release would alter the exposure picture.								
1-86	Risk and exposure assessment at this time are simply too uncertain and unreliable to serve as a basis for deciding for which chemicals hazard data should be developed. While ultimate decisions concerning risk identification and management need to account for exposure as well as hazard, in all but the most exceptional cases, chemical prioritization approaches should be hazard-, not risk-driven.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-87	Transparency: Policies should ensure that any descriptions of exposure information are clear and transparent in describing the scope and nature of the information and its limitations, including by addressing all of the elements specified above under Scope and Completeness and Quality.								
1-88	Policies should require that conclusions or recommendations be carefully written and explicitly qualified so as to limit their perceived and actual applicability to those settings for which information has been provided and deemed sufficient to warrant the conclusion or recommendation. Furthermore, the degree of uncertainty associated with a conclusion or recommendation should be stated and should reflect the extent of exposure information available. Lastly, policies should ensure that in the absence of good exposure information, exposure should be assumed possible or likely.			X					
1-89	Ensure access to information gathered by others								
1-90	Negotiate for access to confidential business information (CBI) submitted under the European Union's REACH Regulation and under the Canadian Environmental Protection Act (CEPA)	X							
1-91	Require companies making/importing chemicals in California that are subject to REACH or CEPA to submit the same information to California officials	X							
1-92	Enhance existing IT infrastructure to receive and share the large volumes of REACH data								
1-93	Map the flow of chemicals in California by developing and sharing production/use info	X							
1-94	Require California producers/importers and users to submit and update information on production and processing (amounts, facility locations), uses (including in products), and post-use management	X							
1-95	Much of the information reported to EPA is designated confidential business information (CBI). Under TSCA, EPA is prohibited from divulging any CBI to the public or to other governments, including the State of California.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-96	MORE THAN 18 MONTHS AFTER THE ORIGINAL DEADLINE, THE HPV CHALLENGE IS FAR FROM COMPLETE								
1-97	Two-and-a-half years after final data sets were due, fewer than half (47%) have been submitted.								
1-98	10% of eligible HPV chemicals were not volunteered for the Challenge by the companies that produce them; EPA has issued rules to compel testing for only 6% of these chemicals.								
1-99	The average quality of sponsors' initial submissions, while originally quite good, has declined over the course of the Challenge, especially in the past 18 months. The grade point average for initial industry submissions has declined from a solid B-plus in 2001 to a C-minus in 2006.								
1-100	Because the HPV Challenge is voluntary, EPA has very limited ability to ensure that the data submitted by sponsors are of high quality and complete. While EPA and other commenters have often identified deficiencies in initial submissions, there is no legal or binding obligation on the part of sponsors to heed those comments.				X				
1-101	THE MAJORITY OF CHEMICALS IN COMMERCE ARE NOT HPVS								
1-102	HPV chemicals constitute the bulk of chemicals in commerce when measured by tonnage, non-HPV chemicals far outnumber HPV chemicals.								
1-103	Findings indicate that the chemical industry is not making the development of, and public access, to hazard data on all HPV chemicals "evergreen" practices.								
1-104	Embrace the idea of screening of chemicals to get meaningful information and results in a reasonable amount of time. Methods for screening may be different than for full testing.								
1-105	Develop a map of chemical use in California that shows where chemicals come from, how they are used, and where they go.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-106	Develop approaches that better address the significance of levels of biological activity as ways to predict and understand toxicity and potency, along the lines of the recommendations from the National Academy of Sciences.								
1-107	Talk to chemistry departments at universities so that they understand the importance of the hazard traits of toxicity, persistence, and bioaccumulation. Encourage the development of new curriculum and requirements for chemistry undergraduate and graduate students.					X			
1-108	Include variability and differential human susceptibility in the models and approaches. We know that there are distributions of many of the factors that predict human response to chemicals. We have not fully integrated these issues into the ways that we think about chemicals, and we need to.								
1-109	Lower the barrier to obtaining access to data and create incentives for the production of data, rather than maintaining the current framework which actually provides incentives to avoid producing data.		X	X					
1-110	Create lists of chemicals of concern at different levels of evidence or certainty. There may be chemicals that are of concern as possible toxic air contaminants or carcinogens but that do not make it onto the lists of the Toxic Air Contaminants or the Proposition 65 chemicals, for example. There could be "feeder" lists that would help us have an early view on what the potential chemicals of concern are.	X							
1-111	Focus more on what people are exposed to in the real world.			X					
1-112	Focus more on products and the chemicals in products, which get little attention.			X					
1-113	Overcome gaps in education related to new methods. Some of these may include computational toxicology and bioinformatics, as well as other things that we have discussed. Building such capacity (e.g., more training, resources, scientists) may lead to better models and approaches.					X			

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
		1-114	Educate the public and consumers and other users of products about how to select and use “safer” products. We need to address their information needs in ways that are understandable to make it possible for them to do so.					X	
1-115	Understand the information needed by businesses using chemicals to make informed choices and evaluate how to address these information needs throughout the supply chain (i.e., information transfer up and down the supply chain between manufacturers to chemical users).	X						X	
1-116	Encourage greater collaboration and partnership across disciplines and institutions to increase overall knowledge. For example, consider the model of how pharmaceutical companies make decisions on which chemicals are too hazardous to pursue.		X		X	X		X	
1-117	Reduce the differences in the ways that we treat pharmaceuticals and environmental chemicals. The workshop identified several areas where information and methods developed in the pharmaceutical industry could be useful for environmental chemicals, and these should be addressed.			X					
1-118	Implement the policy that “no data means no market,” meaning that chemicals for which safety data are not available are to be banned from sale or use.	X		X					
1-119	Increase the budget for state agencies responsible for evaluating human and ecological risk i.e OEHHA.		X	X					
1-120	Create a unified database that includes data from sources around the world. This database would have to be designed to be accessible to different users (chemical products users; consumers, etc) and should be made public. (The “E-Chem” unified data portal newly introduced by OECD might be considered a “baby step” toward this.)	X				X		X	
1-121	Ensure that data are available to the public and address limitations related to confidential business information.					X			

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-122	Look at a product from all the various aspects of its life cycle. It is critical to ensure the total picture of benefits and impacts is understood. Failure to look across the entire life cycle when making decisions can lead to unintended consequences and often fail to solve the issue of concern. Dissecting a product into all the various processes that contribute to its production and disposal can help us better understand how our production and consumer habits affect the environment.	X							
1-123	Establishing trade-off rules and boundaries is critical to success. However, despite the availability of an ISO standard on LCA, not all life cycle assessments are conducted using that standard. In addition, assumptions and boundaries can be defined differently in different assessments. These facts make it difficult and unwise to try to compare one life cycle analysis to another group's work.								
1-124	For example, this analytical technique has been adopted by some manufacturers who hire private research firms to conduct LCAs for their products. With a growing environmental consciousness on the part of consumers, marketing a product as "environmentally-friendly" can mean money in the bank for manufacturers.								
1-125	three LCAs have been conducted on cloth vs. disposable diapers by separate firms hired by different groups. Each analysis came out with different results and each group marketed their products using the numbers from the studies they backed. This has raised great concern in scientific and environmental circles. The assumptions and boundaries used in any LCA must be transparent to avoid confusion and misuse.								
1-126	A life cycle analysis must be combined with trade-off rules, boundaries and critical thinking. Understanding the purpose of the analysis and the good or service delivered allows for a good comparative analysis. However, there are a number of potential problems that must be considered to ensure good results.						X		

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-127	Due to differing assumptions developed up front: comparisons between studies difficult								
1-128	No single, globally accepted method exists for LCA work								
1-129	To help alleviate concerns over the trend to use LCA as a marketing tool, the Society of Environmental Toxicology and Chemistry (SETAC) has established guidelines for conducting LCAs by both governmental and private agencies, as well as developed a code of ethics. It is suggested that DTSC consider following this type of standard.	X							
1-130	Concerned about the growing tide of consumer deceptive trade practices litigation, some of it based on product labels. The State of California is a significant jurisdiction for such claims, including class action lawsuits. Any eco-labeling program developed and overseen by the state should exempt eco-labeling from forming the basis for such liability, relying instead on state regulatory controls to enforce eco-labeling standards. It would defeat the public policy goals of having an eco-labeling program, if the very program that the State designs to inform consumer decision-making becomes the basis for private parties to claim money damages for purported misinformation. Additionally, any eco-labeling program must be harmonized with existing State and Federal regulations.					X			
1-131	Providing consumers with accurate information upon which they can make informed decisions can be a very useful tool in driving changes. There are many programs that are predicated on consumer choice. Cars are labeled with expected fuel efficiency ratings. Major home appliances have energy labels which can be used for comparisons. Plumbing fixtures show the water use. The clear intent is that consumers will use these labels to make more informed purchasing decisions.	X	X			X			X
1-132	Polls have shown that consumers want to have the information they desire readily available to them so that they are able to make informed decisions about the products they purchase. This must be a shared responsibility of the value chain.	X	X						X

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-133	While most of the initial consumer labels focused on single attributes (water, energy or fuel efficiency), most purchasing decisions are not that simple. Typically in green chemistry, there are a number of attributes that must be evaluated. A food nutrition label is perhaps a more analogous situation where consumers need to consider a variety of factors (sugar, protein, fat), various desirable nutrients (vitamins, minerals) and some to be avoided or minimized (sodium, saturated fat).					X			
1-134	A consumer choice approach to green chemistry, like a food nutrition label, would provide the relevant information in the hands of consumers and allows each person to make the most appropriate choice for their situation. It is critical to define the components and metrics for such a label, and the process should engage all of the stakeholders in its development.								
1-135	Environmentally Preferred Purchasing (EPP) can be an effective approach to drive change by assigning an advantage in the purchasing process for products and services that meet a pre-determined set of "green" or "sustainable" attributes. Using this approach, brand owners, retailers and government regulations set the marketplace expectations and develop market demand for new technologies. It is up to manufacturers – and their suppliers to deliver products and services that meet the market demand, or risk being left behind.	X	X			X			
1-136	Developing and marketing materials to meet rising consumer demand for "green" or sustainable products.		X			X			
1-137	As a key material solutions partner, work with our customers and their customers to better understand the impact of the product throughout its life cycle so they can make better informed decisions.					X		X	
1-138	The application of science-based EPP definitions so that measurable environmental improvements can be delivered.		X			X			
1-139	Government preferred purchasing or government sponsored preferences		X			X			

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-140	Government specified product standards (e.g., CAFE standards, energy efficiency standards for buildings, bans on incandescent lighting bulbs, etc.) Must be preceded by the appropriate infrastructure to take and recycle emerging waste streams. I.e . mercury containing bulbs are routinely disposed of with residential wastes. More energy efficient but equally harmful in the environment if not handled properly					X			
1-141	It is particularly important to think through the “signals” that are being sent to markets to avoid unintended consequences. For example, specifying increased recycle content will significantly raise barriers to entry and delay introduction of new, innovative materials since recycling infrastructure and markets take time to develop. A flexible, performance based approach avoids the government picking technological winners and losers, but it must be done using a holistic, long-term view.		X			X			
1-142	To be sustainable, a solution must be economically viable in the long run. Unending subsidies and credits are not appropriate and can disrupt markets. However, these tools can be very powerful to initiate, develop and commercialize new technologies and products. Rewarding early adopters should be the objective. These risk sharing mechanisms between the private and public sectors should have a finite limit.		X						
1-143	It is important to remember that not all incentives require revenue or an exchange of money. Expedited permitting or regulatory relief can be very important to companies and cost governments little to implement and can even streamline the government processes in some cases.		X						
1-144	SUBSTITUTIONS MAY CHANGE THE NATURE OF THE PROBLEM RATHER THAN SOLVE IT			X					

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-145	Mandatory bans and forced substitutions often are not a complete solution because, as one issue is addressed, another set of concerns may arise. This is the difference between “informed substitution” and “regrettable substitution”, with the goal of “informed substitution” being to avoid “regrettable substitution”. For example, the health and convenience of our lives has been greatly enhanced by modern refrigeration. Refrigerators originally used ammonia, a toxic chemical, as a coolant. As scientific discoveries were made, chlorofluorocarbons (CFCs) replaced ammonia. While CFCs are practically non-toxic, they were later implicated in depleting the ozone layer and eventually banned. CFCs were then replaced with hydrochlorofluorocarbons (HFCs), which have no impact on the ozone layer, are non-flammable, have low toxicity, and high energy efficiencies. Scientists have now learned that HFCs could contribute to global warming if released into the air. Alternative coolants such as hydrocarbons and carbon dioxide have been considered, but both need to be carefully examined because of the potential for emissions and the possible dangers from higher operating pressures.			X					
1-146	Substituting one material for another is never as simple or straightforward as it might at first appear. i.e. mercury containing light bulbs			X					
1-147	SUBSTITUTIONS MAY RESULT IN UNINTENDED ADVERSE CONSEQUENCES			X					
1-148	SUBSTITUTION IS NOT THE ONLY VIABLE APPROACH TO CONTROL RISK			X			X		
1-149	We must involve people at the business and community level.					X			
1-150	We must give people at the business and community level a tool that will work for them.			X					
1-151	Extended Product Responsibility (EPR) – put incentive on manufacturer to minimize costs of products, i.e., spur reuse and disposal management costs.		X						
1-152	Implement a California Toxic Substances Control Act - CA TSCA. Require all new chemicals sold in California be tested for toxicity before they are marketed.			X					
1-153	Require American Society for Testing and Materials (ASTM) Standards.			X					

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
		1-154	Provide consumer education so consumers know what questions to ask.					X	
1-155	Provide consumer education on what will be hazardous when product is thrown away, wake up consumers that there is no "away."	X				X			
1-156	Encourage C2C curriculum (K-12 and Postsecondary).					X			
1-157	Require chemistry students to take toxicology classes								
1-158	Require training for companies doing business in CA on concepts of green chemistry (i.e. mandatory employee training type program)								
1-159	Identify end points for cradle to cradle								
1-160	Should there be industry specific cradle to cradle standards?			X					
1-161	A company that manufactures chemicals in and/or imports chemicals into California should have a publicly available overview of the approach it uses for chemical evaluation and assessment. Companies should affirm to the state that the chemical evaluation and assessment approach is publicly available.					X			
1-162	The state of California should establish research and development centers focused on sustainable chemistry and/or sustainable engineering within its University of California system, such as Centers for Excellence in Sustainable Chemistry at leading University of California campuses that are networked to address major sustainability opportunities and issues.					X			
1-163	California, should adopt the output of the Canadian Chemical Management Plan (based on Canada's categorization and prioritization of the existing chemical inventory) as a solid, scientifically sound foundation.			X					

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-164	The August 2007 Montebello Agreement between the US, Canada, and Mexico will result in significant chemical evaluation work being completed in a relatively short timeframe. DTSC should take advantage of the upcoming work to be conducted by the US, Canada, and Mexico. This would clearly allow DTSC to save time and resources, while advancing the protection of health and the environment. It would also allow DTSC to be viewed as a global leader in integrating the Montebello evaluation outcomes into its own process.			X					
1-165	“Green Chemistry” is not just about substitution of one hazard for another; it is ultimately about the reduction of risks to health and the environment that are otherwise unmanaged. A risk reduction policy seems to be a much better approach to accounting for the economic, social, health, and environmental dimensions of green chemistry, particularly because by definition it will address not only inherent toxicity (hazard), but potential exposures as well. Perhaps most importantly, a risk reduction policy (one that addresses both hazard and exposure) correlates very well with the pollution prevention policies that have been at the heart of many existing DTSC programs, and can serve as a meaningful focal point in encouraging the development of sustainable chemistry, green engineering, and products that improve the lives of Californians and the State environment			X					
1-166	California must establish a process by which state-wide priorities can be identified, where existing and new risk reduction measures – spanning the entire spectrum from research and financial incentives to regulation – can be appropriately assessed, and where the relative benefits and impacts of the approach can be evaluated. In short, a risk reduction policy provides an important and appropriate organizing principle for DTSC’s “Green Chemistry” recommendations.			X					

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-167	DTSC's "emerging options" document contains several recommendations aimed at compliance and enforcement issues. In general, it will be difficult to enforce broad concepts of "green chemistry," largely because what constitutes "green chemistry" (or green engineering) will differ depending on the product, process, company, or industry involved. To the extent that regulatory actions are recommended by DTSC, appropriate enforcement measures will likely need to be considered. It is critical that those enforcement measures be capable of uniform application. In addition, California should address what steps might be necessary to deter false claims of "green-ness" that mislead consumers and distort the market.			X					
1-168	DTSC should not wait for the conclusion of the CGCI to engage in discussions with U.S. EPA and the Canadian government on how the State can coordinate with and leverage those programs in support of the CGCI.			X					
1-169	There is a need for education that the broad scope of "green chemistry" includes "green engineering," and that it is not limited to simplistic hazard substitution. Moreover, a concerted effort to disseminate appropriate information on the accomplishments, best practices, costs, and benefits of "green chemistry" would help assure that all interested stakeholders understand the concept and limitations of the approach. Health and safety information should never be considered proprietary or confidential information.			X		X			
1-170	Collecting and delivering material to a processing site is probably no more complex than the current system for collecting recyclables. The "reverse distribution" system that powers recycling is energy intensive itself and the cost can only be supported by a high-value recycled material. On the other hand, our logistics are already well-optimized to deliver material to a landfill. Thus, proper segregation at the landfill—the mine, if you will--and processing geographically as close as possible could be an economical combination.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-171	We must start using natural substances that are not toxic and end the relentless abuse of animals in toxicity testing.								
1-172	Chemicals should be regulated based on risk of exposure from the use in a product not a raw material or substance outright. For example, no lead in paint or toys, but allow lead as a raw material for other non-risk products, such as, lead-acid batteries.								
1-173	Green chemistry principles should be agreed upon and clearly articulated.								
1-174	Chemical hazards and risks should be described and communicated effectively with extensive and accessible data management.					X			
1-175	Toxic chemicals should be prioritized according to risk in a practical, objective and . transparent manner using sound science.			X					
1-176	Green chemistry chemical evaluation process should be collaborative and include scientific experts in toxicity and exposure from all stakeholder groups.								
1-177	Voluntary collaboration with regulatory clout will support a green chemistry infrastructure to eliminate or mitigate hazard while promoting innovation and substitution.				X				
1-178	Green chemistry progress metrics should be developed and adopted with a commitment to transparency and proactive response to new information on any risk or benefit posed by chemicals.			X					
1-179	Enforcement efforts should be pursued in two directions: voluntary with incentives and regulatory to dictate changes. The California Green Chemistry Initiative should leverage voluntary industry efforts to create better alternatives to high hazard substances, to mitigate risk and to make full use of market-based incentives. Recognition should be given for early adaptors and/or outstanding achievements in green chemistry. These would then be complemented by regulatory compliance to meet public expectations for safe chemical management.				X				

