

***CALIFORNIA  
GREEN CHEMISTRY  
INITIATIVE***

***June 2008 Update***

**Department of Toxic Substances Control  
California Environmental Protection Agency**

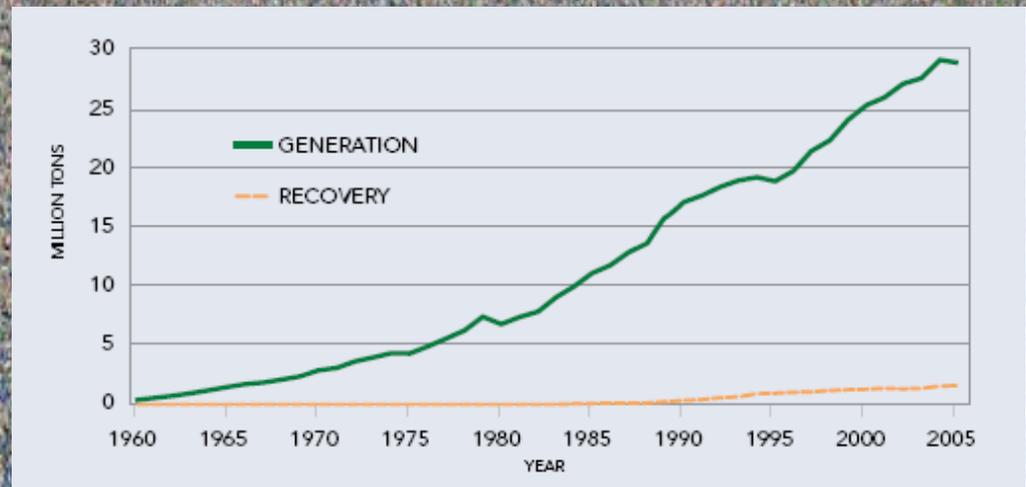
# *Old Approach:* *Cradle to Grave*

- 20<sup>th</sup> Century—Single Medium (air, water, land)
- For the past 40 years, we have focused on end-of-pipe or after product use
  - *Discharges*
  - *Emissions*
  - *Wastes*



## *The Problem:*

**Two million plastic beverage bottles are discarded every five seconds in the U.S.  
Only 3% of plastic is recycled in U.S.**



