













GC³ Green Chemistry & Commerce Council





One University Avenue, University of Massachusetts Lowell, Lowell, MA 01854

Green Chemistry and Commerce Council – A Year in Perspective

Joel A. Tickner, ScD, Yve Torrie, MS Lowell Center for Sustainable Production University of Massachusetts Lowell

GC3 Highlights

- Growth of the Network more companies, and diversity
- Interest in new stakeholders NGOs, government, consultants
- Establishment of participant guidelines for GC3
- > GC3 website and listserv
- Increased recognition of GC3 as a powerful network of leading firms dedicated to advancing safer chemicals and products.

http://www.greenchemistryandcommerce.org/home.php

Headlines



Moving Business Toward Safer Alternatives

About the GC3 How to Participate Green Chemistry & DfE News / Updates / Events About the Lowell Center Links Contact Us

Participants Only



GC³ Green Chemistry & Commerce Council

Chemicals, alone or in combination, are the platform upon which key elements of the global economy have been built, and have been incorporated into millions of products used every day. Many chemicals may have inherently harmful characteristics that can impact ecological and human systems as they are used throughout supply chains.

A growing number of companies are discovering that the approaches of green chemistry and Design for Environment (DfE) allow for a transition to safer alternatives. The Green Chemistry and Commerce Council provides open conversation about the challenges to and opportunities for this successful transition.





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http://www.greenchemistryandcommerce.org/how.participation.php

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Moving Business Toward Safer Alternatives

About the GC3 How to Participate

- Participation
- Participants List

New Participants

Green Chemistry & DfE News / Updates / Events

About the Lowell Center

Links

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Participation

The GC3 welcomes the active participation of companies and other governmental and nongovernmental entities meeting the following guidelines:

- Has read and agrees with the work priorities and goals outlined in the GC3 mission statement, including the 12 Principles of Green Chemistry and Design for Environment approach:
- 2. Is willing to be an active participant in annual meetings and regularly scheduled conference calls and working group meetings;
- 3. Agrees to work cooperatively and productively in a group setting to advance the GC3 mission;
- 4. Accepts that organizations participating in the GC3 will be listed on the GC3 website for public review, unless specifically requested otherwise, and that individuals' contact information will be available for other participants' reference on a password protected online directory.
- 5. Understands that participation in the GC3 is voluntary and nonbinding; products and outcomes of the GC3 do not necessarily reflect the policy or opinion of individual participants or of participating companies.

Industry and trade associations are not permitted to participate in the GC3 as an association; however individual companies may do so at their discretion. Because the GC3 is a discussion forum, consultants and product or service providers are expected to refrain from promoting or selling their products to other participants.

The Lowell Center will send monthly email updates over the "green-innovation" listserv announcing any conference calls and/or meetings scheduled in the coming month, updates on working group activities, and any other relevant information. Additional information will also be posted on this website. Any working group

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GC3 Advisory Committee

- > Melissa Coffin, Lowell Center for Sustainable Production
- > Joel Tickner, Lowell Center for Sustainable Production
- > Yve Torrie, Lowell Center for Sustainable Production
- Roger McFadden, Corporate Express (and Co-Chair DfE and Green Chemistry Working Group)
- Richard Cottrell, Sysco (and Co-Chair DfE and Green Chemistry Working Group)
- Berkeley Cue, Pfizer (retired)
- > John Frazier, Nike (and Co-Chair Tools Working Group)
- > Eric Harrington, True Textiles Inc.
- > Lauren Heine, Lauren Heine LLC (and Co-Chair Drivers Working Group)
- Bob Israel, Johnson Diversey
- Dave Long, Environmental Sustainability Solutions (and Co-Chair Tools Working Group)
- Kathleen Shelton, DuPont
- > Tom Swarr, United Technologies (retired)
- > George Wilkish, Prime Consulting (MA/COM Retired)

GC3 elections for the coming year – discussion Friday.

GC3 Working Groups

Advancing Design for Environment (DfE) and Green Chemistry

Focusing on activities to support the federal Design for Environment program and green chemistry legislative initiatives; addressing conflicts between DfE and eco-labeling systems; and integrating state green chemistry initiatives into their work._

Tools for Chemical Assessment and Safer Design Identifying existing and needed tools, as well as tools in development, and considering creating a database of toxicity information for companies looking to make better chemical choices.

Drivers for Innovation and Marketing Identifying drivers and obstacles to innovation and marketing safer products within industry; promoting a credible third party endorsement system and distinguishing green in the marketplace consumers can easily identify safe (or safer)/green (or greener) products.