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-180	California should create a clearinghouse of best green chemistry practices. There are numerous initiatives being conducted around the world with an existing and developing body of knowledge that can be leveraged to speed implementation.	X						X	
1-181	California should develop a technical center of excellence in green chemistry as a key element of the California Green Chemistry Initiative. The center would be available to provide technical assistance, lead development of a green chemistry curriculum for undergraduate and graduate programs, and conduct state-of-the-art research on green chemistry innovations.				X	X		X	
1-182	The California initiative should promote public education and awareness of chemicals used in commerce and the principles of green chemistry. Programs addressed to consumers or primary (K-12) education should focus on scientific literacy to create a broader understanding of the costs and benefits of both chemicals policy and product innovation. These programs should provide the foundation for effective communication using product labels, hazard warnings, etc., and other policy options.					X			
1-183	a "Green Chemistry" program, in and of itself, should not be picking "winning" or "losing" products. Instead, it should be removing barriers and creating objective tools to allow companies to create new products and enable consumers to recognize and choose them.		X						
1-184	Green chemistry should ensure the safety of consumer products through the use of sound science in the decision-making process.			X					
1-185	A green chemistry program should be designed with guidance from all stakeholder interests.								
1-186	A green chemistry program should be designed to promote products which are technologically and commercially feasible to produce.								
1-187	Green chemistry must foster innovation and not limit the development of new chemistry technologies.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-188	A green chemistry program must ensure that product efficacy, performance, and usability are not compromised or undermined.								
1-189	A green chemistry program should build on existing statutory and regulatory structures, voluntary initiatives, and data development efforts.			X	X				
1-190	Education plays a key role in effective decision-making, uncovering new innovations, and training the next generation of society's leaders in science, business, health and public policy. With a topic like green chemistry, where effective decisions will require collaborative approaches and solutions not yet imagined, education needs to play a key role. Green chemistry requires integrated, systems approaches and knowledge on a broad range of topics. For example, chemists need an understanding of toxicology, while policy makers need to understand business processes and markets to develop efficient and effective policies. Successful implementation of green chemistry requires a level of collaboration not often taught or practiced today.					X			
1-191	The National Science Resources Center and its Science and Technology for Children® (STC®) program is a comprehensive, researched-based K-6 science curriculum consisting of 24 instructional units that explore the life, earth, and physical sciences and technological design.					X			
1-192	LCAs first and foremost are useful in comparisons of specific products/processes - as support to the decision making process.								
1-193	at some point, even with material recycling, those useful products are worn out or discarded. The atoms don't disappear--they get recycled, burned, degraded or put in a landfill. But recycling programs, unless 100% efficient are simply slower routes to the incinerator or the landfill.								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-194	For biological materials, it is argued, cradle-to-cradle is a spontaneous system. In an ecosystem, all waste is food. Food is not necessarily recycled by organisms in the same article-to-article way as synthetic materials are; organisms also "burn" it as an energy source in addition to being a raw material for creating new living structures.								
1-195	Must adhere to the ISO standards, so that no LCA results carried out by companies can be published unless critically reviewed by 3rd party or published in a peer reviewed journal.			X					
1-196	The development of a standardized environmental product declaration system is a logical first step for reliable Eco-labeling systems.								
1-197	Ever-expanding research confirms that many chemicals that are useful to society are also known to be hazardous to human biology and health, particularly in utero and in developing children								
1-198	appropriate use-restrictions for chemical ingredients when scientific safety-based assessments indicate that they cannot be used safely in a consumer product or use application.			X					
1-199	education of consumers and other organizations will be critical to driving change and fostering innovation within other groups. We challenge DTSC to develop educational components as a part of the overall approach to California's Green Chemistry Initiative.					X			
1-200	Organizations which put accurate, unbiased information into the hands of consumers are also an important component,					X			

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-201	The successful management of chemicals already in the marketplace according to their characteristics and actual uses, rather than simply banning substances. This focus recognizes the important difference between risk and hazard, i.e., that hazardous substances properly managed may not pose actual risks, and would create a system that is based on successful management of identified risks, as opposed to establishing prohibitions based on potential hazard.			X					
1-202	Prohibitions should be put in place only when an unacceptable level of risk is identified that cannot be adequately mitigated or that is not offset by the aggregate benefits of continued use. This approach is science-based, and relies on data generated through experimentation or by means of modeling (structure-activity relationships).			X					
1-203	A chemical management system must be RISK-BASED.			X					
1-204	The system should SCREEN all chemicals (new and existing) to determine further information needs in a TIERED, risk-based approach.	X		X					
1-205	The system should initially leverage AVAILABLE INFORMATION								
1-206	The system should recognize the SHARED RESPONSIBILITIES of each party within the VALUE CHAIN			X					
1-207	The system should promote TRANSPARENCY								
1-208	We are concerned that some parties in California's Green Chemistry Initiative discussion are focusing only on the hazards of certain chemicals without regard to exposure, substitution costs, benefits to society, and other important factors.								
1-209	There is also a need to retain certain business information as confidential in order to protect intellectual capital. Health and environmental information should not be considered confidential.					X			

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-210	the greatest opportunity for California is in establishing flexible approaches that support the use of life cycle-assessment to more holistically evaluate the balance between societal needs, protection of public health and the environment, and sustainable production and consumption, rather than through traditional regulatory paradigms.	X							
1-211	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.	X		X					
1-212	The Green Chemistry Initiative must ensure that product efficacy, performance, and usability are not undermined, and that the ability to innovate is not compromised.			X					
1-213	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.	X		X		X			
1-214	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.			X					
1-215	Increased Transparency and Access to Information on Chemicals in Commerce					X			

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-216	Of greatest concern for my organization and me right now is what is happening to our plastic waste once it leaves the US shores not as litter but as commerce. The Green Chemistry Initiative must first acknowledge that fossil plastic is downcyclable not recyclable. And that most of our fossil plastic waste is being shipped overseas and being handled under conditions that are harming water, air, public health and the land surrounding so-called recycling facilities.								
1-217	Our continued embrace of plastic needs to be looked at with a cradle-to-cradle perspective, which requires a close look at what is happening overseas.								
1-218	We in California need to develop closed-loop safe and just ways of handling our waste.								
1-219	Look at the chemical information that is already available to California.								
1-220	Make it clear that the Green Chemistry Initiative process will be governed by a risk-based science approach.								
1-221	Support an understanding of both the benefits and the burdens of new regulatory proposals.								
1-222	Consider process technology as part of a green chemistry program.								
1-223	Look at the chemical information that is already available to California:								
1-224	Criticisms of the TSCA to protect human health and the environment often overlook the real need for resources to properly administer the statute. Without the proper staffing and financial resources, any regulatory program will have limited effectiveness		X	X					
1-225	The Pharmaceutical Industry should retain its TSCA exemption status from GCI. The EU Reach program currently exempts pharmaceuticals, since they recognize that the Pharmaceutical Industry is heavily regulated by FDA-like government agencies and there may be product quality concerns if there are modifications to the registered formulations.			X					

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-226	We support California's initiative to move beyond a chemical-by-chemical approach and build a more systematic, scientific and collaborative process to address priority chemicals. As Governor Schwarzenegger recently stated:								
1-227	As part of the agreement signed in Montebello, the three countries agreed to share data, information and safety assessments so that all North Americans would have continued access to safe and effective products with improved sustainability and environmental quality profiles. With California's expertise at the table, collaborating with the agencies involved could accelerate the benefits of this effort across the North American region.			X					
1-228	This process must be the tool for focusing resources and attention on a limited number of chemicals that are important to evaluate. The process should be collaborative and should include scientific experts in toxicity and exposure from academia, chemical manufacturers, product formulators, and nongovernmental organizations. The manufacturers of the chemicals and consumer products could provide toxicity and exposure/use data to determine whether the uses of "priority chemicals" are safe or should be restricted.					X			
1-229	Some consumers have expressed a desire to know what ingredients are in the products they use in their everyday life. These consumers are interested in having this knowledge in order to make informed product choices.								
1-230	The Green Chemistry report argues that there is a need to close the "technology gap" through market-based incentives to support green chemistry. This could include funding for university research grants, scholarships, and similar programs, as well as awards for innovation, tax credits, low-interest loans, and other incentives. These positive incentives should be open to all companies that are innovators and sell products in California -- not simply be limited to companies located in California.		X						
1-231	Speed to Market of products is most important to companies than any other incentive								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
		1-232	Recognize that some countries do not follow US patent laws.						
1-233	Provide safe harbors similar to medical profession for Companies taking initiative in Substituting ingredients			X					
1-234	Develop Metrics & demonstrate Cost effectiveness and long term benefits Health impacts, Environmental etc.			X					
1-235	Cost to second wave formulators who take advantage of R&D								
1-236	It is important that producers assume responsibility for the safe stewardship of their materials in order to promote environmental sustainability. Producers should be responsible for collection through processing/disposal, financially and operationally, with no cost to local government.		X						
1-237	Extended producer responsibility (EPR) will shift the responsibility for the end-of-life management of discarded materials from local government to private industry producers, thereby incorporating the costs of product collection, recycling, and/or disposal into product price, and encouraging product design that has a reduced impact on the environment and human health. The end results are products and product chains that have a reduced impact on the environment and that costs associated with a product's impact are paid by those manufacturing or using the product, rather than general taxpayers.		X	X					
1-238	Substitute chemicals should be held to the same standards as the chemical they are intended to replace.			X					
1-239	The GCI process should level the playing field and strive for consistency across the board.								
1-240	Time-to-market is critical in any new product launch. Delays and uncertainties increase the financial risks and reduce the initiative.								
1-241	Current Regulations impede pollution prevention								

Reference Number	(1) Cradle to Cradle: Moving Towards a Cradle to Cradle Framework Options	Data Collection & Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
1-242	Investment tax credits, public private partnerships grants, low interest revolving fund loan, personal property tax exemption for laboratory equipment. Preferred tax treatment for equity fund investment in California's CGI movement.								
1-243	program funding with in DTSC's Science Pollution Prevention and Technology Development must be reestablished in order for the technology staff to review and validate the GCI performance claims made by companies.		X						
1-244	Encourage the Department to assure sufficient funding is available to conduct the necessary process steps that lie ahead.		X	X					
1-245	Avoid the temptation to shortcut the process for political expedience.								
1-246	Consider moving to a concurrent dialogue sessions with representatives of stakeholder groups whose talents align with the relevant issue.								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-1	Chemical policy needs to be harmonized worldwide; California should avoid creating its own unique requirements.			X					
2-2	California law should harmonize with other states and countries.			X					
2-3	Use life cycle perspective that includes social values.								
2-4	Environmental regulation must be based on thorough scientific data that has clear evidence of harm to human health and environment.	X		X					
2-5	Mandatory labeling/product disclosure indicating the presence and/or hazards of chemicals even if health data is unavailable.			X					
2-6	Emphasize strict labeling of contents.			X					
2-7	Require chemicals manufacturers to report information about the long term health effects of chemicals in use by 2016.			X					
2-8	Perform a comprehensive gap analysis at the outset to avoid duplicative and possibly contradictory regulatory actions (e.g. laws, existing databases, inventories, etc.).			X					
2-9	Compile a comprehensive list of all reports that must be filed with Federal, State and local agencies, including the information and data submission requirements for each; determine whether current reports provide sufficient baseline information, and if additional information should be obtained.	X		X					
2-10	Develop a centralized database of chemicals and properties.								X
2-11	Prioritize protection of the most vulnerable people (e.g., children) and resources (e.g., endangered species, critical resources). In other words, identify currently unaddressed ways children are exposed to potentially harmful substances.	X							
2-12	Require real world information about how chemicals interact with each other.			X			X		

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-13	Identify voluntary programs (USEPA Industry HPV Challenge Program, etc.), program requirements, number of participants, sectors represented and effectiveness.				X				
2-14	Survey a statistically significant sample of California businesses to determine if they have adopted strategies or programs to implement environmental management systems; convene a business/industry stakeholder-advisory panel.				X				
2-15	Link GC efforts to already-existing environmental compliance activities; identify actual sources of pollution and environmental problems and then evaluate whether a prevention answer would work.								
2-16	Remove known chemical hazards from the market immediately via Prop 65, Silent Spring/Harvard study, tax incentives etc.	X	X						
2-17	Establish regulatory framework that drives green chemistry through prohibitions, cost structures, etc. (i.e. disincentives for using practices that are not in agreement with green chemistry principles).	X	X						
2-18	Governments should provide incentives for the implementation of sustainable technologies.	X							
2-19	State government should lead the way to driving demand for cleaner products through its own procurement processes.			X					
2-20	State should invest in new testing methods since many of the current testing methods are out of date or do not exist.			X			X		
2-21	Regulatory agencies should provide technical expertise to organizations lacking internal resources.			X				X	
2-22	Cal-EPA should designate the Center for Occupational and Environmental Health at UC-Berkeley and UCLA as the lead entities within the UC system to address matters pertaining to chemicals policy and green chemistry in California.						X		

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-23	Partner w/UC to create an institute for sustainable manufacturing and green chemistry research.						X		
2-24	Create a green chemistry program at the University of California.						X		
2-25	Education: Green chemistry curriculums should be expanded from middle school through post-secondary education.					X			
2-26	Develop a "Safe Home Environment" place for children to visit/learn.								
2-27	Identify priority chemicals for toxics use reduction and create a list as targets for toxics use reduction.	X		X					
2-28	Identify accurate and effective methods to test for and evaluate the potential hazard traits of chemical substances.						X		
2-29	Businesses that use large quantities of toxic chemicals should be required to annually report on the quantities of toxic chemicals used, and prepare and biennially update toxics use reduction plans.	X		X					
2-30	California businesses should be surveyed to provide information regarding each facility it owns or operates in the state, the full-time equivalent number of employees at that facility, and whether a listed substance is manufactured, processed, or otherwise used in a facility. The total quantity used statewide should be established as a baseline against which toxics use reduction progress can be measured.	X							
2-31	Fees should be established on businesses that use toxic chemicals. Such fees should be used to fund agency toxics use reduction activities, including data analysis, and the provision of technical assistance.		X	X				X	
2-32	Prohibition of diacetyl.			X					

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-33	Alkaline battery study.								
2-34	Incandescent lamp ban.			X					
2-35	Ewaste: donation of reusable computers.			X					
2-36	Prohibition on polystyrene containers.			X					
2-37	Marine debris - reduction and recycling.			X					
2-38	Mercury added thermostat collection.			X					
2-39	Cleantech Advantage Act: create a tax credit for cleantech research.		X						
2-40	Water quality: sewage sludge.			X					
2-41	P2: Design for the Environment Program				X			X	
2-42	Ensure that chemical producers generate, distribute, and communicate information on chemical toxicity, ecotoxicity, uses, and other key data.	X		X					
2-43	Strengthen government tools for identifying, prioritizing, and mitigating chemical hazards.	X		X				X	
2-44	Support research, development, technical assistance, entrepreneurial activity, and education in green chemistry science and technology						X	X	
2-45	Protect proprietary technology and intellectual property			X					
2-46	Don't impede discovery through unnecessary legislation and regulation			X					
2-47	Don't expect continuous breakthrough								
2-48	Value continuous improvement								
2-49	Incorporate pollution prevention								
2-50	Increase grants to accelerate commercialization		X						
2-51	Add criteria to State revolving fund allocations to encourage use of green technologies		X						
2-52	provide matching fund offsets to water providers who choose new green technologies		X						

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-53	Encourage Cal/EPA to consider a certification program for green technology similar to USEPA's ETV program								X
2-54	Consider tax credits for developers and users developers of green technologies		X	X					
2-55	Examine ways to expand education and training programs for students and chemists through partnerships with industry				X				
2-56	Disseminate information on accomplishments, best practices, costs and benefits.							X	X
2-57	Collaborate with Universities to further the study and application of Green Chemistry						X		
2-58	Support research and development through various initiatives (eg. University-based center, government funding, cooperative state research, etc		X				X		
2-59	Education and training – at various levels including but not limited to K-12 programs – is critical to advancing green chemistry.					X			
2-60	Develop and share production/use information (data on amounts, facility locations, and uses of chemicals; MSDS updated to include all data; consumer product contents disclosure)			X				X	
2-61	Advance the science (improve toxicological methodology; use biomonitoring data; press industry and federal government to move forward, collaborate with universities)						X		
2-62	Require CA producers, importers and users to submit and update info on amounts, facility locations, and uses (including in products)	X		X					
2-63	Require updating of MSDS to reflect all available data (HPV, REACH, Canada)			X					
2-64	Require disclosure of chemicals in consumer products, perhaps initially on priority chemicals	X		X					
2-65	Prioritization is essential	X							
2-66	Opportunities exist to leverage other state-mandated activities (e.g., the biomonitoring program)	X							
2-67	Collaboration needed between UC, state agencies and industry				X		X	X	