***The Problem:***

**60,000 plastic bags are used and discarded every 5 seconds in U.S.**

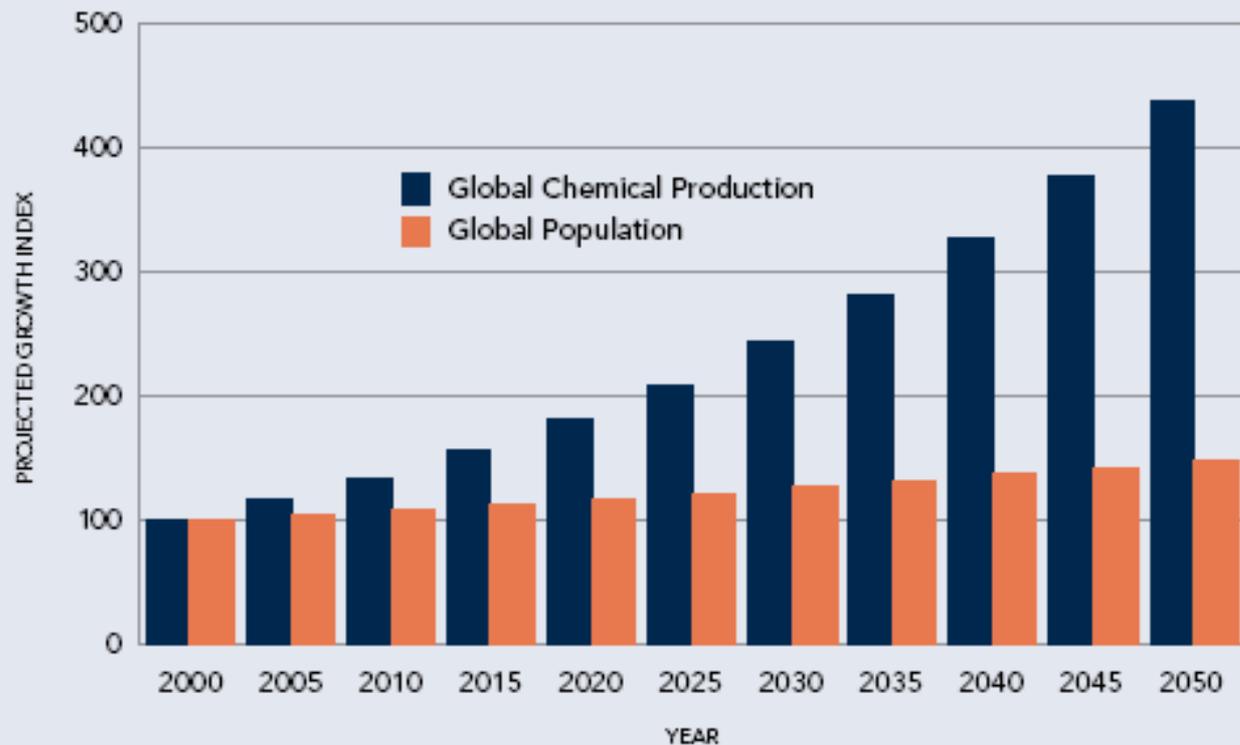


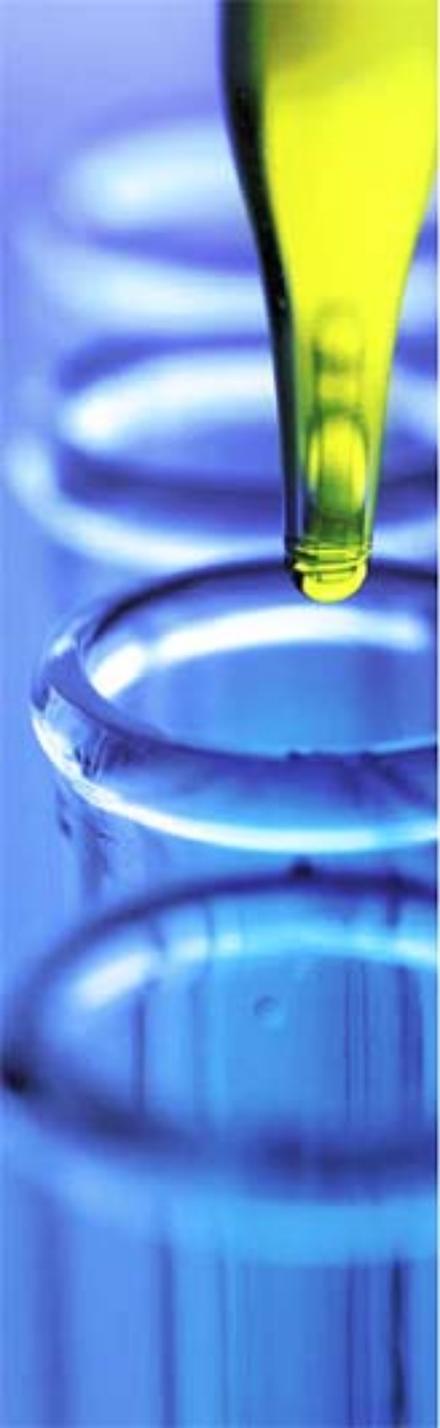
***The Problem:***

**426,000 cell phones retired each day in U.S.**



# *Global Chemical Production Doubling Every 25 Years*





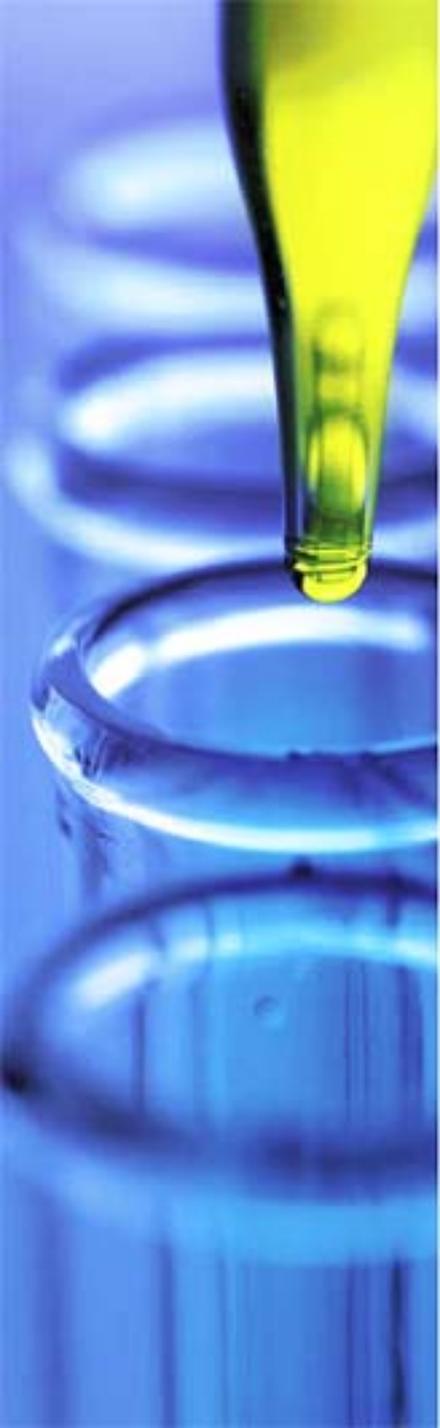
## ***NEW California Laws Banning Sale of Toxic Products***

- ◆ **Ban on lead in jewelry**
- ◆ **Ban on toxics in packaging**