Progress in Working Groups

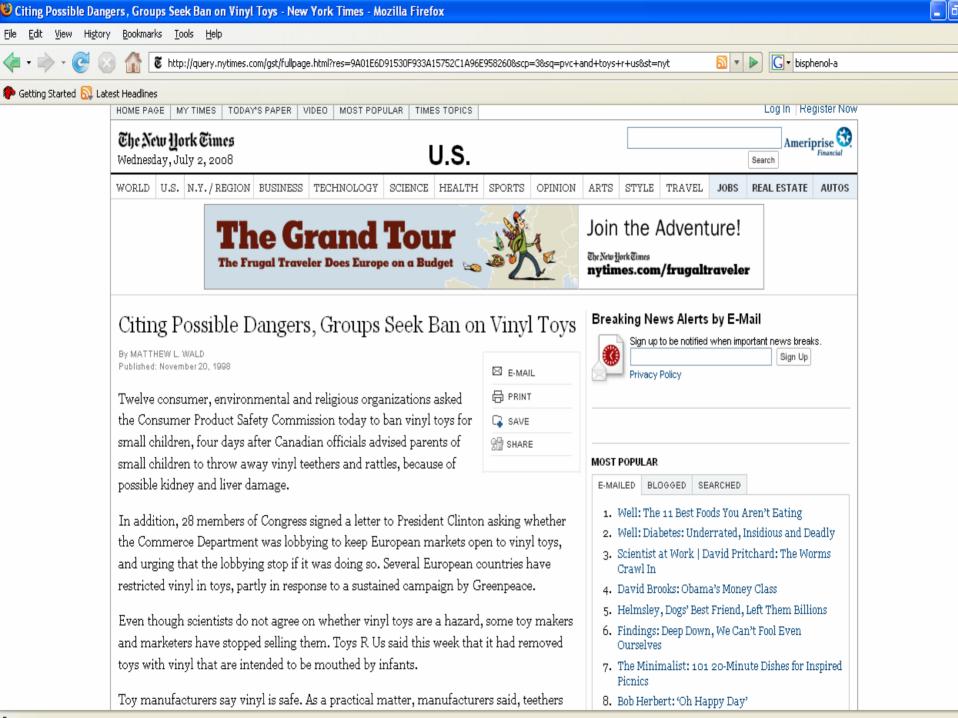
- Tools RSL database, discussions on chemical assessment, prioritization and management schemes
- DfE/Green Chemistry meeting with EPA officials, Meetings with National Pollution Prevention Roundtable

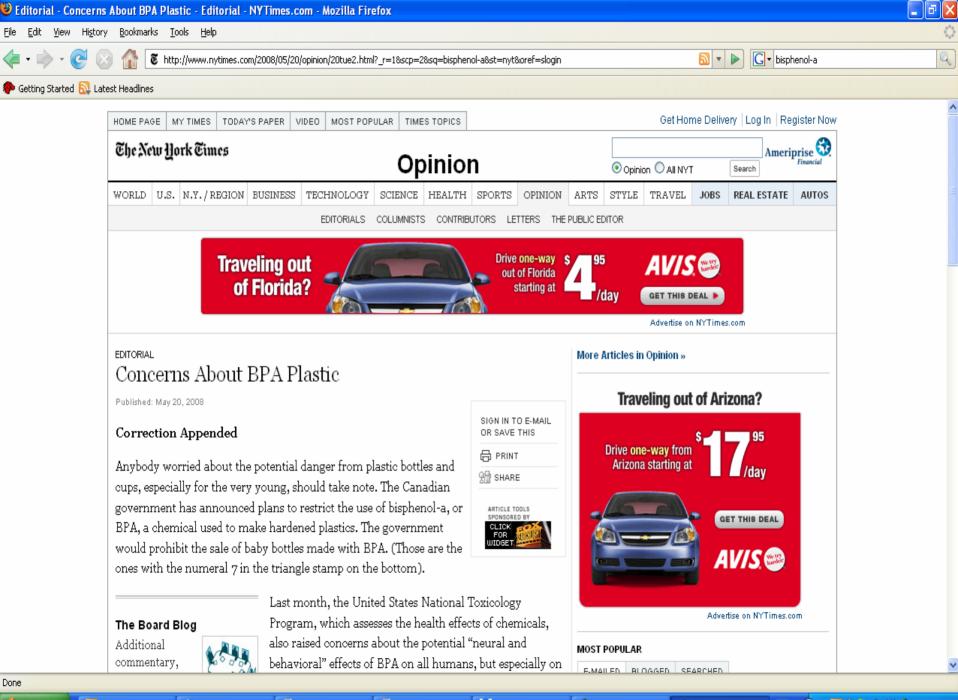
Drivers – Discussions around "green" terminology and preliminary survey of retailer chemicals policies