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-68	Promote the exchange of information about best management practices, incentives and barriers among industries/corporations, and between industry and customers; one way to do this is through a mentoring program (e.g., large corporations mentoring small ones, or via the "ACC" (American Chemical Council)) is suggested							X	
2-69	Create a database of "safe" chemical alternatives.							X	
2-70	Ensure that information is transmitted through all consumers in the supply chain.	X		X				X	
2-71	Enable the public to drive green chemistry by providing them with information, such as through a database with green information								
2-72	Adopt an expansive view of green chemistry that includes not only substitutes, but also processes, "designing" molecules, and addressing all potential exposures								
2-73	Use existing sources for identifying/collecting data, including MSDSs								
2-74	Focus research on impacts of chemicals on early childhood development	X					X		
2-75	Develop testing methods			X					
2-76	Data gaps need to be filled and better understood			X					
2-77	Provide technical assistance to industry							X	
2-78	Develop definitions for identifying green chemistry								
2-79	Develop labeling process for identifying and comparing green products and/or green product certification								X
2-80	Offer R&D tax credits as an incentive for industry		X	X					
2-81	Offer tax credits for green chemistry capital investments as an incentive for industry		X	X					
2-82	Offer low interest loans as an incentive for industry		X						
2-83	Offer a grants program as an incentive for green chemistry		X						

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-84	Develop a program to recognize green chemistry achievement, such as awards								X
2-85	Develop a system for public contracting, such as preference points, that takes lifecycle costs analysis into account.								
2-86	The most sensitive receptors should be the basis for acceptable risk	X							
2-87	Prioritize chemicals that should be restricted	X		X					
2-88	Develop an credible and effective 3rd party labeling system for green products			X					X
2-89	Life Cycle Assessment should play a key role			X					
2-90	California should harmonize its program with other leaders			X					
2-91	Develop a more involved relationship between the industry and academia to develop and exchange toxicology information						X	X	
2-92	Look to universities to work on alternatives							X	
2-93	Companies are innovators. Companies and industry associations should be encouraged to share best practices in regards to green chemistry and sustainability including incentives and barriers. Large companies can mentor small companies.							X	
2-94	Educate consumers. Provide green information to consumers to change the marketplace and consumer attitudes, enable informed choices, and drive green chemistry. Create a database for the public to get green information.								
2-95	Promote academic programs in green chemistry. Enhance current programs, including training in ecotoxicity and green chemistry for chemistry students.								
2-96	Create a green business program to educate and encourage companies and recognize companies incorporating green chemistry practices.							X	X

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-97	Use large associations/organizations, such as the American Chemistry Council, to facilitate interactions between suppliers and customers, including mentoring.							X	
2-98	Recognize the value and role of industry stewardship programs (e.g., American Chemistry Council's Responsible Care, which includes evaluations of chemical products and their uses to assure that they deliver their intended benefits while protecting public health and the environment, and a management system certified by third-party auditors) and create incentives for others to take similar steps		X		X			X	X
2-99	Incorporate biomonitoring as part of the green chemistry policy	X							
2-100	Utilize Chemical Compliance Systems, Inc. and their Green Product Compliance Analytical System, Green Process Analytical Compliance System and Green Munitions Analytical Compliance System web-based tools, developed for the U.S. Defense Ammunition Center to assess munitions from a green perspective (considers 43 ecological health and safety criteria)							X	
2-101	Conduct a baseline assessment of chemical information -- both hazard and exposure data -- already available to the State; coordinate on information needs with others, even before the end of the GCI process								
2-102	Ensure that GCI will be governed by science, examine the basis for assumptions about the adequacy of current protective measures in the process of identifying policy options; understand both the burdens and benefits of new regulatory approaches; acknowledge that engineering/process improvements are as much a part of "green chemistry" as product improvements/substitutions.						X		

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-103	The state of California should purchase the Chemical Compliance System's (www.chemply.com) Hazardous Material Management System database, which provides information on over 220,000 chemicals and their environmental characteristics. Making this tool available on the web will enable informed choices by consumers and assist in the selection of chemicals based on scores for ecology, human health, and safety.							X	
2-104	Streamline regulations			X					
2-105	More R&D for private/government, including R&D prior to using chemicals in products		X				X		
2-106	Make green products affordable								
2-107	Encourage development of chemicals that are reusable, recyclable, biodegradable								
2-108	Classify/rank existing chemicals (green, light green, yellow, red)							X	
2-109	Require new chemical registration, including information on fate, transport, and health effects			X					
2-110	Create a Green Chemistry Department (NOTE: Not clear if this means an academic department, or a State agency.)								
2-111	Create a partnership between State, industry, the public, etc.				X			X	
2-112	Offer incentives or Awards for good ideas on products or project; establish a "green inventor" or "imagine-er" award		X						X
2-113	Provide venture capital to business or manufacturers that design green chemistry products or processes		X						
2-114	Until the Green Chemistry Initiative is operational, DTSC and other departments should not oppose legislative or other efforts to restrict exposures to toxic chemicals.			X					
2-115	Clarify the scope of "Green Chemistry"							X	
2-116	Look at existing as well as emerging/new chemicals and products.								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-117	Develop criteria for determining safe alternatives, including multi-media considerations; identify and publicize safe alternatives							X	
2-118	Prioritize based on exposures	X							
2-119	Focus on upstream processes			X					
2-120	Provide funding for re-tooling manufacturing		X	X					
2-121	Incorporate into K-12 education and the Environmental Education Initiative					X			
2-122	Consider a bond act to provide funding			X					
2-123	A regulatory component is needed			X					
2-124	Do not reinvent the process, as a whole new process could have a negative effect; instead study Canadian list, REACH and others to determine their usefulness/validity	X		X					
2-125	Consider efficacy, safety and costs as important.								
2-126	Establish methods to assess impacts at the molecular level, and methods beyond CMR(?) data								
2-127	Innovation should be based on knowledge about what we are replacing and with what								
2-128	Provide a way to ensure exclusivity of a reformulated product in a market without competitors for a given period								
2-129	Establish a process, rather than creating a list; lists are only as good as the data (need current, accurate data)							X	
2-130	Consider tax incentives, phase tax/penalty approach		X	X					
2-131	Establish a "green seal," reflecting a specified level of greenness, or certification of approval			X				X	X
2-132	More education for business groups; involvement of UC Extension			X				X	

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-133	Invest in green chemistry research and development, develop leading university centers; invest in EDC (endocrine disrupting chemicals) research, encourage collaborative work between green chemists and EDC researchers to foster strategies for avoiding EDCs in new products; promote public education into the dangers of EDCs and the need for alternatives		X					X	
2-134	Use Green Buildings/LEED Certification as a model for green labeling/product certification; include the following as criteria -- use of green energy during manufacturing, waste generation, use of recyclable materials, use of non-toxic ingredients								X
2-135	A California Toxic Substances Control Act (CAL TSCA) is needed; this would require all new chemicals to be tested for toxicity before they are marketed, as would all existing chemicals sold in the State; DTSC with assistance from OEHHA would evaluate the results. OEHHA should be given more resources to speed up its current evaluation process and to implement CAL TSCA. CARB's authority should be expanded to forbid the use of aerosol products where there are greener alternatives, and of certain toxics determined under CAL TSCA as a threat.			X					
2-136	Recognition and award for green products would be a strong motivator because they can lead to greater sales and preferential purchase by environmentally conscious consumers: recognition with the use of a logo would be most effective; see German Blue Angel award, www.Blauer-Engel.de								X
2-137	DTSC should develop a grading/award system for products that meet certain green criteria as a joint effort within Cal/EPA; use of both green energy and green chemistry technologies should be considered. A standard, easily recognizable green logo could be used, reflecting different levels of "greenness" (bronze, silver, gold and platinum); this would enable consumers to choose green products and motivate manufacturers to invest research and energy into the development of green products.							X	X

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-138	DTSC website should include information geared towards the general public, particularly related to the purchase and use of certain products, including: lists of manufacturers and products that have received the DTSC "green" awards to motivate submission of information to DTSC for review; information on the environmental impacts of plastics; greener alternatives to household chemicals; disposal options for universal waste; information on green chemistry; a page called "What can I do to help the environment?" (which also should be posted on Cal/EPA's home page). Increased awareness will enable the general public to put greater pressure on manufacturers and legislatures to make green chemistry and environmental protection a priority.								X
2-139	Environmental certification in Germany, "The Blue Angel," (www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm) can be used as a model for the certification of products and services.			X					X
2-140	Security & Prosperity Agreement between US-Mexico-Canada should look to leverage, not duplicate			X					
2-141	Evaluate elements of REACH and CEPA and choose those most relevant to California	X		X					
2-142	California should ID its goals for chemicals policy as a first step								
2-143	Share of data (From Canada's DSL to EU REACH) to other programs, avoid duplication, use equivalent testing systems			X					
2-144	No data, no market idea: levels the playing field with all chemicals both new and old			X					
2-145	Transparency, as in REACH and the Canadian system, is important : Two way flow of information – data could benefit a company that didn't have that knowledge beforehand								
2-146	An available method for providing substitutions, as in REACH, will be important			X					
2-147	Collaboration of different agencies i.e. government agencies should work together, as with in Canadian system			X	X			X	

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-148	Adopt a phased approach for existing / new chemicals, as with CEPA	X		X					
2-149	Clear criteria are important, as in Canada, especially for PBT								
2-150	Be sure to provide an effective stakeholder process, as Canada did			X					
2-151	Identify less hazardous chemicals, as Canada did	X		X				X	
2-152	Avoid generation of new/different data where it's already being generated								
2-153	Provide incentives or public funding for R&D on alternatives		X						
2-154	Employ wiki data and other new and emerging technologies for consumers, industry and others								
2-155	Bring social science into the picture to help stimulate behavior change in consumers and businesses								
2-156	Promote product stewardship and manufacturer responsibility which will lead to greener products and production			X				X	
2-157	Data and the lack or unavailability of same is a major issue in the GCI process. <ul style="list-style-type: none"> • Data represents great value to the developer, in terms of resources, time, and opportunity for market advantage • Data is intellectual property, confidential business property that must be protected • Data gap will always exist – must prioritize chemicals for additional testing – have to consider exposure, as well as hazard – have to consider how chemical will be used, in characterizing data needed • Substitute chemicals must meet same data requirements as the chemicals they are replacing 								
2-158	Cannot eliminate all toxicity in chemicals – trade-offs must be identified through life cycle analysis			X					
2-159	GCI should look at existing federal and international requirements before adding another layer of regulation								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-160	Is "natural", "organic", "bio-derived" necessarily safe?								
2-161	DTSC should, in conjunction with other state agencies, conduct a base-line review of physical and intellectual capabilities to support and nurture the green chemistry R&D initiative.								
2-162	Public private arrangements between universities and private industry should be encouraged, particularly as they relate to green chemistry solutions.							X	
2-163	Command and control regulations slow down industry's ability to innovate: delays and uncertainties increase financial risks and reduce initiative.								
2-164	Failure of DTSC to "fully adopt RCRA rules" has imposed heavier burden on industry, thereby discouraging recycling.								
2-165	DTSC should conduct a feasibility review for the following economic and tax incentive ideas: investment tax credits, public private partnership grants, low interest revolving fund loan, personal property tax exemption for laboratory equipment, preferred tax treatment for equity fund investment in California's GCI movement.		X						
2-166	DTSC should host a Green Chemistry Symposium IV dedicated entirely to technology transfer, start-up funds, equity funding, and possible CalPERS investment in California companies with homegrown technology that solve California environmental problems.		X						
2-167	DTSC should reestablish funding for Technology Development staff to review and validate the green chemistry/ green engineering performance claims made by companies seeking economic incentives in the form of grants, low interest revolving loans, and preferred equity funding – without the certification component. Should look at US EPA's Design for the Environment program.		X	X					
2-168	DTSC should begin an immediate effort to ramp-up its Life Cycle Analysis (LCA) capability.								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-169	DTSC should consider how UC Berkeley's Science Education Public Understanding Project (SEPUP), and educational outreach program, might accelerate outreach and conversely how green chemistry concepts might be incorporated into the teaching modules.							X	
2-170	There are problems with the GCI process (too many topics, too little time, relatively superficial discussions, etc.) – DTSC must pay attention to the process design, so that it is not pressured by impatience and the traditional regulatory development method. <ul style="list-style-type: none"> • Provide sufficient funding to finish process • Avoid shortcuts for political expediency • Ramp up sophistication and relevance (have concurrent dialogue sessions with representatives of stakeholder groups whose talents align with the relevant issue) 								
2-171	GCI must have a strong science foundation.								
2-172	Establish clear criteria and voluntary certification for green chemistry based on comprehensive lifecycle considerations (including energy, CO2 impact, water usage, packaging, recyclability, etc.)							X	
2-173	Explore models other than, or building upon, the current Materials Safety Data Sheet (MSDS) system to provide needed chemical hazard data throughout the supply chain.								
2-174	Establish a Green Chemistry Coordination Council to collect and promote the sharing of information, highlight businesses with green practices, provide assistance to businesses lacking resources, and educate consumers.								
2-175	Prioritize chemicals for screening, testing and appropriate restrictions: build upon Canada's model of analysis and prioritization as well as the Proposition 65 review process. Allow chemicals of high concern for targeted, low-exposure uses as determined in an open process by DTSC.								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-176	Greater investment in pollution prevention in the short term as well as extension of the current CA Pollution Prevention model to downstream chemical users as an element of the long term Green Chemistry strategy.							X	
2-177	Continue the Conversation with California to sustain progress in Green Chemistry. The dialogue between DTSC and stakeholders has been very helpful and will result in more well-developed, effective policy.								
2-178	Should not have California-specific data development requirements and pre-market approval process for chemicals or consumer products. Rather, DTSC should collaborate with other government efforts, such as Canada's Chemicals Management Plan and the Montebello Agreement between Mexico, Canada, and the US.			X					
2-179	Efforts to establish chemical priorities should be collaborative and should include scientific experts in toxicity and exposure, chemical manufacturers, consumer product manufacturers, and nongovernmental organizations								
2-180	Pre-market approval of chemicals or consumer products would be an incredibly burdensome and expensive process for the State of California and would unnecessarily slow down the development of products.			X					
2-181	California should establish relationships with the Canadian and European chemicals management programs with a view to establishing data and information sharing among the jurisdictions. All efforts should be made to maintain consistency and harmonization with Canada and Europe to avoid duplication of effort.								
2-182	Chemicals that are regulated by other agencies should not be subject to duplicative reporting and/or contradictory regulation.			X					

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-183	California should provide a well-defined prioritization mechanism, based on both inherent chemical hazards and a qualitative evaluation of exposure potential. It should include a decision-making process that involves stakeholders, is transparent and available on the internet with the screening criteria clearly explained.								
2-184	California should develop pilot applications in close collaboration with key stakeholders to test various green chemistry policy options.				X				
2-185	California should encourage voluntary industry efforts to create better alternatives to high hazard substances, to mitigate risk and to make full use of market- based incentives. Recognition should be given for early adaptors and/or outstanding achievements in green chemistry. These would then be complemented by regulatory compliance to meet public expectations for safe chemical management.				X				
2-186	California should create a clearinghouse of best green chemistry practices.								
2-187	California should develop a technical center of excellence in green chemistry. The center would provide technical assistance, lead development of a green chemistry curriculum for undergraduate and graduate programs, and conduct state- of- the- art research on green chemistry innovations.							X	
2-188	The California initiative should promote public (including K-12) education and awareness of chemicals used in commerce and the principles of green chemistry. Programs should focus on scientific literacy and effective communication on using product labels, hazard warnings, etc..					X			

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-189	Green chemistry goals are similar in policy focus and intent to those of reducing greenhouse gas emissions. The California Climate Action Registry has been effective in protecting, encouraging and promoting early actions to reducing GHG emissions, and successful in engaging voluntary stakeholder participation. Such a vehicle could be used as a prototype for Green Chemistry Initiative efforts.								
2-190	When California purchases chemicals for state contracts, it should pay a modest premium for a set period of time for new "green materials" that show promise								
2-191	Make capital available to companies on preferential terms to encourage Green Chemistry and Green Engineering manufacturing process development		X						
2-192	Foster innovation and encourage universities, educational institutions, and industry to partner in developing effective "greener" ingredients that reduce environmental impact							X	
2-193	Encourage company performed safety-based assessments of consumer products prior to the marketing of a product, that take into consideration all of the phases of a product's life-cycle			X					
2-194	Make it a requirement that companies have a chemicals management programs based on sound scientific risk assessment to protect human health and the environment			X					
2-195	Require appropriate use-restrictions for chemical ingredients when scientific safety-based assessments indicate that they cannot be used safely in a consumer product or use application			X					
2-196	Promote consumer awareness of the importance of reading and following label instructions for safe product use, storage, and disposal								
2-197	Support collaborative efforts to encourage public and private partnerships to develop "greener" products and "environmentally responsible" ingredients				X			X	
2-198	Establish research programs to identify opportunities for the use of green chemistry in consumer products								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-199	Support policies designed to overcome barriers to commercial application of green chemistry research and development efforts.								
2-200	Recognize companies that develop sustainable business operations, processes, and/or products								
2-201	Non-refillable refrigerant cylinders to service air conditioning systems must be banned. This would eliminate the emission of greenhouse gases remaining in disposable containers when they are discarded. Also, it would save millions of pounds of steel and thousands of cubic yards of landfill space each year			X					
2-202	Commercial Dry Cleaners should be required to use CO2 systems in place of the Perc systems they now use.			X					
2-203	Metal shops should replace the use of cutting oils and biocides with CO2, which is an excellent coolant and lubricant.			X					
2-204	California should make a marketing program to promote companies that are actively engaged in Green Chemistry and Green Engineering, and products that are the result of Green Chemistry and Green Engineering.								
2-205	California must develop requirements to obtain hazardous traits data to support a comprehensive assessment of chemical hazards for chemicals currently in use and those proposed for use			X					
2-206	Cal / EPA should push for the investment in improved 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								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
2-207	Require companies to generate comprehensive safety and health data for all chemicals in their products by 2016 for the following listing of hazardous traits: Mutagenicity and genetic toxicity; Reproductive effects; Developmental toxicity; Cancer; Immunological effects; Neurological affects; organ effects, such as liver, kidney, eye, blood, and heart; Respiratory effects; Endocrine disruption; Other disruptions of signaling and hormone systems; Impacts on water and air quality and ecosystem health.			X				
2-208	Establish partnerships with other states to create an interstate clearing house of environmental safety and health data				X			X
2-209	Develop a data audit system to evaluate the scientific validity of the data							
2-210	Place fees on products and processes for which there is inadequate health and safety information		X					
2-211	Require chemical producers to complete a full life-cycle analysis of products to foster cradle to cradle management							
2-212	Create labeling requirements to inform consumers of the potential health and environmental impacts of the chemicals contained in products			X				
2-213	Make companies that make or sell products in CA containing hazardous chemicals take them back at the end of their life cycle and ensure their proper disposal							
2-214	Take immediate action to reduce or eliminate the use of chemicals that are toxic, bioaccumulative and persistent			X				
2-215	Require the use of safer substitutes for toxic chemicals when available. Require the development of non-toxic alternatives when safer substitutes are not available			X				
2-216	Phase out chemicals that harm the health of humans or the environment or whose impacts are unknown			X				