- ◆ **Ban on mercury in certain devices**
- ◆ **RoHS ban on covered electronics**

# *The Problem:* *Toxic Waste*

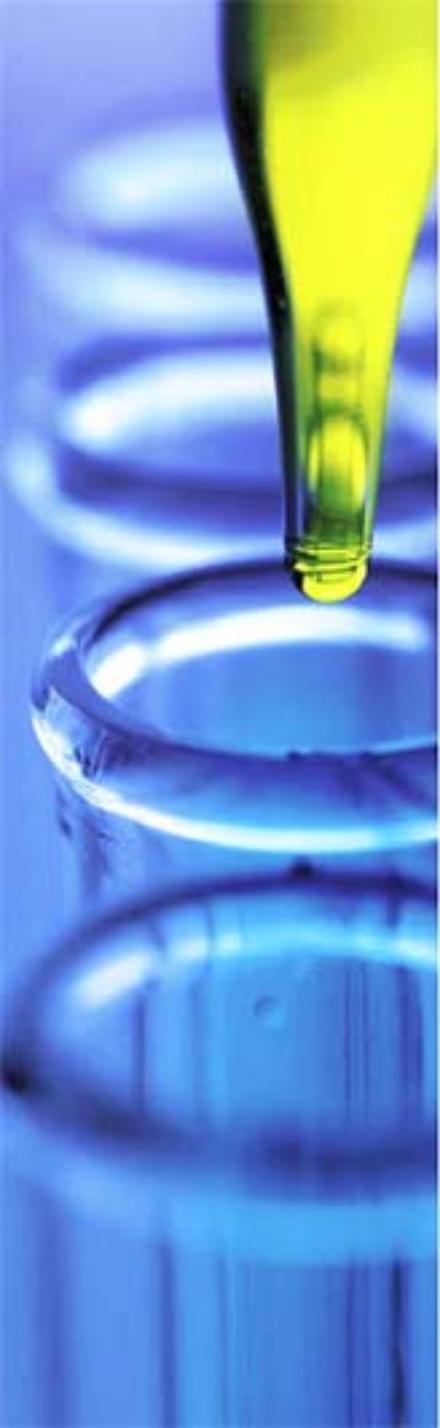
- *The Solution: Green Chemistry*
- The opportunity:  
\$16 trillion global market for  
green materials





## ***What is Green Chemistry?***

- **The consideration of public health and environmental effects of chemicals—during the design of products and processes**
- **A fundamentally new approach to environmental protection**