What's new in the past year

- Increased consumer concern about toxic substances in products (including concerns over production overseas)
- Companies preparing for REACH and its implications for supply chains
- Increasing policy development at state level (and some federal policy discussions) and discussion about collaboration
- Growth of interest in Green Chemistry and Design for Environment – linked to economic development, green jobs, clean tech, etc.
- Companies (including retailers) developing own chemicals policy/RSL schemes in absence of government mandates.







- 7 🛛 🕲 CamelBak BPA-free water bottles - Mozilla Firefox <u>File E</u>dit <u>V</u>iew Hi<u>s</u>tory <u>B</u>ookmarks <u>T</u>ools <u>H</u>elp G - bisphenol-a Q C http://www.camelbak.com/betterbottle/?gclid=CPPAh9OooZQCFQUrHgodASe2tg **-**🌮 Getting Started 🔂 Latest Headlines IT'S A BETTER DAY. BPA Free FOR YOU AND YOUR FAMILY. THE BPA-FREE CAMELBAK® BETTER BOTTLE. ONE LESS THING TO WORRY ABOUT.

CHOOSE TO RE-US



The BPA-free CamelBak Better Bottle is the first clear, re-usable water bottle that's free of the chemical called Bisphenol-A (BPA) traditionally used in hard plastic bottles.

BUY NOW () SPREAD THE WORD WHY BPA-FREE?

Story of Stuff

- > 2.5 million viewers
- Message getting out to a broad public internationally
- http://www.youtube.com/watch?v=Zam9D Z43Cl0&feature=user

PUBLIC Law, Chapter 643, 123rd Maine State Legislature An Act To Protect Children's Health and the Environment from Toxic Chemicals in Toys and Children's Products

PLEASE NOTE: Legislative Information *cannot* perform research, provide legal advice, or interpret Maine law. For legal assistance, please contact a qualified attorney.

An Act To Protect Children's Health and the Environment from Toxic Chemicals in Toys and Children's Products

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 38 MRSA §1609, sub-§10, as enacted by PL 2007, c. 296, §1, is repealed.

Sec. 2. 38 MRSA c. 16-D is enacted to read:

CHAPTER 16-D

TOXIC CHEMICALS IN CHILDREN'S PRODUCTS

<u>§ 1691</u>. <u>Definitions</u>

As used in this chapter, unless the context otherwise indicates, the following terms have the following meanings.

<u>1.</u> <u>Alternative.</u> <u>"Alternative" means a substitute process, product, material, chemical, strategy</u> or combination of these that serves a functionally equivalent purpose to a chemical in a children's product.

2. <u>Chemical.</u> "Chemical" means a substance with a distinct molecular composition or a group of structurally related substances and includes the breakdown products of the substance or substances that form through decomposition, degradation or metabolism.

ENGROSSED SECOND SUBSTITUTE HOUSE BILL 2647

AS AMENDED BY THE SENATE

Passed Legislature - 2008 Regular Session

State of Washington 60th Legislature 2008 Regular Session

By House Appropriations (originally sponsored by Representatives Dickerson, Hudgins, Hunt, Morrell, Pedersen, Williams, Cody, Green, Campbell, VanDeWege, Hasegawa, Roberts, Loomis, Upthegrove, Liias, Hunter, Chase, Smith, McIntire, Barlow, Conway, Priest, Schual-Berke, Simpson, Kenney, Goodman, Sells, Rolfes, Darneille, and Lantz)

READ FIRST TIME 02/12/08.

AN ACT Relating to the children's safe products act; amending RCW 43.70.660; adding a new chapter to Title 70 RCW; creating a new section; and prescribing penalties.