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-217	Create economic penalties as part of a regulatory program for companies using toxic chemicals followed by a ban after a period of time		X						
2-218	Develop, implement, and enforce regulations in the public interest without undue influence from parties advancing private interests by the creation of a public advisory committee to advise DTSC on what best serves the public interest regarding health, safety and a protected environment								
2-219	Reduce impacts of chemical exposure on the most highly impacted communities, e.g., developmentally vulnerable; communities bearing a disproportionate exposure to toxic chemicals; and workers exposed to toxic chemicals on the job			X					
2-220	Use full cost accounting when making decisions regarding chemical use and management including not only R&D but also the cost to communities of 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			X					
2-221	Support workshops and education forums that are accessible to communities so they can hear about the green chemistry issues								
2-222	Provide grants funded from revenue from fees imposed on companies using toxic chemicals to groups engaged in grassroots outreach and education on green chemistry issues		X						
2-223	Make information about chemicals to which the public and workers may be exposed more accessible, including mandatory labeling, indicating the presence of chemicals that may be hazardous			X					
2-224	The next 4 rows are responses to the question, "Should CA adopt the European Union's Registration, Evaluation, Authorization and Restriction of Chemicals (EU REACH) list or the Canadian Domestic Substances List (DSL)?"								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-225	Don't adopt all or either the EU REACH or Canadian DSL list. Instead consider the elements of each and choose the most appropriate ones for inclusion in CA's program avoiding any duplication. Then once these programs have been evaluated fill in the gaps not covered by the elements that were selected								
2-226	Acquire the data collection of both programs, Do this immediately								
2-227	Don't adopt either the EU REACH or the Canadian DSL at all								
2-228	Start with existing information already collected in CA. Then compare list to DSL list								
2-229	The next 5 rows are responses to the question, "What are the three best concepts/implementation ideas from EU REACH that should be integrated into a CA green chemistry program?"								
2-230	Develops baseline information on all chemicals. Has a prioritization strategy taking into account benefits, economy and risk with risk being the final arbiter								
2-231	It is based in data seeking, uses clear criteria and tiered testing requirements, and has a method for providing substitutes								
2-232	It has transparency of the health and safety data. There is a two way flow of information - information going up and down the supply chain - the data could benefit a company that didn't have that knowledge before hand. The information is also transferred to users								
2-233	It overturns the presumption of innocence for any chemical shifting the burden of proof of safety to the manufacturer.			X					
2-234	Without data you cannot market the product. This levels the playing field for all chemicals both new and old								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-235	The next 4 rows are responses to the question, "What are the three best concepts/implementation ideas from the Canadian DSL list that should be integrated into a CA green chemistry program?"								
2-236	The DSL list takes a comprehensive approach of mandatory and volunteer information and uses a phased introduction approach with a timetable for new chemicals if sufficient information is available. It has a risk based prioritization strategy that uses hazard and exposure in setting those priorities. It creates a manageable universe of chemicals prioritized by level of concern identifying the less hazardous chemicals and targeting the worst chemicals first.								
2-237	Like REACH, It has transparency of the health and safety data. There is a two way flow of information.								
2-238	The list is the result of collaborative work of several different government agencies working together in an agency integration								
2-239	There is a "portal" - an electronic tool to link to other systems.								
2-240	The next 7 rows are responses to the question, "Are there parts of EU REACH or Canadian DSL that CA should avoid?"								
2-241	DSL uses old data and has an over reliance on alternatives to testing. It does not have incentives or public funding for R&D on alternatives								
2-242	Avoid generation of new/different data where it's already been generated. Limit or avoid animal testing. Avoid "hazard" based assessment. PBT criteria is not adequately protective								
2-243	EU should be seen as a tool and not the "be all end all" notion.								
2-244	Business liability was questioned pertaining to the information provided by others. CBI information was not available to the public								
2-245	Avoid the EU lack of clarity and no requirement for government evaluation								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-246	Avoid the lack of prioritization relative to intrinsic toxicity which could lead to a poor resource to use								
2-247	Avoid over reliance on alternatives to testing								
2-248	The next 5 rows are responses to the question, "In a global internet, web-based world, building on the policies of EU REACH and the Canadian DSL, what is the next level in cradle-to-cradle green chemistry policy?"								
2-249	There should be universal training in Green Chemistry starting in K-12 education and development of a curriculum to train our future scientists. Data gaps should be identified and filled and we should create a usable info depot/clearing house to make the system consumer friendly					X			
2-250	We should invite other countries to give us data input, e.g., Southeast Asian countries, and promote sharing the data among governments at the state and national level, while limiting the amount of C.B.I. that businesses can claim								
2-251	The concept of Extended Producer Responsibility (EPR) and Green Chemistry should be integrated and the concept that product stewardship is the manufacturer's responsibility should be promulgated								
2-252	End of life should be factored into the risk equation and total lifecycle cost should be promulgated to industry. Industry should price their products to incorporate the true environmental / societal costs. The concept of an end of life label should be introduced								
2-253	At the same time there should be a social sci-attitude adjustment that includes a ratcheting down of solid waste acceptance both by government and consumers. Current waste streams must be turned into resource streams and the cost can be internalized								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-254	The next row is a response to the question, "How do you think CA can stimulate a Green Chemistry transformation in the design of products and processes? Consider public health and the environmental effects of chemicals during the process of designing products and industrial processes.								
2-255	There should be strong environmental law that produces strict regulations and at the same time there should be financial incentives for promoting and facilitating reclamation. Incentives can come in the form of financial awards; tax incentives; favorable terms by state procurement departments; R&D tax credits; Tax credits for green chemistry capital investments; and low interest loans		X						
2-256	Prior to developing new programs DTSC must evaluate what regulations and information are currently available and whether these tools are being appropriately implemented								
2-257	State of California should develop an integrated program that features the following actions: 1) Introduce a regulatory requirement that all existing chemicals undergo a tiered process of scrutiny for their environmental, social and health/toxicity impacts. 2) Introduce a regulatory requirement that this information should be passed in a standard form along the supply chain. 3) Require manufacturers to label consumer products with all the chemicals and materials (including nanotechnology) that these contain. 4) Develop interactive consumer tools and technologies that assist consumers to interpret and use labeling data in their shopping. 5) Require industry to conduct green chemistry assessments for chemical products sold or used within California. 6) Expand greatly the investment of resources into green chemistry education and research at California State-supported universities, including the UC system. 7) Introduce a modest toxicity tax on all intermediates and chemical products used or sold within the State of California.	X	X	X					

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-258	Include the following policy elements to further Green Chemistry in California: 1) Strengthen the recognition and pursuit of Green Chemistry processes and products by establishing clear criteria and voluntary certification based on comprehensive lifecycle considerations. 2) Explore models to provide needed chemical hazard data throughout the supply chain. 3) Establish a Green Chemistry Coordination Council to collect and promote the sharing of information, highlight businesses with green practices, provide assistance to businesses lacking resources, and educate consumers. 4) Prioritize chemicals for screening, testing and appropriate restrictions. 5) Greater investment in pollution prevention in the short term as well as extension of the current CA Pollution Prevention model to downstream chemical users. 6) Continue the Conversation with California to sustain progress in Green Chemistry.		X		X			X	
2-259	DTSC should prohibit the import, sale, or use of certain RV toilet additives containing formaldehyde and derivatives of formaldehyde			X					
2-260	When deciding if chemicals should be banned or not, the burden of proof should be on the chemical producing companies to fully disclose the chemicals in their products and to adequately demonstrate that the chemicals and products are safe. California should not fail to act in the face of uncertainty to ban chemicals suspected of toxicity. Chemical companies should be required to fund independent research of the impacts of their products, not just research conducted by their own scientists. The research should address the effects of multiple chemicals—only testing chemicals in isolation will fail to address the real world impacts. Chemicals found to be harmful to people or wildlife should be banned or phased out. Research efforts should also include the monitoring of various species, especially amphibians and upper trophic level predators, so as to better understand what chemicals are already present in the environment and what their impacts are. Incentives should be instituted that encourage the production and use of products that do not contain toxic chemicals.		X	X					

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-261	DTSC should make educational programs a key component of its Green Chemistry Initiative.								X
2-262	Toxicology should be incorporated into the formal training of chemists.								
2-263	Green Chemistry Initiative Science Advisory Panel meetings should be open to the public.								
2-264	Do not use animals in toxicological studies.								
2-265	DTSC needs to carefully review and identify with stakeholders the current significant barriers that impede investment in, and adoption of, sustainable technologies.								
2-266	When evaluating alternatives to existing flame retardant chemicals, Cal-EPA must also address affordability issues			X					
2-267	A voluntary certification program for green chemistry processes and products will clarify goals for industry members while empowering consumers with the information they need to make informed choices								
2-268	Companies that manufacture chemicals in and/or imports chemicals into California should have a publicly available overview of the approach it uses for chemical evaluation and assessment and should affirm to the state that the chemical evaluation and assessment approach is publicly available.								
2-269	Companies that manufacture chemicals in and/or imports chemicals into California should have a management system that includes process and product safety elements and be subject to third party certification by representatives of a nationally recognized auditing Board. They should affirm to the state that the management systems are in place and that third party certification has occurred.			X					

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-270	California should establish research and development centers focused on sustainable chemistry and/or sustainable engineering within its University of California system, such as Centers for Excellence in Sustainable Chemistry, at campuses that are networked to address major sustainability opportunities and issues.								
2-271	California should make risk assessment, including toxicology and life cycle thinking, part of the required curriculum for chemistry and/or chemistry related degrees conferred by State institutions.								
2-272	California should establish an awards program to provide financial incentive and recognition for innovations								
2-273	California should encourage companies in important value chain sectors to identify information needs of the value chain's members (upstream and downstream companies) and to establish communication processes to meet those information needs								
2-274	If DTSC determines that it needs its own regulatory program specific to California, it should adopt the output of the Canadian Chemical Management Plan (based on Canada's categorization and prioritization of the existing chemical inventory) as a solid, scientifically sound foundation.			X					
2-275	DTSC will need to build from the foundation of an established process and to leverage evaluation work generated by other parties.								
2-276	DTSC must also recognize that a prioritization of chemicals to be tested is essential.								
2-277	DTSC must be pragmatic in leveraging existing information that support the DTSC's overall program.								
2-278	Decisions should be based on high quality scientific data that are up to the GLP (Good Laboratory Practice) standard.								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-279	Data required for chemical evaluation should be harmonized with the data requirements of other regulatory jurisdictions; persistency, bioaccumulation potential, toxicity (PBT) characteristics, and carcinogenic, mutagenic and reprotoxic (CMR) characteristics form a suitable base line for decision making.								
2-280	The decision making process on any chemical should weigh risk against benefit, not just hazard			X					
2-281	There should be ready access to data used to support conclusions								
2-282	All stakeholders should have opportunity to participate								
2-283	There should be positive incentive for introduction of best practices		X						
2-284	There should exist a framework for incremental improvement								
2-285	Substitution decisions should be informed in terms of the characteristics and risks presented by potential alternatives			X				X	
2-286	The creation of a "green chemistry scorecard" for suppliers would allow specific materials and their applications to be rewarded through favored purchasing policies.							X	
2-287	The State of California should develop a matrix of information about the hazard traits of chemicals in use or considered for use, presented in ways that are useful for various audiences.							X	
2-288	The State of California should fund development of the ingredient database.							X	
2-289	The Green Chemistry Initiative must acknowledge that fossil plastic is downcyclable not recyclable. Plastic is not fine. It is melted down or burned; smoke and ash fill the air. Untreated polluted water runs into local streams turning them dark grey. Workers are subjected to toxic fumes and heavy metals where PVC is downcycled. Also the ocean is now full of plastic particles. These particles affect the fish and wildlife								

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
2-290	The key issue for CGI is to fund the replacement of outmoded plant and equipment. Worldwide detoxification of the industry will cost something on the order of \$10 trillion, perhaps \$500 billion in California alone. There is only one reliable source for such funding: an excise tax on chemical sales to create a Chemical Trust Fund.							
2-291	If Cal/EPA recommends or develops toxicity testing policies or procedures, guidance must include measures that insure the development and incorporation of relevant, reliable and predictive non-animal methods, and must not be limited to ICCVAM-validated methods.			X				
2-292	A static, required list of toxicity tests should be avoided as check-the-box toxicology. A list of required tests promulgated legislatively should be avoided. Tiered, thoughtful testing strategies should be pursued with flexibility and creativity. Seek input from animal protection stakeholders, who have a unique set of qualifications and can specifically address the reduction and replacement of in vivo animal tests, before recommending testing strategies or regulations. The vision of the National Academy of Sciences report, "Toxicity Testing in the 21st Century", which calls for a reinvention of toxicity testing using high-throughput in vitro and in silico screens and tests based on human relevance, should be backed by California. The Toxcast Program should be embraced. http://www.epa.gov/osp/ftta.htm . California should put incentives into place for chemical manufacturers and testing laboratories to develop and validate human-relevant methods.		X					
2-293	Pre-market approval of chemicals or consumer products should not be attempted because this would be an incredibly burdensome and unworkable process for the state of California.			X				
2-294	Green chemistry programs should be designed to ensure that products remain technologically and commercially feasible to produce and that product efficacy, performance and usability are not compromised or undermined.							

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-295	Decisions affecting human health and the environment should be based on the intrinsic hazards of a chemical and a new approach to toxicity testing.			X					
2-296	Chemical manufacturers should prove their products are safe			X					
2-297	Hazardous chemicals and chemicals with inadequate safety data should be phased out or restricted			X					
2-298	Industry should bear the costs associated with their chemical production or use			X					
2-299	Safer alternatives to hazardous chemicals should be required			X					
2-300	California should create an easily understood matrix of all chemicals currently in use with information on their hazard traits and biological consequences for use by downstream users, consumers, and other interested parties							X	
2-301	There should be mandatory labeling for consumer products indicating the presence of chemicals that have not been tested for their impact on human health								
2-302	Act quickly to eliminate or restrict known chemicals for which we already have adequate data demonstrating that they cause serious harm from use in California and require safer alternatives when available			X					
2-303	Base assessment of chemicals on a full life cycle analysis and hazard traits								
2-304	Create requirements to obtain scientifically defensible full life-cycle analysis data from producers to support complete chemical hazard assessment			X					
2-305	Create a public advisory panel or committee in addition to the science advisory group								
2-306	Incorporate full cost accounting including "externalities" in chemical policy decisions		X						
2-307	Encourage the growth of green chemistry investment and real world enterprises		X						

Reference Number	(2) Green Chemistry: Stimulating Green Chemistry Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards and Certification
2-308	Extend producer responsibility to placing the burden of end of life disposal, including sustainable practices such as recycling								
2-309	Continue to broaden the tent of stakeholders as the Green Chemistry Initiative moves forward.								
2-310	Initiative implements protective regulations, including restrictions and bans								
2-311	The GCI should implement protective regulations, including restrictions and bans on chemicals for which the weight of evidence demonstrates a severe hazard to human health and/or the environment								
2-312	DTSC should make educational programs a key component of its Green Chemistry Initiative, considering the full range of educational opportunities: sponsored research, collaborative grants, modules for courses K-12 and at the university level, programs to educate consumers, media and policy makers.					X			
2-313	We are being exposed to far too many chemicals in our daily environment and many of us are getting sick. It is especially necessary to get them out of commercial cleaning products that are used everywhere, from stores to doctor's offices and even hospitals.								