## ***New Approach: Cradle to Cradle***

- **21<sup>th</sup> Century—Multi-media, life-cycle**
- **Through design and innovation, we can reduce the use of harmful chemicals, generate less waste, and use less energy**

# *State-based Initiatives*

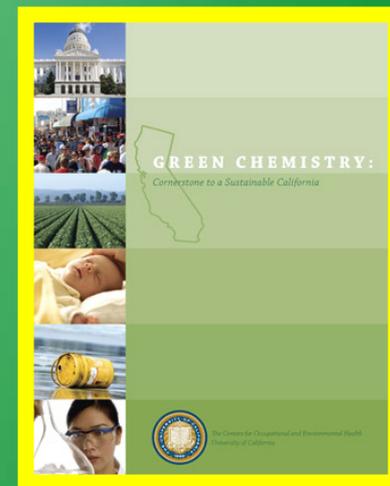
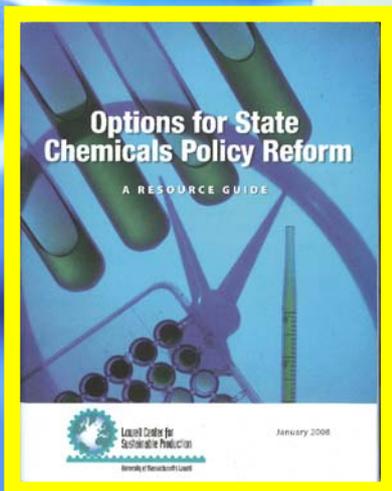
UC Berkeley report identified three failures of current policies:

- Data gap
- Safety gap
- Technology gap

[www.coeh.berkeley.edu/greenchemistry/briefing/default.htm](http://www.coeh.berkeley.edu/greenchemistry/briefing/default.htm)

UMass at Lowell report:

[www.chemicalspolicy.org/publications.shtml](http://www.chemicalspolicy.org/publications.shtml)



# *The Beginning*



**April 2007**

**Secretary Adams announced the Green Chemistry Initiative and encouraged all stakeholders to participate and contribute their ideas.**

# ***The Draft Goal***

***California is a leader in innovation, use, and manufacture of safer, ever more environmentally benign chemicals and products.***



# *Green Chemistry Initiative*



- **Two phases:**
  - *Phase 1 – Listening*
  - *Phase 2 – Analysis*
  
- **New process to:**
  - **Develop public policy**
  - **Increase stakeholder participation, interaction, and ideas**



# Initiative Timeline



Options  
deadline

Recommendation  
deadline

2007

2008

A M J J A S O N D J F M A M J J

Collect ideas  
and comments



Compile options



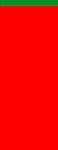
Submit report on  
options



*Evaluate options*



*Submit  
Recommendations*



SAMPLE FORM FOR EVALUATING ALTERNATIVES (SFA)				
Sample: "State Transportation"				
Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Cost	High	Medium	Low	Medium
Efficiency	High	Medium	Low	Medium
Equity	High	Medium	Low	Medium
Feasibility	High	Medium	Low	Medium
Flexibility	High	Medium	Low	Medium
Impact	High	Medium	Low	Medium
Reliability	High	Medium	Low	Medium
Transparency	High	Medium	Low	Medium
Accountability	High	Medium	Low	Medium
Collaboration	High	Medium	Low	Medium
Communication	High	Medium	Low	Medium
Participation	High	Medium	Low	Medium
Information	High	Medium	Low	Medium
Consultation	High	Medium	Low	Medium
Coordination	High	Medium	Low	Medium
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# *PHASE 1: Listening*