4 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

5 <u>NEW SECTION.</u> Sec. 1. Research shows that many toys and other 6 children's products contain toxic chemicals, such as lead, cadmium, and 7 phthalates that have been shown to cause harm to children's health and 8 the environment. These chemicals have been linked to long-term health



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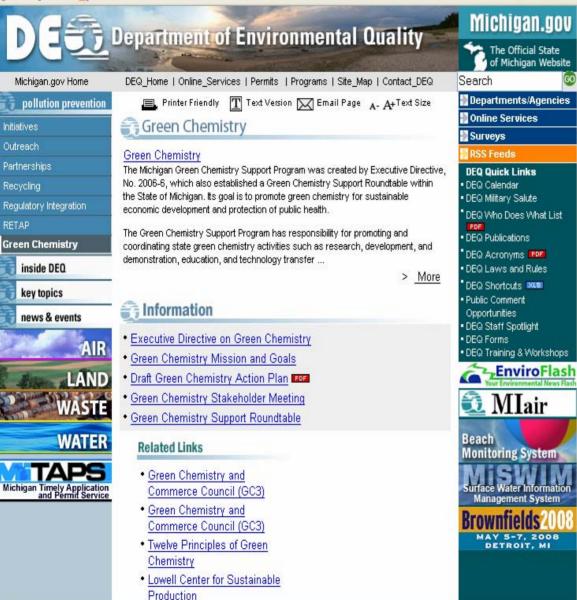


http://www.michigan.gov/deq/0,1607,7-135-3585_49005---,00.html

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Dell's Chemical Use Policy

Dell's vision is to avoid the use of substances in its products that could seriously harm the environment or human health and to ensure that we act responsibly and with caution.

To act responsibly, Dell believes that if reasonable scientific grounds indicate a substance (or group of substances) could pose significant environmental or human health risks, even if the full extent of harm has not yet been definitively established, precautionary measures should be taken to avoid use of the substance(s) in products unless there is convincing evidence that the risks are small and are outweighed by the benefits. Dell considers these to be "substances of concern."

Dell identifies substances of concern with consideration for legal requirements, international treaties and conventions, specific market demands, and by the following criteria:

- Substances with hazardous properties that are a known threat to human health or the environment;
- Substances with hazardous properties that show strong indications of significant risks to human health or the environment;
- Substances with hazardous properties that are known to biopersist and bioaccumulate in humans or the environment.

To enforce the company's precautionary measures, Dell strives to eliminate substances of concern in its products by:

- Maintaining a Banned and Restricted Substance Program,
- · Choosing designs and materials that avoid the use of substances of concern,
- · Prohibiting supplier use of these substances contractually, and
- Substitution of viable alternate substances.

If alternatives are not yet viable, Dell works with its industry partners to promote industry standards and the development of reliable, environmentally sound, and economically scalable technical solutions.

To demonstrate our commitment, Dell is committed to eliminate in our new products all remaining uses of brominated flame retardants (BFRs) and polyvinyl chloride (PVC) by 2009, as acceptable alternatives are identified that will not compromise product performance and will lower product health and environmental impacts. We will review a phase out plan yearly or when required and evaluate available technical, environmental and scalable solutions. Dell is open to discuss these plans and is committed to continuously improve the environmental quality of our products. 🕲 Restricted Substances List (RSL) - Mozilla Firefox

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| ₩A | american apparel & footwear association | | | | | | | |
| ABOUT AAFA | MEDIA ROOM MEMBERSHIP RESOURCES AAFA ON THE ISSUES INDUSTRY TOOLS EVENTS | | | | | | | |
| AAFA/OSHA Alliance | Home . Restricted Substances List (RSL) | | | | | | | |
| AAFA-Supported Coalitions | Restricted Substances List (RSL) | | | | | | | |
| China Business Resources | February 2008 Release 2 | | | | | | | |
| CLOTHESPAC | | | | | | | | |
| Contacting Congress | To download a copy of the RSL Introduction 2007 Final Release 2 , please click <u>HERE</u> To download a copy of the AAFA RSL Final Release 2, please click <u>HERE</u> To Receive Updated Information, including future RSL releases, Please click <u>HERE</u> To download a list of AAFA member companies who test for restricted substances on the RSL, please click <u>HERE</u> | | | | | | | |
| IPR/Brand Protection | | | | | | | | |
| U.S. Gov't Request for Comments | | | | | | | | |
| RFID | | | | | | | | |
| Restricted Substances List (RSL) | Introduction | | | | | | | |
| Intimate Apparel Executive Apparel Certificate Program | This Restricted Substances List (RSL) was created by a special working group of the American Apparel & Footwear Association's (AAFA) Environmental Task Force. The RSL is intended to provide apparel and footwear companies with information related to regulations and laws that restrict or ban certain chemicals and substances in finished home textile, apparel, and footwear products around the world. | | | | | | | |
| | It is our hope that this RSL will serve as a practical tool to help those individuals in textile, apparel and footwear companies, and their suppliers, responsible for environmental compliance throughout the supply chain, to become more aware of various national regulations governing the amount of substances that are permitted in finished home textile, apparel and footwear products. | | | | | | | |
| | Our effort is to create a dynamic and useful instrument. The RSL will be updated on a regular basis and will be supplemented with additional resources to help officials in these companies undertake responsible chemical management practices in the aforementioned finished products. | | | | | | | |