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-1	Develop science-based criteria for determining whether a particular product is greener or safer than alternatives.	X		X				X
3-2	1. Develop criteria for appropriate use of cosmetic pesticides and consider banning inappropriate use. 2. Ban the most toxic cosmetic pesticides via legislation/regulation; possibly create monetary incentives for new home builders to substitute non-toxic chemicals in landscaping or create more sustainable landscaping designs (i.e., drought tolerant landscaping, water conservation, plants indigenous to the region, etc).		X	X				
3-3	1. Evaluate things that have worked in the past to reduce toxics in products/the environment, including gaps and opportunities; consider legislating toxic reduction efforts, e.g., A. Legislative Efforts have helped on numerous toxic reduction efforts. i. Mandatory emissions standards for automobiles in California. This has had a tremendous impact by mandating a shift in demand allowing the auto manufactures to voluntarily comply if they want to participate in the California market. B. Usage Fees (Tax) can help to move a product's sales price closer to the total product life cycle costs (inclusive of decommissioning, disposal, clean up, associated human health care cost, and environmental rectification costs that are now born by tax payers). i. Bottle Tax gives an incentive to be environmental conscious to reduce the toxins in the waste we consumers create. ii. Cigarette Tax provides a disincentive for consumption. C. Rebates for use of preferred product purchases. Example: i. Rebates for Hybrid automobile purchases.		X	X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-4	<p>1. Since well-informed consumers will not only handle and dispose of chemicals more safely, and will demand safer products with closed loop lifecycles, California should expand consumer education regarding product life cycle costs and impacts (e.g. appropriate selection, use, disposal, and alternative materials or practices). Disseminating information could occur through traditional media as well as outreach through community partners as well as the private sector. Educate people how chemicals are created, screened for use, and managed through a process. Show people “a day in the life of a chemical.”</p> <p>2. California should provide complete transparent chemical risk information in a way the public can access, understand, and absorb.</p> <p>3. California should create convenient, credible chemical evaluation tools that businesses, schools or individuals can easily use when selecting chemical products. These could use prior art such as the Green Screen or Pfizer’s Solvent Alternatives Chart. These tools could show examples of the risk as well as hazard, and define hazard/risk as high, medium and low and compare to products and services used by consumers everyday. If something is a hazard, show the alternatives or how the risk relates to the pathways for exposure (Is it in a product, or solely for use in a process? If it is in a product, what entails safe use? etc.)</p>	X				X		X

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
3-5	<p>1. California could create a labeling system that is accessible, and accurate.</p> <p>2. California should enable and streamline disposal of household hazardous waste (curbside pick-up or more local collection centers.), and improve the publicity of and accessibility to this disposal, and ensure safety of the collection sites.</p> <p>3. Part of the education/outreach process should include manufacturers public disclosure of product selection and chemicals used in those products. Define/ID toxic & non-toxic chemicals in specific products, proper use, dangers of inappropriate use, and include information re; disposal. Include Life Cycle Analysis, and impacts thereof.</p>		X	X		X			
3-6	Create a task force by collaborating with regulatory agencies, UC, Chemical Abstract Service, industry manufacturers and the public to create a web portal to ID chemicals (toxic & non-toxic), how each is created/screened for use/managed through a process, and disseminate/access information.					X			

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-7	<p>1. California should prioritize chemicals used in commerce in California based on exposure potential and toxicity, and work to reduce exposure to the most hazardous substances. To do this, California should gather data regarding all chemicals manufactured in or used in commerce in California, including in what products, how and in what volumes they are used. Additional data regarding available toxicity characteristics should also be gathered for each of those chemicals. Gaps in toxicity and exposure data should be identified.</p> <p>2. The data should be used to prioritize or rank chemicals in terms of hazard as a function of toxicity and exposure. Tools for such ranking are available from other efforts such as Canada's CEPA program, and USEPA, and should be evaluated for use in California. Subsequent efforts should then focus on working with industry to find viable, safer alternatives for the highest ranked chemicals (i.e., those that pose the biggest threat in terms of toxicity and exposure), while at the same time engaging industry and our University system to fill in important gaps regarding toxicity and exposure data.</p> <p>3. Biomonitoring efforts should be tapped to help fill exposure gaps. In evaluating and ranking chemicals, considerations should be given to the performance, and feasibility of alternatives.</p>	X		X		X		
3-8	Ban the use of single-use polystyrene and other plastic/non-biodegradable polymer materials in order to protect the natural environment for present and future generations, exercise environmental stewardship by reducing the amount of polystyrene and other nonbiodegradable polymeric substances that enters our waste stream, storm drains, watershed and coastal environment.			X				X

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
Options									
3-9	Work with the military and aerospace industry as well as the plating industry, to evaluate and revise outdated milspecs to allow for more "environmentally friendly" plating chemistries. Technological advances have generated more environmentally friendly electroplating technologies (e.g., cyanide-free plating solutions). However, a wide-spread switch to more "green" plating practices has been hampered by outdated "milspecs" (i.e., the military specifications for most plating done for military and aerospace applications).		X			X		X	
3-10	<ol style="list-style-type: none"> 1. Prioritize protection of most vulnerable people and resources. For example, get information on exposures of children to harmful substances through toxics in products, and seek changes to reduce or eliminate these toxics. Focus on consumer products with lots of exposure potential. This needs a regulatory action. 2. Look for initial easy fixes by integrating existing programs that have identified actual sources of pollutants. 3. Drive the demand for cleaner products through state procurement practices. 4. Designate the Occupational and Environmental Health at UC Berkeley and LA as lead entities within the UC system to address research relevant to Green Chemistry and Chemicals Policy in California. 	X	X	X			X		
3-11	<ol style="list-style-type: none"> 1. Include human health and environmental considerations, performance, cost, and feasibility in evaluating alternatives materials and processes. 2. Provide positive incentives for green chemistry. Use the Green Chemistry principles articulated by Anastas in evaluating alternatives. 		X	X					

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
Options									
3-12	1. Use the Green Chemistry principles in developing useful approaches to pollution prevention. 2. Leverage resources with USEPA programs, Canadian CEPA, etc.(e.g., information from the HPV program and the VCCEP program, and the ICCA Global Initiative on HPV chemicals) 3. Conduct a baseline assessment to determine needs. 4. Study available hazard and exposure data and how California can best use these data. 5. Identify "green approaches" that have worked as well as those that have not worked.	X							
3-13	Electronic devices: removal of hazardous substances.			X					
3-14	Adoption of work standards for diacetyl.			X					
3-15	Ban brominated and chlorinated fire retardants.			X					
3-16	Prohibits the use of phthalates in Children's products.			X					
3-17	Lighting waste: toxic reduction.			X					
3-18	Drinking water: pipes and fittings: lead content.			X					
3-19	Hazardous packaging.			X					
3-20	Products containing diacetyl.			X					
3-21	PBDE prohibition.			X					
3-22	E-waste: personal computers.			X					
3-23	Establish emission limits for composition wood treated with formaldehyde.			X					
3-24	High production volume chemicals.								
3-25	Toxic packaging materials.			X					
3-26	Chemicals of concern.								

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-27	Cal/EPA should use any useful information developed by the U.S.EPA Design for the Environment program and work with industry/businesses to implement elements espoused by the EPA regarding how businesses should "design for the environment". These elements include the following: 1.Evaluate the human health and environmental impacts of its processes and products. 2. Identify what information is needed to make human health and environmental decisions (e.g., hazard characteristics data and identification of "safer" alternatives). 3.Consider cross-media impacts and the benefits of substituting chemicals. 4. Reducing the use and release of toxic chemicals through the innovation of cleaner technologies that use safer chemicals. 5. reducing the use and release of toxic chemicals through the innovation of cleaner technologies that use safer chemicals. 6.Make products that can be more readily reused, refurbished, remanufactured, or recycled. 7.Monitor the environmental impacts and costs associated with each product or process. 8.Recognize that although change can be rapid, in many cases a cycle of evaluation and continuous improvement is needed. Pa		X	X	X	X		X
3-28	Cal/EPA should develop layperson information on common chemicals in common commercial products for the purpose of educating the public.					X		
3-29	Cal/EPA should develop a fact sheet on chemicals policy in the U.S. and post it on their GCI website to educate the general public.					X		
3-30	Cal/EPA should engage in culturally appropriate outreach to consumers to help them make informed choices and move purchasing towards greener products. Media such as television commercials (featuring Arnold Schwarzenegger, perhaps), comic books, radio, could be utilized. Partnering with Hollywood would go a long way.					X		

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-31	Cal/EPA should develop guidance on what its citizens as individuals could do to move towards greener, sustainable living.					X		
3-32	Cal/EPA should work with the U.C. system to develop a green chemistry curriculum for all chemistry and engineering majors.					X		
3-33	Cal/EPA should work with other state agencies including DGS to develop information on green purchasing, and disseminate this information to counties and cities and to private sector businesses for their use.		X			X	X	
3-34	Responsible parties should be required to identify the individual constituents of their products or, if that information was considered to be confidential business information, to provide the appropriate health information on their products. Responsible parties should be required to report new factual information regarding adverse health effects of their products or of the individual constituents of their products. This information could be reported to a centralized, publicly addressable database. The adverse effects reporting requirements for pesticides, as set forth in Section 6 (a) (2) of the Federal Insecticide, Rodenticide, and Fungicide Act, could be used as a starting point.	X		X				
3-35	California should require that chemical manufacturers, importers and users supply Cal/EPA with the structure of chemicals in use in California commerce, physicochemical properties, and all available toxicity and hazard data. California should use Quantitative Structure-Activity Models to evaluate exposure potential and predict toxicity where data are not yet available. This information should go into any prioritization scheme.	X		X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-36	California could impose restrictions on amounts of hazardous chemicals in products that are released to the environment over the life of the product. California could require elimination of certain compounds known to be hazardous from products, such as carcinogens, mutagens, reproductive toxicants, developmental toxicants, and chemicals that are persistent and bioaccumulative.			X				
3-37	California could generate environmental codes of practices and procedures in the development and design of products that encompass the manufacture, distribution, use, and end-disposal or recycling of the product that all manufacturers, importers, distributors, and users of products must follow. These practices could include bans of specific chemicals from consumer products.		X	X				
3-38	In following the EU's REACH program as a model, California could do the following: 1. Register all chemicals in commerce in California and require a summation of the chemical properties, toxicity and hazard of each in order to be registered for use. 2. Develop a list of chemicals of concern based on usage and toxicity or hazard information. 3. Register products containing these hazardous materials including imported products and publish this information. 4. Required tiered sets of toxicity information according to usage, amounts produced/imported, or other indicators of exposure. 5. Eliminate the use and/or require strict regulation of use of highly persistent or bioaccumulative chemicals, carcinogens, mutagens, reproductive toxins developmental toxins, neurotoxicants, and any other compound capable of causing serious or irreversible harm. 6. Develop models to simulate exposure scenarios for common chemicals in common products to inform decisions on chemical management.	X		X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-39	California should evaluate the best practices for chemical management schemes pointed out in the April 2007 report entitled "Not That Innocent: A comparative analysis of Canadian, European, and United States Policies on Industrial Chemicals by Richard Denison for application to a California Green Chemicals Policy.	X		X				
3-40	California should work with industry to reduce toxics in products, and where that proves difficult because no safe alternative exists, California should require product take-back at no cost to the consumer. This shifts the physical and financial responsibility away from local governments and consumers back to the product manufacturer.		X	X				X
3-41	California should ban the export of toxic products and waste to developing countries as they lack the infrastructure to handle these materials.			X				
3-42	California should co-ordinate across agencies for a comprehensive green chemistry program and smooth implementation.			X				
3-43	California should develop clear criteria for prioritizing chemicals by toxicity, including aquatic toxicity. Evaluate Canada's criteria and those in REACH for applicability to California.			X				
3-44	California should develop clear criteria for identifying chemicals as persistent or bioaccumulative.	X		X				
3-45	California should use Quantitative Structure Activity models to help identify toxicity potential and exposure potential of chemicals used in commerce in California.	X						
3-46	California should evaluate what other states have done and utilize appropriate elements from those programs, including the Massachusetts Toxics Use Reduction Act, the Oregon Toxics Use and Hazardous Waste Reduction Act, , and Oregon's Executive Order to reduce persistent and bioaccumulative Toxicants.	X		X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
Options								
3-47	California should promote chemical reclamation and recycling technology to reduce chemical waste, which in turn reduces chemical manufacture.			X				X
3-48	California should require mandatory take-back for unused pharmaceuticals.			X				
3-49	California should ban the export of hazardous waste to developing countries.			X				
3-50	California should create legislation that includes chemicals used in personal care products under DTSC authority. Partner with Europeans who have been working on this.							
3-51	California should evaluate products already available to screen chemicals in products including the Chemical Compliance Systems tool used by the DOD and US Army to evaluate munitions, paint, etc.	X						
3-52	Using data on toxicity and use, prioritize chemicals into low, medium, high, and very high concern categories. Develop clear criteria for manufacturers and users of chemicals prioritized into very high, high, medium, and low concern	X		X				
3-53	Work with major users of chemicals of very high and high concern to reduce or eliminate their use of these chemicals in their products.			X	X			X
3-54	California should use data from the Canadian CEPA program summaries of chemicals in their prioritization program, and any summaries that come from EU's REACH program.	X		X				
3-55	California should look at available data sources to obtain information on chemical toxicity. These include EPA's various programs (IRIS, HPV, VCCEP)TSCA Test Submissions of unpublished technical reports, European Chemical Substance Information System, OECD member countries, and International Programme on Chemical Safety.	X						

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-56	Ensure access to info gathered by others by 1) requiring companies submitting data under Canada's CEPA and EU's REACH to submit it to California, 2) negotiate for access to CBI data submitted under CEPA and REACH, 3) enhance IT infrastructure to receive and share data.	X						
3-57	Map the flow of chemicals in California, require submission of data from California producers/users on amounts of chemicals produced/used, and where, amount and use in products and post-use management.	X						
3-58	Require updates of MSDS to reflect all available data					X		
3-59	Require disclosure of chemicals in consumer products, focusing initially on high concern chemicals	X				X		
3-60	California should help advance the science by developing, road-testing and sharing new toxicology testing methods and strategies that account for endocrine disruption, developmental neurotoxicology, timing of exposure , toxicogenomics, etc, including high throughput screening methods. Collaboration with the federal government and Universities is important.				X	X		
3-61	Consider environmental justice in setting Green Chemistry policy and initiatives for data requirements and analyses. Include consideration of communities bearing a disproportionate exposure to toxic chemicals in their communities and on the job.			X				
3-62	Address cumulative exposures in communities when collecting and analyzing data and making decisions							
3-63	Data requirements, analysis should be based on a full cost accounting, including such externalities as the cost of pollution to communities, health care costs, environmental clean-up, disposal of toxic materials, worker exposure and lost work days, and premature death.							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
Options								
3-64	Require companies to generate comprehensive safety and health data based on the hazard traits of chemicals for all chemicals in their products by 2016.	X						
3-65	Establish partnerships with states to create an interstate clearing house of environmental health and safety data			X				X
3-66	Develop a data audit system to evaluate the scientific validity of information gathered from external sources.			X				
3-67	Require chemical producers to complete a full life-cycle analysis of products to foster cradle-to-cradle management.							
3-68	Place fees on products and processes for which there is inadequate health and safety information.							
3-69	Create labeling requirements that will inform consumers of potential health and environmental impacts of the chemicals contained in products.			X				
3-70	Take early action on bad actor chemicals directed toward eliminating impacts to the most sensitive populations including vulnerable humans and ecosystems/species.			X				
3-71	Require safer substitutes where available; use regulatory authority to require safer substitutes, including non-chemical solutions, and seek additional legal authority if necessary to do so.			X				
3-72	Ban hazardous chemicals over time with a robust phase-out program including specific timelines by which users/producers must comply.			X				
3-73	Where no evidence exists for the safety of a chemical, restrict its use until safety can be comprehensively demonstrated.			X				
3-74	Develop regulations to require extended producer responsibility including take-back of hazardous materials, recycling of materials and use of less toxic materials. California can look at the Green Dot program in Europe as a model.			X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-75	To include public interests in Green Chemistry efforts, create a public advisory committee, in addition to the Science Advisory Committee to advise California on what best serves the public interest, including sustaining healthy communities, a protected environment, and safe workplaces.							
3-76	DTSC should consider using life-cycle analysis guidelines established by the Society of Environmental Toxicology and Chemistry in using LCA to compare water, energy, raw material use to generate products, and the transportation and waste of same.							
3-77	If California considers an eco-label program, labeling should be based on science and life-cycle analysis, and involve a multi-stakeholder working group to generate the standards for eco-labeling.					X		
3-78	California needs a California Toxic Substances Control Act which would require all new chemicals to be tested for toxicity before they are marketed in California, and would established requirements for toxicity testing of existing chemicals.			X				
3-79	The Office of Environmental Health Hazard Assessment should be given more funding to evaluate alternative chemicals to determine whether alternatives pose an unacceptable risk.		X	X				
3-80	The authority of the Air Resources Board should be expanded to apply to other types of products, not just aerosolized products, which would increase the ability to forbid the use of certain toxic chemicals in consumer products.			X				
3-81	Cal EPA ought to encourage the use of renewable resources, continuously recycled materials, and green energy (i.e., alternative fuels and solar power) in manufacturing. Any program to reward or recognize "Green Chemistry" efforts ought to recognize companies that use renewable or continuously recyclable materials, and/or implement the use of green energy to support their manufacturing operations.							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-82	Cal EPA should develop model Life Cycle Analysis paradigm, starting with a single widely used product with environmentally detrimental properties, and analyze every aspect of that product's lifecycle, from the harvesting and processing of raw materials, to that product's ultimate disposal or "end of life" management.					X		
3-83	The State of California should implement a modern, comprehensive chemicals policy in line with current scientific knowledge on human health, and which requires a full evaluation of the health impacts of both newly developed and existing industrial chemicals now in use			X				
3-84	To further stimulate Green Chemistry and Green Engineering, California should consider the following incentives: (1) awards like EPA's Green Chemistry Challenge (see http://www.epa.gov/greenchemistry/pubs/pgcc/presgcc.html for more information); (2) tax incentives/subsidies/grants/low interest loans for research and development; and (3) marketing exposure for Green Chemistry processes and products.		X					
3-85	When California purchases chemicals for state contracts, it could decide to pay a modest premium for a set period of time for new "green materials" that show promise. The goal of this subsidy would be to help a new material achieve greater economies of scale, but avoid locking in an inefficient permanent subsidy..		X					
3-86	California could additionally make capital available to companies at preferential terms, whether via grant or lower interest loans, to encourage Green Chemistry and Green Engineering manufacturing process development..		X					