## *April through December 2007*

### ✓ Conversation with California

- 57,000 blog hits
- 411+ pages of ideas

Green Chemistry  
Information Exchange

### ✓ Symposia and Meetings

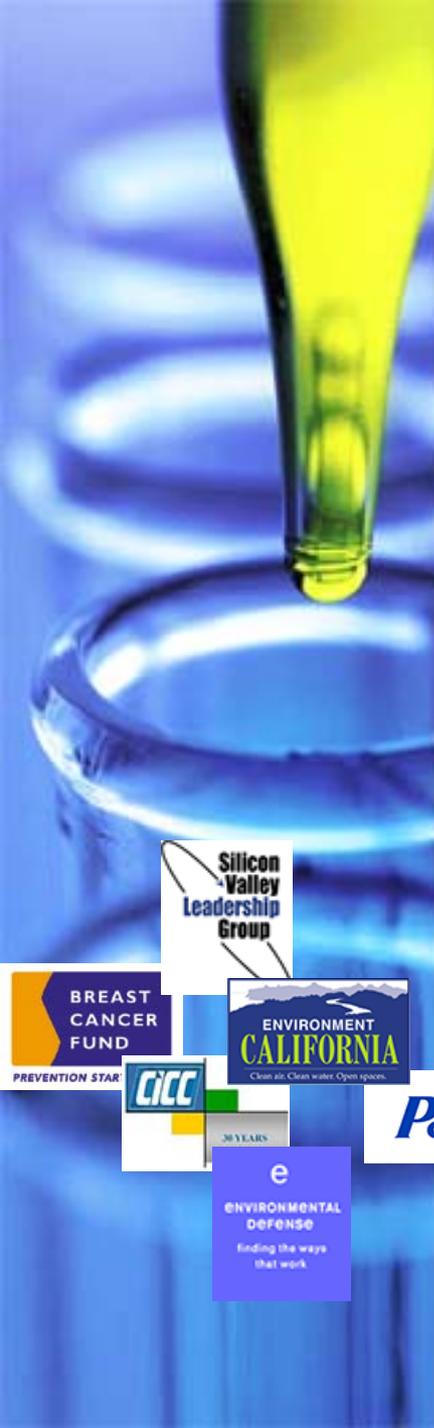
- Green Chemistry I, II, and III
- Nanotechnology I and II
- Biomonitoring
- OEHHA - Green Chemistry
- Stakeholder

### ✓ Phase 1 Options Report

- 818 options
- 8 chapters

### ✓ Key Elements

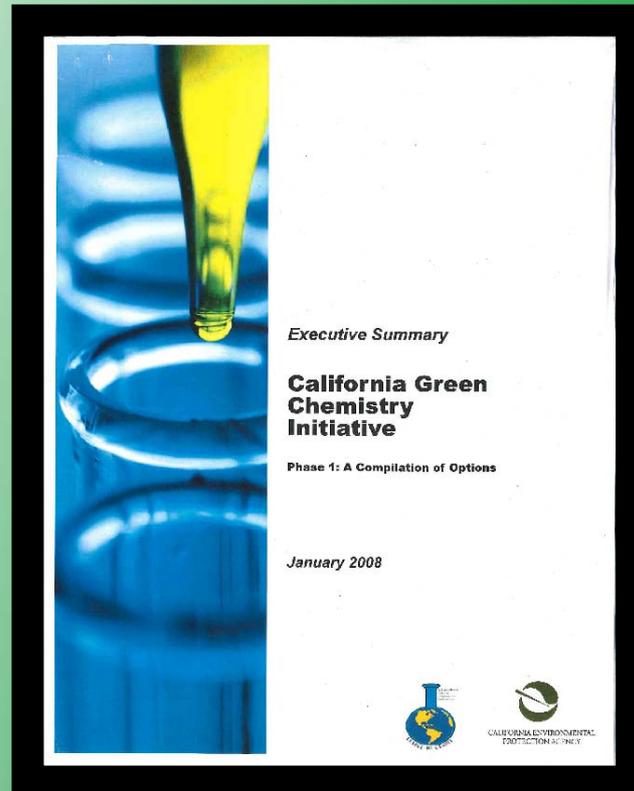
- Align existing state programs



# *Phase One Report*

**Please browse:**

[www.dtsc.ca.gov/PollutionPrevention/  
GreenChemistryInitiative](http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative)