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Green chemistry takes root

By Elizabeth Weise, USA TODAY

A new kind of chemical revolution is brewing, 150 years after the first one transformed modern life with a host of conveniences.



Paul Anastas says thinking 'green' can increase profits.

By H. Darr Beiser, USA TODAY

This 21st-century revolution — called green chemistry — is a reaction to the environmental and economic costs that often are the dark underbelly of such a transformation.

The fundamental idea of green chemistry is that the designer of a chemical is responsible for considering what will happen to the world after the agent is put in place, says John Warner of the University of Massachusetts-Lowell, which hosts the nation's only doctoral program in green chemistry.

In the past "we've created a mess and then come up with bandages to make it less bad," says Paul Anastas, who was formerly with the White House Office of Science & Technology Policy and now heads the Green Chemistry Institute of the American Chemical Society.

But by rethinking chemical design from the ground up, green chemists at universities and in private industry are developing new ways to manufacture products that fuel our economy and lifestyles, without the damages that have become all too evident in recent years.

In fact, green chemistry has gone from blackboard conjecture to a multimillion-dollar business in the past 15 years. "Chemical manufacturers are understanding that part of their costs — and therefore subtractions from their bottom line — are waste and environmental disposal," says Mary Ellen Weber of the Environmental Protection Agency.

The stakes are high indeed. Cleaning up chemical messes is growing ever more costly. This fall, the DuPont company agreed to pay up to \$600 million in fines and settlement costs over environmental damage caused by production of Teflon and Gore-Tex. General Electric will spend years and tens of millions of dollars to clean up PCBs it discharged into the Hudson River. Other companies face costs in the hundreds of millions of dollars to clean up dioxins, perchlorate, mercury and asbestos.

| What companies are doing | | | | | | | | |
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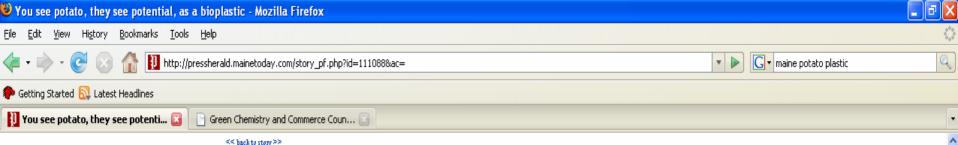
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Portland Press Herald Alaine Sunday Telegram

You see potato, they see potential, as a bioplastic

Researchers say products like 'spudware' could rejuvenate Maine's potato industry.

ALLISON ROSS, Staff Writer

June 6, 2007

Carpeting made of potatoes? Chairs upholstered with potato fabric? Mouthwash bottles made of spuds? It may sound like a postmodern art display, but these all could be economically feasible uses of Maine potatoes, according to a report issued Tuesday by the University of Maine. The report by the Margaret Chase Smith Policy Center concludes that Maine's potato industry could become a producer of bio-based plastics made from potatoes, joining the growing bioplastics industry in the United States. Bio-based plastics are made from starch from plants rather than from crude oil. Other countries, such as the United Kingdom and Japan, already have begun to use potato-based plastics technology to create such items as "spudware," or plastic silverware made from potatoes. "This could open up a whole new value-added use for potatoes," said Amanda Sears, associate director of the Environmental Health Strategy Center, a private nonprofit organization that promotes clean industries. One business that is interested in using potato-based plastics technology is InterfaceFABRIC, a manufacturer of fabrics for commercial interiors with three manufacturing plants in Maine. The company already uses products made of com starch in carpeting and fabrics, but that ingredient is produced in the Midwest and the manufacturer is interested in using resources that are found closer to its plants. Interface funded the study using a \$10,000 seed grant it received in November 2006 from the Maine Institute of Technology to evaluate the practicality of using potatoes in Maine for the production of polylactic acid to create plastic products. Matching donations from other interested parties brought the total for the study to more than \$50,000. The report shows there are enough waste potatoes left over from every harvest to supply the approximately 13 million pounds of potatoes a year that Interface needs to make its products. The report also concludes that if there were potato-based plastic production facilities in Maine, it would be economically viable for farmers to harvest potatoes solely for polylactic acid production. "The potato-based plastics industry won't take away food, but it can utilize the waste," Sears said. Don Flannery, executive director of the Maine Potato Board, said that with little or no startup costs, Maine growers could provide potatoes for bioplastic production. Kate Dickerson, one of the primary authors of the study, said the potato industry is a mature market with "not a whole lot of new things