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-87	California could also consider a marketing program (perhaps akin to the "California cows" and dairy ads currently on television) whereby the state would promote companies that are actively engaged in Green Chemistry and Green Engineering, and products that are the result of Green Chemistry and Green Engineering..		X			X		
3-88	CSPA's Product Care program is a stewardship program for the consumer and institutional specialty products industry where participating companies have agreed to go beyond government regulations in emphasizing health, safety and environmental concerns by carefully designing products, purchasing raw material and packaging, operating safe manufacturing facilities, promoting safe storage and distribution, providing useful product information, answering consumers questions and anticipating product disposal needs. CSPA believes that these types of product stewardship programs should be considered as frameworks for programs developed under the Green Chemistry Initiative..							
3-89	Develop and use cost- and time-efficient high-throughput human cell and tissue methods, as they are developed and validated, and computer-based methods such as (Q)SAR, and intelligent, tiered testing schemes to evaluate potential toxicity of chemicals in commerce.							
3-90	Data gathering requirements must take advantage of existing data gathered from other testing programs as well as intelligent testing strategies. Requiring a fixed list of toxicity tests for all chemicals is wasteful.							
3-91	A recent report by the National Academy of Sciences, entitled "Toxicity Testing in the Twenty-First Century: A Vision and a Strategy," recommends an overhaul in the way chemicals are tested for toxicity. California's implementation of green chemistry goals should be consistent with this vision, and the state should commit resources to this effort.							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-92	The U.S., Canada and Mexico have now agreed to a program to screen thousands of chemicals to see if further research is necessary to protect human health. It will follow work already being done in Canada prioritizing chemicals based on whether they show strong evidence of persistence, bioaccumulation and toxicity. USEPA has ongoing projects with the domestic chemical industry to gather data about large volume chemicals and fill in necessary information gaps. California should piggy-back any new chemical policy onto these programs rather than try to create its own testing agenda..			X				
3-93	If we are going to promote green chemistry, then let's do it! A glass-bead product for highway markings from China is available and for a cheaper price, but you also could get significant levels of lead and arsenic in the product as a result. Another glass-bead product is domestically produced and does not contain dangerous levels of these heavy metals.		X	X				
3-94	Prohibitions of chemicals should be put in place only when an unacceptable level of risk is identified that cannot be adequately mitigated or is not offset by benefits of the chemical..			X				
3-95	Materials classified as persistent bioaccumulative toxicants, very persistent or bioaccumulative, carcinogens, mutagens, or reproductive toxicants should be subject to an environmental and human health risk assessment conducted by the producer or importer and reviewed by the Office of Environmental Health Hazard Assessment.			X				
3-96	Schools (primary, secondary, and colleges and universities) as the trainers of tomorrow's leaders and the institutions conducting foundational research, should play a critical role in the Green Chemistry Initiative. California should engage educators to develop curricula, sponsor research, and educate consumers, the media, and policymakers..					X		

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-97	The authority of the Air Resources Board should be expanded to apply to other types of products, not just aerosolized products, which would increase the ability to forbid the use of certain toxic chemicals in consumer products.			X				
3-98	As California selects specific approaches for chemical controls, they should adhere to these principles: 1. management must be risk-based; 2. screen all new and existing chemicals to determine further information needs in a tiered, risk-based approach; 3. leverage available information; 4. recognize the shared responsibilities of each party within the value chain; 5. promote transparency. The process Canada is using is consistent with these principles. The objectives of REACH and the responsibility it places on all members of the value chain are also consistent with this, although questions remain regarding implementation of REACH.							
3-99	In obtaining data to understand chemical risks, there is a need to retain certain business information as confidential in order to protect intellectual capital. Health and environmental data should not be considered confidential. .			X				
3-100	Life cycle assessment should be used to more holistically balance between societal needs, protection of public health and the environment, sustainable production and consumption.	X						
3-101	An effective green chemistry program should consider the concepts of risk management and net benefit as elemental to identifying topics of focus for this Initiative. "Risk" is usually expressed as a probability that an event will occur. Expressing risk in this way allows relative comparisons to be made about exposures to various substances and events. For example, expressing risks as a probability allows us to compare a variety of risks associated with daily living.							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-102	In California's Green Chemistry Initiative, risk management efforts can involve a variety of approaches such as: Substituting alternative input materials, Making process changes during manufacturing, Installing technological controls (e.g., pollution control equipment), Requiring use of personal protective equipment, Instituting a range of pollution prevention options, Training, Labeling, Imposing various storage, transport and disposal requirements			X				
3-103	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.			X				
3-104	In weighing benefits, such an analysis must also consider the "externalities", such as costs to communities in terms of lost wages from sick leave, health care costs, environmental degradation and the economic impacts that brings, expensive clean up actions, higher education costs due to higher rates of behavioral and developmental problems in highly exposed populations, etc..			X				
3-105	The problem and cost of disposal at the end of the life of the products or processes in which they are used need to be considered. We can impose rules on manufacturers, requiring take back and recycling, but we must also remember that those processes in themselves are expensive and have their own environmental or health impacts..		X					

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-106	California should move toward a model in which hazard traits are prioritized. This will be essential in protecting and growing the California economy. While the EU may accept risk management as a premise, hazard trait analysis can provide our companies with a competitive advantage by enabling them to develop/choose safer alternative chemicals and to respond to shifts in international regulatory frameworks as they occur.	X						
3-107	We need a system that focuses on a chemical's rank relative to environmental performance and impacts on health, including worker health.	X						
3-108	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.	X		X				
3-109	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. .	X						

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-110	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. .							
3-111	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. .	X					X	
3-112	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..	X		X			X	
3-113	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..	X						

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-114	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..						X	
3-115	California could expand product-specific chemical ingredient disclosure for consumer products which currently do not have that requirement. .	X						
3-116	The State could establish a registry for companies seeking to align their business practices with the Green Chemistry principles and acknowledge their intent..							
3-117	For the Green Chemistry Initiative to have integrity it cannot allow exporting waste that is causing great harm overseas. We in California need to develop closed-loop safe and just ways of handling our waste, including recyclable plastics. The current model of exporting plastic to countries such as China needs to be stopped if California is serious about its Green Chemistry Initiative..			X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-118	Priority Chemicals—California should establish a program to identify, assess and manage priority chemicals based on an evaluation of hazard and potential for exposure- Move quickly by leveraging priorities identified in the Canadian Chemical Management Plan. Create a collaborative effort between California and Canada to accelerate progress in both geographies.- Include a means for adding and deleting priority chemicals based on unique California circumstances. - Leverage the recently assembled U.S. Inventory Update report to provide initial volume, use and exposure information. Identify uses and user industries for the high priority chemicals that raise the greatest concern. Expect producers of priority chemicals and manufacturers with high concern uses to provide hazard and exposure information on those chemicals/uses to the program. Provide the agency with authority and a due process to establish restrictions for uses of priority chemicals that have unacceptable risks..	X		X				
3-119	Organize this overall effort in a collaborative approach involving chemical producers, targeted users/industries, the agency and appropriate academic and other 3rd party experts. Engage with US EPA and the recently announced Canada-US-Mexico Montebello Agreement to avoid duplication and expedite action on priority chemicals in California and throughout North America..			X				
3-120	In pursuing the objective of the Green Chemistry Initiative to expand toxicology information on chemicals, California should encourage the use of alternatives to animal testing and require testing only as a last resort. - The agency and UC university system could work with other experts to provide assistance on alternative screening methodologies that can be utilized to provide adequate toxicology information for recommendations and decisions about priority chemical uses.	X						X

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
3-121	<p>Expect and encourage manufacturers of consumer products to communicate information about the ingredients in products, either on the package or on the internet at the manufacturer's discretion and with appropriate provisions for protection of Confidential Business Information.</p> <ul style="list-style-type: none"> - Expect and encourage chemical and product manufacturers to update their MSDS's to the new 16-section ANSI standard and to reflect the latest hazard information from voluntary (e.g. HPV) and regulatory (e.g. Canada CMP) programs. - Encourage companies in important value chain sectors to work together to identify "beyond MSDS" information needs both upstream and downstream and to establish processes for communication to meet those needs. - Leverage California's capability and interest to assemble a chemical information system on hazard, use and exposure from global sources. 	X			X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
3-122	California should prime the pump to initiate early and significant advancements in Green Chemistry and to recognize and reward success. - Provide economic incentives for business innovation in green chemistry. - Provide economic support and incentives for innovation at California's University system: scholarships, research funds, technology licenses, etc. - Focus the above programs on development and commercialization of alternatives for restricted priority chemicals, including for small business application and on innovations that create breakthroughs in performance, value and environmental quality. - Establish an Annual Green Chemistry Recognition program for new chemicals, products and processes and for advances in research, analytical and toxicological methods that best exemplify the objectives of GCI,		X					
3-123	Develop a registry in which all stakeholders can document Green Chemistry successes - Develop an extension service through the UC university system to expand reapplication of successes across the potential user community.					X		
3-124	Continue the Conversation with California via ongoing workshops, symposia, and other communication approaches to maintain and build on the momentum established in the program to date.					X		
3-125	California should incorporate the work that will be developed as a result of the Montebello Agreement between the United States, Canada and Mexico. The environmental agencies of the three companies will coordinate efforts to advance chemical assessment and management in North America.			X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-126	California should consider existing data and information already available to California and the public before making judgments on additional chemical specific data and information needs. There are existing programs such as the High Production Volume (HPV) Challenge Program and the Extended HPV Program, which have provided valuable toxicology and exposure information that is publicly available. Hazard information from such sources can be used in light of exposure scenarios to evaluate potential risk and ensure appropriate risk management. In addition, the information from the recent evaluation and categorization of chemicals on the Canadian Domestic Substance List (DSL), Canada, should be considered by California..	X						
3-127	Rather than imposing regulatory burdens, innovation through green chemistry can be promoted with positive incentives and partnerships. Green Chemistry should be encouraged through the sharing of expertise, financial support for research, information exchange, and public education. Incentives could be offered for companies to pursue and foster Green Chemistry and Green Engineering..		X		X			X
3-128	Green chemistry programs should include process technology considerations as alternative chemistry is being evaluated. This technology can have a significant impact on minimizing potential adverse health or environmental effects of a chemical substance. Process technology can reduce both human and environmental exposures to chemicals, for example, through enclosed systems, recycling of by-products, and controlling potential environmental releases. Use of these process technologies can eliminate the need for substitution of critical raw materials..			X				
3-129	California should impose appropriate use-restrictions for chemical ingredients when scientific safety-based assessments indicate they cannot be used safely in consumer product or use application..			X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-130	California should push collaborative efforts to encourage public and private partnerships, with a goal of developing greener products and environmentally responsible ingredients based on life cycle considerations, rather than mandatory and voluntary state labeling programs that endorse green products or programs that stipulate a single third-party certification of green products or numerical ranking.		X		X			X
3-131	CalEPA collaborate with the Canadian government not only on the priority list of chemicals but the program in general. In our opinion, this collaboration would avoid needless duplication, inefficiencies and burdens, as well as take advantage of credible, high-quality scientific work already completed.				X			
3-132	California should bring its expertise to the table in the Montebello agreement to share data and assessments so that all North Americans would have continued access to safe and effective products with improved sustainability and environmental quality profiles.			X				
3-133	Work with affected industries to implement a means of ingredient communication that would provide consumers with the information they can use to make even better informed decisions regarding the products they use in their homes.				X			
3-134	CalEPA could work with scientific experts to examine best practices and to develop a toolkit for safety assessment programs and for safety assessments. Companies also could make a description of their safety assessment process available on the Internet. This could help provide context for product ingredient communication.	X		X	X	X		

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
Options									
3-135	California should close the “technology gap” through market-based incentives to support green chemistry. This could include funding for university research grants, scholarships, and similar programs, as well as awards for innovation, tax credits, low-interest loans, and other incentives. These positive incentives should be open to all companies that are innovators and sell products in California -- not simply be limited to companies located in California.	X	X			X			
3-136	The chemical industry or chemical importers should take the responsibility to describe the environmental characteristics of their products. The financial burden of testing chemical products appropriately lies with the producer or importer. Such testing should be carried out at independent test facilities, and it may be beneficial to California to encourage the creation of such test centers within the state – either as independent entities or as part of the CA University system.			X					
3-137	Self certification by the producer would be based on independently run tests of a chemical’s characteristics in terms of whether the chemical should be considered persistent, bio-accumulative, and toxic (PBT), or should be considered a very persistent and very bio-accumulative (vPvB), or should be considered to have significant possibility of being carcinogenic, mutagenic, or reprotoxic (CMR category 2). These classifications are well recognized in global regulatory systems, and the data necessary for such classifications can be clearly defined. The data and rationale behind the assessment shall accompany the submission. The submission would be reviewed by the CA EPA and final determination of the chemical’s classification will lie with CA EPA.								

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
3-138	Materials classified as PBT, vPvB, or CMR category 2 should be subject to risk analysis. If risk levels are judged too high, then industry should have the opportunity to introduce appropriate measures to reduce risk within a given time span, or face phase out of the material. Within a phase out strategy, the potential use of alternatives must address any risks associated with such substitution. It should not be acceptable to propose substitution by a material for which there is little data on its characteristics. Fundamentally, lack of data should not be rewarded.			X				
3-139	Incentives could be given to develop products with improved characteristics, e.g. non-PBT or polymeric chemical additives. Similarly, improved stewardship, such as driven by the BFR industry's Voluntary Emission Control Action Program (VECAP) should be encouraged and rewarded.		X	X	X			
3-140	Conduct studies of why specific chemistries are being used in terms of industrial structures and histories. Regulatory standards or established industry practices can actually exacerbate the creation of risks. Flammability standards have encouraged the use of brominated flame retardants; companies often simply use specific chemicals in manufacturing because they are accustomed to doing so and their technologies and ordering systems are built on the chemicals.			X				
3-141	GIS data could be integrated with workplace use, health, ecological, and other data to identify patterns that affect chemical impacts. We need to understand, in particular, the distributional effects of chemical exposures.							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
3-142	Develop new monitoring systems that can track chemicals and materials as they are introduced into consumer products or industrial systems, and identify far more promptly emerging problems. These could include developing biomonitoring schemes, consumer and ecological health surveillance, and feedback from workers and downstream users or manufacturers.	X							
3-143	1. Strengthen the recognition and pursuit of Green Chemistry processes and products by establishing clear criteria and voluntary certification based on comprehensive lifecycle considerations. Equally important, consumers need to be educated about responsible choices and practices.							X	
3-144	2. Explore models other than, or building upon, the current Materials Safety Data Sheet (MSDS) system to provide needed chemical hazard data throughout the supply chain. Our members often find the data included on the Material Safety Data Sheet (MSDS) to be insufficient for determining chemical hazards. Many times important information is addressed in a superficial, boiler-plate fashion or missing altogether. The same raw material from different suppliers may have divergent information. This is in part due to some government regulations requiring that an MSDS be obtained directly from the manufacturer. While we recognize that confidential business information needs to be protected, best possible data on hazard and ecological effects should be made readily available to the supply chain and other stakeholders. The Global Harmonization System for the Classification and Labeling of Chemicals (GHS) should be considered, as well. Any model chosen should include the appropriate ecological as well as toxicological information	X							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
Options									
3-145	3. Establish a Green Chemistry Coordination Council to collect and promote the sharing of information, highlight businesses with green practices, provide assistance to businesses lacking resources, and educate consumers. We suggest the DTSC catalog and make easily available information regarding best practice screening processes, green chemical design, collaborative efforts such as the ACS Green Chemistry Institute, and international efforts such as the Global Harmonization System. All stakeholders still have a lot to learn in this dynamic area, and everyone stands to gain from continued information sharing. DTSC's leadership in this area should be continued by establishing it as a central clearinghouse of information for the state and beyond. We further suggest building upon and making readily available the information provided by existing efforts: ACS Green Chemistry Institute, Cleangredients, U.S. EPA's Design for Environment Program, Performance Track, the chemical industry's HPV testing program, eChemPortal, EPEAT, and DTSC Technical Resource Center							X	
3-146	4. Prioritize chemicals for screening, testing and appropriate restrictions. We suggest building upon the model of Canada's analysis and prioritization as well as the Proposition 65 review process. Chemicals of high concern should be allowed for targeted, low-exposure uses as determined in an open process. The use of a transparent and rigorous process to evaluate risk factors as indicated by toxicological, epidemiological, and exposure data will allow us to compare the relative importance and safety of chemicals as well as determine whether any restrictions or substitutions are appropriate								

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-147	5. Greater investment in pollution prevention in the short term as well as extension of the current CA Pollution Prevention model to downstream chemical users as an element of the long term Green Chemistry strategy. Pollution prevention programs and policies such as SB 14 have been promoted for quite some time, yet they never receive anywhere near adequate funding and attention. This suggests the possibility of 1) taking chemicals of top priority concern, 2) identifying the specific applications or industry uses posing the greatest risk from those chemicals, and 3) applying a collaborative process of agency, industry and third-party experts to identify or develop viable alternatives that can maintain efficacy, but reduce risk in those targeted applications	X						X
3-148	6. Continue the Conversation with California to sustain progress in Green Chemistry. The dialogue between DTSC and stakeholders has been very helpful and will result in more well-developed, effective policy.					X		
3-149	While the focus of the Initiative has been on chemical safety, green chemistry in the broader sense should incorporate an accounting of embedded energy, CO2 impact, water usage, packaging, recyclability and so forth. Industry on the whole is already moving toward a greater consideration of these factors in our practices. The difficulty of quantifying and ascribing relative importance to these factors points to the need for commonly-held practices or industry standards.			X				
3-150	The authority of the Air Resources Board should be expanded to apply to other types of products, not just aerosolized products, which would increase the ability to forbid the use of certain toxic chemicals in consumer products.	X	X					

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-151	California must evaluate what regulations and information are currently available and whether these tools are being appropriately implemented and applied prior to developing new programs. Indeed, we expect this analysis is already underway, pursuant to the mandate to conduct a “baseline assessment” of existing programs and information described in the April 20 memorandum from Cal-EPA Secretary Linda Adams announcing the Green Chemistry Initiative.			X				
3-152	This initiative should address the problem of chemicals being used in our daily lives that have not been tested for neurotoxicity in children. I urge you to include restrictions and bans on chemicals that demonstrate a hazard to our health and/or environment.			X				
3-153	Chemical data development efforts should build on existing statutory and regulatory structures, voluntary initiatives, and data development efforts, and collaboration by California in ongoing work by other government agencies to assess chemicals and consumer products.- leverage efforts by Health and Environment Canada in addressing priority chemicals in the Chemicals Management Plan. California could also participate in the e Security and Prosperity Partnership (SPP) under the Montebello Agreement involving trilateral cooperation among the governments of Canada, the United States and Mexico to share chemical information and safety assessments.			X	X			
3-154	California should work with industry to implement a means of ingredient communication that would provide consumers with the information they can use to make informed decisions regarding the products they use in their homes.	X				X		