# ***PHASE 2: Analysis***

## ***January through June 2008***

- ◆ **Objective:** evaluate policy alternatives and recommend a framework for California
- ◆ **Process**
  - Public
  - Inclusive
  - Transparent
  - Effective
- ◆ **Participants**
  - Government
  - Academia
  - Environmental groups
  - Community Groups
  - Industry, Business, and Labor groups
  - Public
- ◆ **Deliverable:** ***“Recommendations Report” to the Secretary and Governor—by Summer of 2008***



# ***PHASE 2:***

## ***Three Concurrent Tracks***



- ***Science Advisory Panel***
- ***Key Element Teams***
- ***Draft Straw Conceptual Framework***



# *Science Advisory Panel*



- *38 recommendations*
- *Balanced approach*
- *Demand and supply-side*
- *Address data, safety, and technology gaps*



# *Science Advisory Panel Options*

## Supply side

- Instilling green chemistry into education
- Supporting research and innovation in green chemistry and engineering
- Building green chemistry capacity through development of tools, methodologies and strategies for developing greener chemicals
- Providing incentives to industry and recognition

## Demand side

- Identifying and prioritizing chemicals or chemical uses of concern
- Developing, improving and effectively employing regulations
- Developing incentives to boost demand for green chemistry

# Key Elements

*Key Elements are the building blocks. Recurring options presented in Phase One. Align and build on existing State programs.*

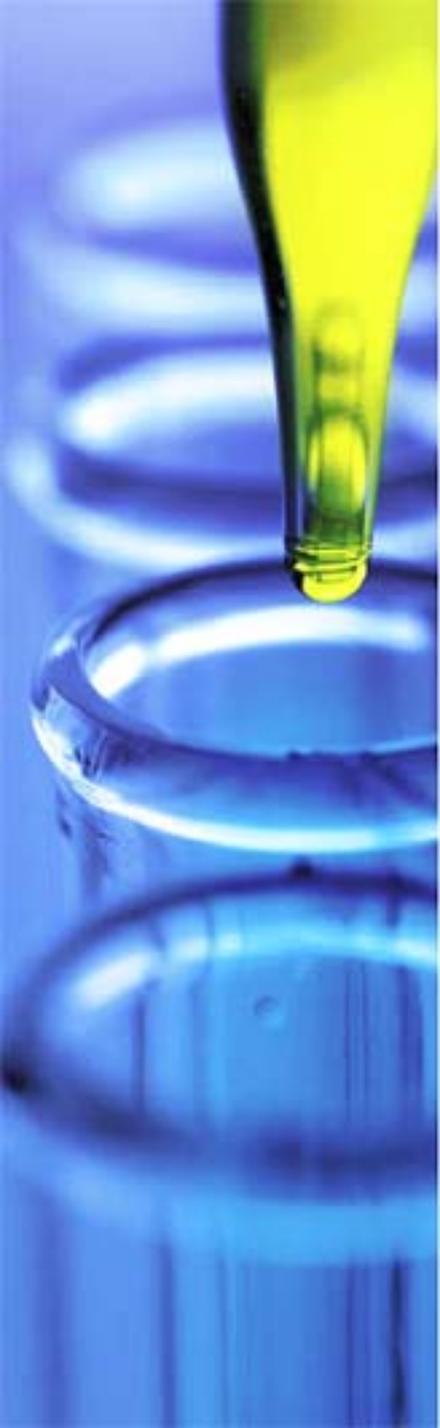


- Include Green Chemistry principles in an Environmental Education Initiative
- Train a new generation of scientists and engineers
- Strengthening consumer protection laws
- **Expand California's pollution prevention program**
- Disseminate information on toxic chemicals and empower consumers to make informed choices.
- Account for chemical toxicity and impacts in state procurement decisions

# ***"Draft Straw Conceptual Framework"***

- *Synthesis of stakeholder, workshop, consultation, and Science Panel input*
- *Policy concepts to address the information, technology, and safety gaps*
- *Answer what is California government's role, how would it be implemented, by whom, when, and who pays?*





***Please  
Join Us !***



## **Blog Space:**

<http://californiagreenchemistry.squarespace.com/welcome/>

## **Resource Link:**

[www.dtsc.ca.gov/Pollution  
Prevention/GreenChemistryInitiative/index.cfm](http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/index.cfm)