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Berkley Medical

Best Sanitizers

Betco Corporation

Better Life

The Green Screen for Safer Chemicals – NGO leadership

- Guidance for selecting greener chemicals
- Case Study: FRs used in television casings
 - decaBDE,
 - RDP
 - BPADP

THE GREEN SCREEN FOR SAFER CHEMICALS: **Evaluating Flame Retardants for TV Enclosures** ERSION 1.0

Download at: http://www.cleanproduction.org/Green.Greenscreen.php

Challenges for the future

- Ensuring adequate resourcing and growth of state and federal government programs supporting DfE and green chemistry
- Distinguishing safer products and preferable treatment
- Ensuring consistent tools and support so that companies can move towards safer materials.
- Ensuring good communication and dialog up and down supply chains to move in the right direction. Engaging retailers more effectively in this
- Education of consumers, purchasers, and manufacturers about safer options

The GC3 Moving Forward

- Expanding the network more participants along supply chains from chemical production to retail.
- Expanding resources and active participation to build energy and interest in the GC3.
- Establishment of a GC3 business plan a clear niche for the GC3.
- Establishing annual specific priority projects with clear deliverables, timelines and value added for participants.
- Linking more effectively to other efforts to avoid duplication.
- Focusing on efforts where GC3 can collectively influence practice towards safer chemicals and products: government, industry, consumers.
- Increasing media, industry, and government attention to GC3 and its vision and activities.

Overall Objective

Share information, experience and understandings among a diverse group of companies and other stakeholders on advancing implementation of green chemistry and design for environment (DfE).

Agenda – Thursday morning

- > 8:00-8:30 am Breakfast
- > 8:30-9:00 am Opening Overview and Goals for Roundtable
- 9:00-10:00 am Working Group Presentations: Review and Plans for Friday's Breakout Sessions
 - Tools for Chemical Assessment
 - Advancing Design for Environment and Green Chemistry in Government
 - Drivers for Innovation and Marketing
- > 10:00-10:30 am Break
- > 10:30-12:30 pm The Role of Standards in Promoting Green Chemistry and DfE

Objective: Discuss the role of standards in promoting green chemistry and DfE. Provide participants with an overview of the relevant certification systems and programs Carolyn Cairns
 Christine Chase
 Archie Beaton
 Clive Davies
 Dorothy Atwood
 Clif McLellan

Thursday afternoon

> 12:30-2:00 pm Lunch

> Bob Peoples

2:00-3:30 pm Retailers Chemicals Policies
 Objective: Explore the chemicals policies of
 retailers and the role of the GC3 in
 supporting and influencing their progress.
 Stephen J

Stephen Johnson
 Zachary Freeze
 Colleen Kohlsaat

> 3:30-3:45pm Break

> 3:45-5:00 pm Tour of Nike

> 5:00 pm

Adjourn

Friday morning

> 7:15-8:20 am Breakfast Discussion

Charlie Auer

- > 8:30-9:45 am Strengthening the GC3 and its impact in 2008-2009
- > 9:45-11:00 am Working Group Breakout Sessions

Objective: Advance discussion and work products of GC3 working groups: Tools for Chemical Assessment, Advancing DfE and Green Chemistry in Government, and Drivers for Innovation and Marketing Safer Products.

- > 11:00-11:10 am Break
- > 11:10-11:30 am Working Group Report Session
- > 11:30-1:00 pm Trends in Chemicals Policies at the State and Federal Level

Objective: Discuss the current status and future directions of state and federal level chemicals policies in US and their impacts on green chemistry and DfE. Sarah Doll
 Ken Zarker
 Charlie Auer
 Chris Pearce

Friday afternoon

> 1:00-2:30 pm Lunch

Maureen Gorsen

> 2:30-3:00pm Next Steps and Priorities for the Future

> 3:00-3:30pm Closing Comments and Remarks
> Arlene Blum

> 3:30pm Adjourn