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-155	California should engage in collaborative efforts to encourage public and private partnerships with the goal of developing “greener” products and “environmentally responsible” ingredients rather than mandatory and voluntary state labeling programs that endorse green products or programs that stipulate a single third-party certification of green products.	X			X			X
3-156	Provide incentives for companies that innovate and develop technologically and commercially feasible products using green chemistry. Provide recognition for companies that develop sustainable business operations, processes, and/or products.							
3-157	Change our current, risk-based method of policy making, which limits the scope of chemical evaluation and puts people in harm’s way before allowing the government to make chemical regulations. The only groups who benefit from "risk management" are chemical suppliers—they don’t have to run toxicity tests or report their findings, they don’t have to report quantities or end uses of potentially toxic substances, and they have no incentive to update manufacturing methods or reformulate, as that always comes with some monetary cost. They need markets and incentives to design better products, but won’t comply without preventative regulation in place.			X				
3-158	Conduct a detailed, comprehensive assessment of existing laws, regulations and programs and ensure that recommendations for chemical screening, prioritization and evaluation include lessons learned from those programs. Cooperative agreements with existing programs are essential to avoid duplicative or ineffective efforts.			X				
3-159	Conduct a detailed, comprehensive assessment of existing chemical toxicity reporting and data availability programs and ensure access to those data as applicable to California. Assurances of some measure of formulation confidentiality would encourage producers and manufacturers to make toxicity and use data available.							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-160	Information on chemical importation, use, and exposure patterns in California should be quantified and analyzed before requiring the generation of toxicity data; exposure and use data can and should be used to prioritize chemicals.	X						
3-161	A static, required list of toxicity tests should be avoided as check-the-box toxicology; instead, tiered, thoughtful testing strategies should be pursued with flexibility and creativity. For example, bioaccumulation, biopersistence, solubility, and other physicochemical parameters should be determined prior to conducting dose-related evaluations such as percutaneous absorption testing; moving up from there would involve a full characterization of the chemical or material using in vitro cell and tissue assays. For the sake of flexibility as science advances a list of required tests promulgated legislatively should be avoided.							
3-162	Seek input from animal protection stakeholders, who have a unique set of qualifications and can specifically address the reduction and replacement of in vivo animal tests, before recommending testing strategies or regulations. The National Academy of Science's recent report addressing the future of toxicity testing should be embraced as part of a GC initiative, not only in the interest of animal welfare, but in the interest of a healthy environment	X				X		
3-163	Keep pace of new methods to evaluate toxicity other than new animal testing. These include: The OECD QSAR Toolbox and other International QSAR Foundation activities, OECD and NTP toxicogenomics initiatives, ILSI/HESI's Tiered Toxicology Testing Proposal for Pesticide Chemicals, the OECD Integrated Approaches to Testing and Assessment workshop (taking place in December of 2007), as well as others such as those presented during the Cal/EPA workshop October 1-2, 2007.							

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
3-164	The responsibility to analyze the human health & environmental profile of the chemicals, and manage chemicals in an appropriate way in accordance with their profile. REACH is a good example of such responsibility. Such a system should give clear certainty to industry that a chemical can continued to be used once the assessment is completed and approved, & it should also not continuously be challenged on the basis of data which are not scientifically sound.	X							
3-165	Product stewardship programs, designed to better management throughout the supply chain of the substance, & continued minimization of the impact of the substance, should be recognized & encouraged.	X	X		X			X	
3-166	A science-based assessment that evaluates human health and environmental considerations, performance, and cost and feasibility must include an examination of traditional and alternative technologies, materials and processes. Incentive-based approaches can allow companies to more easily and effectively share this knowledge, best management practices, and opportunities.								

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
3-167	Establish a California-specific chemical evaluation process to identify uses of concern for priority chemicals that were not on the original CEPA categorization process or that will not be addressed under the Montebello Agreement in the timeframe required. The process should utilize a tiered approach, in which chemicals and their uses are prioritized for further evaluation. The process should also utilize risk-based screening and should focus on potential “data needs” versus “data gaps”. Producers and users of identified priorities should be engaged in a collaborative process to bring hazard, use and exposure information to improve decision-making. As California proceeds with its process, it should leverage information already generated or that will be generated under regulatory or voluntary chemical evaluation programs. California must be transparent in the processes used to make risk evaluation and risk management decisions.			X				
3-168	Require manufacturers to label consumer products with all the chemicals and materials (including nanotechnology) that these contain. Consumers currently lack the information required to discriminate between products based on their toxicity impacts, so industry has few incentives to develop new green chemistry products. In parallel, develop interactive consumer tools and technologies that assist consumers to interpret and use labeling data in their shopping. The Toxics Release Inventory succeeded because information tools made its data highly accessible.	X	X			X		

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-169	Require industry to conduct green chemistry assessments for chemical products sold or used within California. These assessments would consider whether there are green chemistry design options available and use options analysis to justify how products are designed. These assessments can be modeled on the Massachusetts TUR Act but be updated greatly to reflect the combination of both products and processes. Companies currently do not generate enough decision-making information within their businesses. Registration of chemicals for marketing could be linked to the use of green chemistry design tools: if these tools have been used, then approval of the chemicals could be expedited..			X				
3-170	As far as possible the data required for chemical evaluation should be harmonized with the data requirements of other regulatory jurisdictions. In practice we would suggest persistency, bioaccumulation potential, toxicity (PBT) characteristics, and carcinogenic, mutagenic and reprotoxic (CMR) characteristics form a suitable base line for decision making. Use of these factors makes most efficient use of data generated and avoids unnecessary additional testing. We support the goal of minimizing animal testing..							
3-171	Adopt a proactive approach to obtaining data needed to assess hazard traits. The current practice is for the state to consult various lists and data sources to try to track down whatever information is available to assess hazards of chemicals. The information available varies enormously, and little is available for many chemicals. The State needs to have the authority to obtain the information and test results needed to assess and characterize the hazards of chemicals			X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-172	Methods are needed to reflect current understanding of issues including the importance of timing of exposure and how effects at different life stages can differ; differences in susceptibility including the particular susceptibility of children; the importance of multiple exposures to multiple chemicals; and the significance of biological perturbations in increasing likelihood of diseases or disorders. Cal EPA should engage experts to work toward incorporating current science into better methods for assessing the hazards of chemicals. These would likely include use of genomics and related technologies and other high through put approaches. It would also include systematic validation. Such efforts should be guided by the policy goal to adopt the best currently available methods	X						
3-173	Provide clear and transparent characterization of chemical hazards to the public. Many entities can and are making decisions and take action that contribute to adoption of safer or lower hazard chemicals and products. To support such efforts, businesses, agencies, and the public need comprehensive, current, accurate, and reliable information about the relative hazard of different chemicals. The State of California should develop a matrix of information about the hazard traits of chemicals in use or considered for use, presented in ways that are useful and understandable to various audiences. This matrix should also make clear when gaps in data exist, so that businesses and individuals can choose to avoid chemicals with unknown hazards as well as those that are higher hazard	X				X	X	
3-174	To develop a scientifically-based program, it is important to ensure the integrity of the scientific information and expertise that are engaged. The State should adopt the highest standards for ethical conduct and independence of the experts upon which it relies. Standards recently adopted at the International Agency for Research on Cancer for its review of potential carcinogens provide a useful model.	X						

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
3-175	To comply with the spirit of the California Green Chemistry Initiative, it is absolutely necessary that formulators use standardized ingredient properties and criteria. At this time, one of the most difficult aspects of Green Formulation is access to, and the variability of, data describing the potential hazards of chemical ingredients. The ingredient database would characterize the human health, environmental, safety, and regulatory aspects of ingredients used in formulated products							
3-176	The industry itself will not focus on or develop alternatives unless there is a regulation. This results in a “chicken and egg” problem and the chemicals and products that pose problems continue to be used, exposing workers, people in the surrounding communities and consumers. An important feature of this model program should be the work on alternatives. It is important to use or establish independent entities with detailed technical knowledge and experience, to find, develop, test and demonstrate viable and cost effective alternatives. The industries using the candidate chemicals or products must work with the independent entities to test potential alternatives. The health and environmental characteristics of the potential alternatives must be investigated and the alternatives must be safer than the original chemicals and products they will replaces	X		X				
3-177	Consider all existing programs that regulate chemicals. As each of these specific program elements and specific data requirements is evaluated for purpose and benefit, a shorter list can be compiled of specific program elements that should be examined more closely. Additionally, gaps in programs that could lead to exposures that could give rise to unacceptable levels of risk should also be noted. The objective of this review is to focus further efforts on those topics where risks are not now managed at an acceptable level.			X				

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
3-178	There must be an acceptable way to prioritize chemicals for additional testing. Hazard traits are certainly one criterion, but it is only part of the story. GCI must not consider hazard at the exclusion of exposure. Were it so, there would be a misalignment of limited resources for marginal value.								
3-179	Admittedly too much emphasis has been placed in prior year on reducing exposure (risk) and too little emphasis on reducing toxicity (hazard). The transition movement within the chemical industry, however, has begun. Emphasis on a transition to hazard reduction (i.e. green chemistry) is and will continue to build. However, GCI needs to forthrightly acknowledge that elimination of all toxicity through chemical substitution is not possible. At best there will always be tradeoffs which will need to be evaluated via Life Cycle Analysis (LCA) methodology s.	X		X					
3-180	The GCI should look at the current body of federal and international law when determining whether or not to superimpose yet another layer of regulation on an already heavily regulated industry.	X							
3-181	Substitute chemicals should be held to the same data requirements as the chemical(s) they are intended to replace.			X					
3-182	The GCI process should level the playing field and strive for consistency across the board.			X					
3-183	Conduct a base-line review of physical and intellectual capabilities to support and nurture the green chemistry R&D initiative. Additionally, CICC recommends that public private arrangements between universities and private industry be encouraged, particularly as it relates to green chemistry solutions.		X			X			

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design	Category							
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
Options									
3-184	In a command and control regulatory environment, private industry can only proceed as quickly as regulators can regulate. Time-to-market is critical in any new product launch. Delays and uncertainties increase the financial risks and reduce the initiative. California must ascertain its capability to manage whatever regulatory structure might be envisioned and begin making adjustments accordingly.			X					
3-185	There are numerous opportunities to reclaim process streams that may require refining (i.e. distillation, filtration, etc) prior to recycling the material back into the same process. The Chemical Industry Council and the DTSC have embarked on a partnership to promote voluntary pollution prevention and reduce waste. CICC is eager to work with DTSC to implement regulations allowing more flexibility for generators to reclaim streams onsite without having to go through tiered permitting or Part B Permit. CICC recommends that we work collaboratively with the Department to fix this problem and reduce waste generation			X	X				
3-186	Provide incentives to industry to develop green chemistry capabilities. These suggestions include: investment tax credits, public private partnership grants, low interest revolving fund loan, personal property tax exemption for laboratory equipment, preferred tax treatment for equity fund investment in California's GCI movement.								
3-187	Host a Green Chemistry Symposium dedicated entirely to technology transfer, start-up funds, equity funding, and possible CalPERS investment in California companies with homegrown technology that solve California environmental problems.								

Reference Number	(3) Toxics by Design: Identifying Toxics in Products by Design Options	Category						
		Data Collection and Use (Information)	Economic Incentives and Markets	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
3-188	Program funding within DTSC's Science Pollution Prevention and Technology Development group should be reestablished in order for the Technology Development staff to review and validate the green chemistry/ green engineering performance claims made by companies seeking economic incentives in the form of grants, low interest revolving loans, and preferred equity funding.			X				
3-189	Cal/EPA should begin an immediate effort to ramp-up its Life Cycle Analysis (LCA) capability. Unquestionably, one cannot envision competency in Cradle toCradle techniques without enhanced in-house LCA capability			X				
3-190	The Lawrence Hall of Science, UC Berkeley began a program some 20 years ago known then as theChemical Education Public Understand Project (CEPUP), now the Science Education Public Understanding Project. We recommend California consider how this program might accelerate outreach and conversely how green chemistry concepts might be incorporated into the teaching modules.	X				X		
3-191	Important elements of GCI should: protect proprietary technology and intellectual property, avoid unnecessary legislation and regulation which might impede discovery, avoid the false hope of continuous breakthrough discovery, and properly value and promote continuous improvement –pollution prevention.							

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-1	Chemicals should be assessed within the context of alternatives. Criteria for better or worse green products should be clear.	X	X	X		X		X	
4-2	Improve import standards for products manufactured offshore.			X					
4-3	Establish corporate and manufacturing codes of conduct.		X	X					
4-4	Develop best practices for supply chain management.		X	X					
4-5	Require full disclosure from suppliers.			X					
4-6	Establish process and product benchmarks, and distinguish between process chemicals and product chemicals.			X					
4-7	Help establish a product safety/product liability organization to determine a safety check list and review products according to the check list.			X					
4-8	Provide funding for adequate research on toxins using modern methods.		X						
4-9	Educate the public on what items they use that are toxic and natural alternatives that could be used instead					X			
4-10	Educate companies on greener alternatives and penalize companies for selling toxic items			X				X	
4-11	Use sound scientific information to define what is "toxic" and "non-toxic"	X				X			
4-12	Identify specific industry sectors that generate the most toxic products and identify green production and processing for those sectors	X		X		X			
4-13	Develop educational programs for children					X			
4-14	Use tools that are already available for decision-makers (such as purchasing managers) which collect and analyze information on environmental hazards, health hazards and cost of chemical inventories and products (e.g., Dolphin Software, www.chemply.com)	X							
4-15	Government responsibility for international cooperation on imports and exports of products			X					

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
Options									
4-16	Develop mechanisms for improving the flow of information through the manufacturing process	X		X					
4-17	Expand and randomize government testing of food and products			X					
4-18	Improve enforcement for retailers and upstream			X					
4-19	Address the issue of how to find out what's in products from abroad			X					
4-20	Establish rigorous manufacturing process controls			X					
4-21	Require manufacturers/suppliers to certify the safety of the products they sell to retailers		X	X				X	
4-22	Build toxicological and exposure database on chemicals in use in California	X		X					
4-23	Develop a "green" rating system for products with agreed upon criteria		X			X			X
4-24	Ensure that data development and identification of toxics are done by qualified experts			X					
4-25	Review current and next generation technologies to help with product recalls			X					
4-26	Prioritize chemicals of concern based both on risk and exposure			X					
4-27	Require testing, or submission of equivalent level of information, on materials prior to re-use			X					
4-28	Incorporate emerging toxicological issues such as endocrine disruption in the definition of toxic			X					
4-29	Evaluate the synergistic effects of chemicals in products			X					
4-30	Establish a quality assurance/quality control program for precursors and raw materials			X					
4-31	Scrutinize who is liable for a toxic product in the chain from manufacturing to sale and ensure there are consequences for the responsible party		X	X					
4-32	Provide assistance to small manufacturers and encourage pooling of resources to improve safeguards and quality control on inputs.			X				X	
4-33	Require company accountability for out sourcing		X	X					
4-34	Strengthen trade agreements between the state and other countries			X					

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
4-35	Develop international technology exchanges between companies to capture knowledge on how to successfully mass produce products using less toxic alternatives						X	
4-36	Encourage media publicity and engagement on toxics in products		X					X
4-37	Establish academic programs in product stewardship; develop and implement cradle-to-cradle design curriculum into multiple disciplines					X		
4-38	Develop a fact sheet on chemicals policy in the U.S. and post it on the Cal/EPA Green Chemistry Initiative website to educate the general public		X			X		
4-39	Develop layperson information on common chemicals in common commercial products					X		
4-40	Engage in culturally appropriate outreach to consumers to help them make informed choices and move toward greener products. Use television commercials (could feature Arnold Schwarzenegger), comic books, radio, and the Internet. Partner with Hollywood.					X		
4-41	Develop guidance on what citizens of California could do to move toward greener, sustainable living.		X			X		
4-42	Work with the U.C. system to develop a green chemistry curriculum for all chemistry and engineering majors.							
4-43	Work with other state agencies, including DGS, to develop information on green purchasing and disseminate this information to other government agencies, including county and city level, as well as private businesses		X			X		

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-44	Require responsible parties to report new factual information regarding adverse health effects of their products or of the individual constituents of their products to a centralized, publicly accessible database. The adverse effects reporting requirements for pesticides as set forth in Section 6 (a) (2) of the Federal Insecticide, Rodenticide, and Fungicide Act, could be used as a starting point.	X		X					
4-45	Responsible parties should be required to identify the individual constituents of their products or, if that information is considered to be confidential business information, to provide the appropriate health information on their products.	X		X		X			
4-46	Strengthen relevant liability law to provide greater incentive for consumer protection from toxics in products		X	X					
4-47	Require a certificate of analysis to ensure purity			X					
4-48	Communicate information on suppliers providing off-specification chemicals			X					
4-49	Require multi-layered assessment of products including: human and environmental impact, alternatives analysis, lifecycle analysis, multimedia impact.			X					
4-50	Require manufacturers to know what is going into products they produce	X		X					
4-51	Expand education in building a sustainable technology base					X			
4-52	Encourage that chemists should have university courses in Green Chemistry emphasizing toxicity and ecotoxicity					X			
4-53	Encourage universities to develop green business and law courses, etc.					X			
4-54	Require REACH-like analysis/reporting/removal of toxics in products.	X		X					
4-55	Expand State testing of products to detect hidden toxics in all products and to produce a level playing field internationally—police your laws.			X					

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-56	Develop a process for rapid removal of products found to be toxic by new studies that is fair to industry—State subsidized transformations		X	X					
4-57	Encourage the use of existing environmental management systems (e.g., ISO 14000) and work with international standards setting organizations (e.g., International Organization for Standardization) to develop green chemistry technical standards			X		X		X	
4-58	Develop fast, effective screening technologies for toxics in products (e.g., XRF)						X		
4-59	Develop "demonstration projects" and workshops to address common green chemistry problems							X	
4-60	Establish green chemistry scholarships and international exchange programs for students and/or scientists (sponsored by California government and/or industry)		X			X			
4-61	Establish a centralized testing laboratory for toxics in products that would accept testing requests from the public			X			X		
4-62	Make a baseline assessment of chemical information that is already available to the State	X		X					
4-63	Develop legislation that would require new chemicals to be tested for toxicity prior to marketing in California. Toxicity testing would also be required for existing chemicals already being used and marketed in California. The set of required toxicity tests would be developed by a group of scientists with input from California government agencies and the public. California government agencies would evaluate the results of the toxicity testing and decide whether the chemical would be marketed (new chemicals) or whether the chemical would have to be removed from the market (existing chemicals). The criteria for deciding on this "up or down" vote on a chemical would be predetermined by the group of scientists who designed the toxicity test battery, along with input from California government agencies and the public.	X		X					

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
Options									
4-64	Expand the budget of OEHHA to speed the evaluation of toxicity test results and determination of whether particular chemicals pose an unacceptable risk	X		X					
4-65	Grant greater regulatory authority and flexibility to CARB to regulate whole consumer product types and establish regulations based on the characteristics of existing safer and greener alternatives (e.g., allow CARB to establish VOC limits for aerosol deodorant and antiperspirant products based on the low or no VOC content of existing roll-on substitutes, effectively forbidding the use of aerosol products when a roll-on alternative is available)			X					
4-66	Develop clear criteria for prioritizing chemicals by level of concern based on a range of factors including chemical production volume and uses, exposure criteria such as persistence and bioaccumulation, and toxicological characteristics. Follow through with safety assessment and appropriate action.	X		X					
4-67	Require the submission of safety data from chemical producers to address both hazard and use knowledge gaps. Start with lists already available to the state (e.g., Proposition 65 list) and set deadlines for data submission. Take action on substances of very high concern, including requiring permission for continued use of such chemicals. Include substitution planning to ensure movement toward safer and greener alternatives.			X					
4-68	Develop criteria for low, medium and high hazard chemicals. Publish lists of chemicals meeting these criteria to encourage movement away from high hazard chemicals and innovation toward low hazard chemicals.			X					
4-69	Create a map of chemical production and use in California. Show how chemicals flow into the state, who produces them and how they are used.	X	X	X				X	
4-70	Develop educational programs for consumers on the consequences of excessive consumption.					X			

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
Options								
4-71	Create a list to be posted on the Internet of "bad actor" chemicals that have been found in products and the associated suppliers/manufacturers					X		
4-72	Increase the number of inspectors in the field for retail products and food			X				
4-73	Create "feeder" lists of chemicals to provide an early indication of potential chemicals of concern; such feeder lists would require a lower threshold of data than a list such as Proposition 65. Publish the lists on the Internet.		X			X		
4-74	Build technical capacity in state agencies such as OEHHA in the use of QSAR (quantitative structure activity relationship) models; review and consider how these methods can be applied in identifying chemicals of concern as well as safer alternatives	X		X				
4-75	Implement the policy that "no data means no market" meaning that chemicals for which safety data are not available are banned from sale or use.			X				
4-76	Review and implement new strategies for toxicity testing, such as "high through-put" assays, consistent with recommendations discussed in the National Academy of Sciences report on Toxicity Testing in the Twenty-first Century: A Vision and a Strategy.			X				
4-77	Review a case study to examine the factors that are useful and appropriate in determining what is "safer." For example, use flame retardants to evaluate how best to identify a safer alternative (e.g., safer chemical, alternative non-chemical technology, change in performance standards etc.). Develop a technical and a layperson document describing the results of the case study, and use this information for developing policy and doing education/outreach.					X	X	
4-78	Seek continuous improvement to achieve the "greenest" or "safest" possible results; link standards to the best, safest available technology/chemical.			X				

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
4-79	Require companies operating in California to submit copies of the data/information that they submit to other jurisdictions, such as Canada pursuant to CEPA and the European Union pursuant to REACH.			X				
4-80	Set up a third party (could be a government agency) that could facilitate the sharing of technologies and data among industries while guaranteeing the confidentiality of that information.			X				
4-81	Negotiate a data sharing agreement between the state (likely through Cal/EPA) and the European Union so that the state can access the data submitted under REACH.			X				
4-82	Conduct a detailed assessment of data requirements under REACH to evaluate the type of information likely to be generated pursuant to that regulation. Target additional data requirements in California to any areas that are identified as not being adequately addressed under REACH.							
4-83	Evaluate whether the agencies that implement REACH and CEPA could be identified as authoritative bodies under Proposition 65 so that the information generated under these programs could be directly used by California to identify chemicals as known to cause cancer or reproductive/developmental toxicity.			X				
4-84	Create a unified database to capture toxicity and exposure data sources from around the world. Make the database public (on the Internet) and accessible to various types of users (chemical products users, consumers etc.) Review the OECD "E-Chem" portal as an example of this.					X		
4-85	Phase out chemicals that harm human health or the environment or whose impacts are unknown.			X				

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-86	Impose fees on companies that either directly use toxics in their products and processes or use inputs or processes that result in toxics in products. Apply these fees over a specified period of time; at the end of that time take action to phase-out or restrict particular chemicals/processes.		X						
4-87	Support activities that increase the capacity of individuals and communities to act in their own interest to reduce exposure to toxic chemicals.					X			
4-88	Data requirements, analyses and decision making processes 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 lifecycle; (b) address the effects of cumulative exposures; (c) provide comprehensive protection, including protecting the most vulnerable populations, endangered species, and water quality; (d) consider environmental justice and worker impacts; and (e) be based on a full cost accounting including costs to communities.	X		X					
4-89	Assess chemicals based on intrinsic hazard, not risk (i.e., integration of toxicity and exposure).								
4-90	Continue to evaluate chemicals based on risk (i.e., integration of toxicity and exposure), not intrinsic hazard, which could amount to an approach comparable to "homeopathy" for chemicals.								
4-91	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 unless reasonably demonstrated otherwise.			X					
4-92	Where safer alternatives exist for hazardous chemicals, use of these alternatives should be mandated.			X					

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-93	Do not wait to take immediate action while developing a sound, long-term chemicals policy. Chemicals currently in use that are known to be unsafe should be restricted or eliminated.			X					
4-94	Develop a robust framework for regulating chemicals to accompany incentives for the development of greener chemicals and technologies; voluntary programs alone are not sufficient.			X	X				
4-95	Review the Consumer Specialty Products Association's Product Care program as a model stewardship program in which consumer and institutional specialty product companies have agreed to go beyond government regulations in emphasizing health.				X	X			
4-96	Carefully research and evaluate the possible unintended consequences of substituting one chemical for another.			X				X	
4-97	Review the ACC Responsible Care program as a model for reducing potential hazards which includes a rigorous EHS&S management system that is certified by third-party auditors.				X	X			
4-98	Consider a wide range of incentives to motivate changes in the behavior of industry and/or consumers: Production tax credits; Rebates to consumers or business; Investment tax credits; R&D tax credits; R&D grants; Equipment grants; Loans or loan guarantees; Public infrastructure development; Government support to deploy environmentally preferred products or technologies; Public/Private partnerships; Employee training and workforce development; CEQA exemption on qualified projects or other regulatory relief and special status once qualified (Fast track permits; Environmental Leaders programs) or other expedited permitting programs; Government preferred purchasing or government sponsored preferences; Government specified product standards; Use of consensus standards; Use of third party standards and certification; Product labeling programs; Web based consumer information		X		X				

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-99	Construct incentives that: Foster innovation in the private sector and academia; Create markets; Facilitate increasing demand for the desired products and solutions; Periodically are reviewed to assess the ongoing need of the incentives change; Are as comprehensive and equitable as possible; Provide transparent and user friendly information to consumers		X			X			
4-100	In developing and implementing the use of life-cycle analysis be sure to: Understand that data reliability and quality will vary greatly and acknowledge this transparently; Clearly articulate the scale (e.g. global, local); Understand that uncertainty is everywhere – an LCA will be refined as more and better quality data is available; Understand that comparisons between life-cycle studies are difficult due to differing up front assumptions; Understand that no single, globally accepted method exists for LCA work; Consider guidelines developed by the Society of Environmental Toxicology and Chemistry (SETAC) for conducting LCAs by both governmental and private agencies	X							
4-101	In developing and implementing “eco-labeling” ensure that: The analysis of the product be credible and based on scientific study; The products meet agreed upon criteria and the eco-labels are not reliant on unsubstantiated claims by the producer; An independent third party audits the eco-label.			X		X			
4-102	Amend TSCA to correct the deficiencies that impede the timely and effective regulation of toxic chemicals.			X					
4-103	Assess opportunities to enhance the level of cooperation and coordination between Cal/EPA and U.S. EPA, and with international agencies.			X					
4-104	Promote private business sector sponsorship of training/education programs at all levels (including elementary, high school and university). Conflict of interest concerns could be avoided by using an independent third party to manage the funding.		X			X			

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
4-105	When considering toxics in products, examine the entire environmental sustainability of the products, including health and environmental effects, transportation, use, disposal, efficacy, and potential benefits of use.			X				
4-106	Focus initial regulatory efforts on the 500 high priority substances identified in Canada's program; require producers of these priority chemicals to provide hazard and exposure information. Chemicals of high concern should be allowed for targeted, low-exposure uses as determined in an open process. Include a means for adding and deleting priority chemicals based on unique California circumstances.			X				
4-107	Use the recently assembled U.S. Inventory Update Rule report to provide initial volume, use, and exposure information. Identify uses and user industries for the high priority chemicals that raise the greatest concern. Expect producers of priority chemicals and manufacturers with high concern uses to provide hazard and exposure information on those chemicals/uses to the program.	X						
4-108	Provide Cal/EPA with the statutory authority to establish restrictions on uses of priority chemicals.			X				
4-109	Facilitate informed substitution in moving to alternatives for restricted uses of priority chemicals. Although "toxics use reduction" is an admirable goal, failure to adequately assess the multimedia and lifecycle implications of forcing a shift to alternatives can result in significant unintended consequences.					X		

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
4-110	<p>California should expect and encourage manufacturers of consumer and commercial products sold in California to employ comprehensive product safety management systems that include:</p> <ul style="list-style-type: none"> - Assessments to ensure the safety of products prior to marketing; - Rigorous control of production from raw material specifications, to formulation management, to process and quality control; - Safe operations that protect the health and environment of employees and the surrounding community; - Compliance with all applicable product safety, labeling and regulatory requirements including transportation, waste management and product disposal; - Constant vigilance in post market surveillance with rapid response to identified concerns; - Innovation that improves product performance, value and environmental quality based on life-cycle considerations; - Transparency in communicating information about safety management systems and products; and, - Ongoing evaluation and improvement of systems performance. 			X				
4-111	<p>Encourage or require manufacturers of products to communicate information about the ingredients in products, either on the package or on the Internet. Partner with the information technology sector (e.g., Internet search firms) to expand access to chemical information, support its local industry and raise awareness of chemical safety information currently available.</p>		X	X				

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
4-112	Develop an extension service through the UC system to promote successful green chemistry methods/processes.					X		X
4-113	Avoid programs that require pre-market approval of chemicals or consumer products (i.e., modeled on programs used for pesticides and drugs) because these would be far too expensive.			X				
4-114	Engage the various segments of the supply chain to develop a workable system that provides consumers with the identification of the ingredients in products.							
4-115	Make the information that has been submitted to U.S. EPA under the HPV Chemical Testing Program publicly available.							
4-116	Promote consumer education and responsibility. For example, how consumers collectively handle chemical products has an enormous effect (for example, nail polish remover can be easily poured down a household sink which would not be allowed in the workplace). Further, consumers should read and follow label directions.					X		
4-117	Make raw materials hazard information available all along the manufacturing/supply chain.							
4-118	Make more information available through approaches such as adopting the ANSI standard for a 16 section MSDS (described by ANSI Standard Z400.1-2004). Other options, such as an MSDS addendum, should also be pursued.							X
4-119	Establish a Green Chemistry Coordination Council to collect and promote the sharing of information and successful programs and to provide assistance to businesses lacking resources.							X

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-120	Catalog, and make easily available, information regarding best practice screening processes, green chemical design, collaborative efforts, international efforts, and examples of product development decisions and substitutions that have resulted in reduced waste produced and energy inputs.	X							
4-121	Cal/EPA should establish clear and consistent protocols for screening and testing of chemicals.								
4-122	Continue and enhance the current California Pollution Prevention program, while the various green chemistry initiatives are being implemented								
4-123	Green chemistry performance indicators and metrics should be developed and adopted with a commitment to transparency and proactive responses to new information. This would provide a method for evaluating the success of green chemistry measures and whether changes are needed.			X					
4-124	Make use of the Education and the Environment Initiative to incorporate green chemistry concepts into education.					X			
4-125	An indemnity or hold harmless provision should be established to enable responsible parties to test and recover products without the threat of punitive regulatory action.			X					
4-126	Reconsider the proposed bedding standard (TB 604), which may result in a large increase in the use of toxic flame retardants, in light of green chemistry principles. Evaluate the public health and environmental impacts of the increased use of toxic flame retardants.			X					
4-127	Ban the sale and use of certain products (e.g., toilet additives) that contain formaldehyde or other similar biocides and require the use of safer substitutes (e.g., bacterial or enzyme based additives).			X					

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
4-128	Develop a technical center of excellence in green chemistry to provide technical assistance, lead development of a green chemistry curriculum for undergraduate and graduate programs and conduct state-of-the-art research on green chemistry innovations.					X	X	X
4-129	Consider the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) developed by the United Nations as a model for programs to ensure the safe use, transport and disposal of chemicals internationally.							
4-130	Banning should be avoided in the absence of safer alternatives, which should be technically feasible, improve health/safety/environmental profile, be of comparable or superior performance, cost-effective, and be capable of persistence. If safer alternatives are not available, resources should be devoted to R&D or incentives should be provided to develop cost-effective alternatives.			X			X	X
4-131	Novel R&D chemicals, used in relatively tiny amounts in highly controlled settings, be excluded from any consideration of a restriction or mandate. Exemptions should also be allowed for select pilot demonstrations and testing.			X				
4-132	Based on the model collaboration between industry, state government, and a third party expert in identifying solvent substitutes under SB 14, take the following approach: 1) consider chemicals of top priority concern, 2) identify the specific applications or industry uses posing the greatest risk from those chemicals, and 3) apply a collaborative process of agency, industry and third-party experts to identify or develop viable alternatives that can maintain efficacy, but reduce risk in those targeted applications.			X	X			

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category							
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance	Recognition, Awards, and Certification
4-133	Risk should be at the forefront of any deliberations on toxic chemicals and possible substitutes. The risk of any chemical, whether regarded as "green" or not, depends on the dose received from various types of exposures, deliberate or accidental. Non-toxic chemicals can be harmful at high doses (recall the Sacramento radio show contestant who died from water intoxication), and many highly toxic chemicals (pharmaceuticals for example) are extremely beneficial at low doses.								
4-134	If a significant risk is identified, consider a wide range of acceptable risk management options, including improving personal protective equipment and enhancing process technology controls to elimination of specific substances in favor of alternatives.			X					
4-135	Prioritize the evaluation and mitigation of toxic hazards in products that are widely used and already have known safer substitutes, such as commercial cleaning products.			X	X				
4-136	California should participate in the effort launched in August during the Security and Prosperity Partnership (SPP) with under the Montebello Agreement involving trilateral cooperation among the governments of Canada, the United States and Mexico to share chemical information and safety assessments.			X	X				
4-137	In implementing the green chemistry initiative, California should: look at the chemical information that is already available; make it clear that the Green Chemistry Initiative process will be governed by a risk-based science approach; support an understanding of both the benefits and the burdens of new regulatory proposals; consider process technology as part of a green chemistry program.			X					

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance Recognition, Awards, and Certification
4-138	California should support work to better understand what is happening at low dose and thereby more reasonable setting of quantitative risk guidelines to which products can be designed. Current assumptions of multi-stage linear extrapolation from high dose toxicological testing may be causing undue concern and mis-direction of public health resources.							
4-139	In pursuing the objective of the Green Chemistry Initiative to expand toxicology information on chemicals, California should encourage the use of alternatives to animal testing and require testing only as a last resort. Cal/EPA and the UC university system could work with other experts to provide assistance on alternative screening methodologies that can be utilized to provide adequate toxicology information for recommendations and decisions about priority chemical uses			X				
4-140	Acknowledge that plastic is "downcyclable" not "recyclable." Plastic needs to be looked at with a cradle-to-cradle perspective, which requires a close look at what is happening overseas. California needs to develop closed-loop safe and just ways of handling our waste. The current model of exporting plastic to countries such as China needs to be stopped if California is serious about its Green Chemistry Initiative.			X				
4-141	Create a database on 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.	X		X				X
4-142	In addressing toxics in products by accident, identify a few key product areas, and work with the affected industry sectors to either promote existing standards (and many such standards already exist) or develop new ones.			X				

Reference Number	(4) Toxics by Accident: Identifying Toxics in Products by Accident Options	Category						
		Data Collection and Use (Information)	Economic Incentives	Statutory and Regulatory Requirements, Enforcement	Voluntary Measures	Education and Outreach	Research and Technology	Technical Assistance
4-143	The chemical identity of an impurity is key in eliminating it. California should fund and improve research in new analytical methods for detection and quantification. Support for key process-related research could yield important new means to reduce the presence of unwanted toxics due to synthesis.				X		X	
4-144	In assessing toxics in products, cumulative risks associated with multiple exposures (through using or being in proximity to multiple products) should be considered.			X				