GC3 INNOVATORS ROUNDTABLE

MAY 24-26, 2016 | BURLINGTON, VT

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GC3: A Year in Review

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May 26, 2016

GREEN CHEMISTRY & COMMERCE COUNCIL

Business Mainstreaming Green Chemistry

The Green Chemistry & Commerce Council (GC3): Business Mainstreaming Green Chemistry

A business-to-business forum that works collaboratively to accelerate the application of green chemistry across industry sectors and supply chains.

Mission is to make green chemistry standard practice in industry, for innovation, public health, and environmental protection.

Started in 2005.

UMASS University of Massachusetts Lowell

GC3

Core question: How do we mainstream green chemistry?

A time when…

Green chemistry becomes standard practice throughout the economy so that all chemistry is, by default, green chemistry

Why do companies join the GC3?

GC3 members say they joined the GC3 to:

- Be involved in partnerships and projects that bring real business value to the company/individual participating
- Be part of the leading organization of peers who believe in mainstreaming green chemistry and to be part of the solution
- Learn about best practices and network with industry leaders up and down value chains and across industry sectors
- Gain positive benefit for company brand image/reputation with customers and stakeholders

Defining Green Chemistry

- Green chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances.

- Green chemistry is a growing field of practice that builds on conventional chemistry and engineering by applying 12 fundamental principles that guide the design of sustainable chemical products and processes. It applies across the life cycle of a chemical product, including its design, manufacture and use.

Applying green chemistry

- Practiced primarily at the chemical development and formulation level.
- But product developers, manufacturers, brands, and retailers all play an important role in driving and adopting green chemistry.

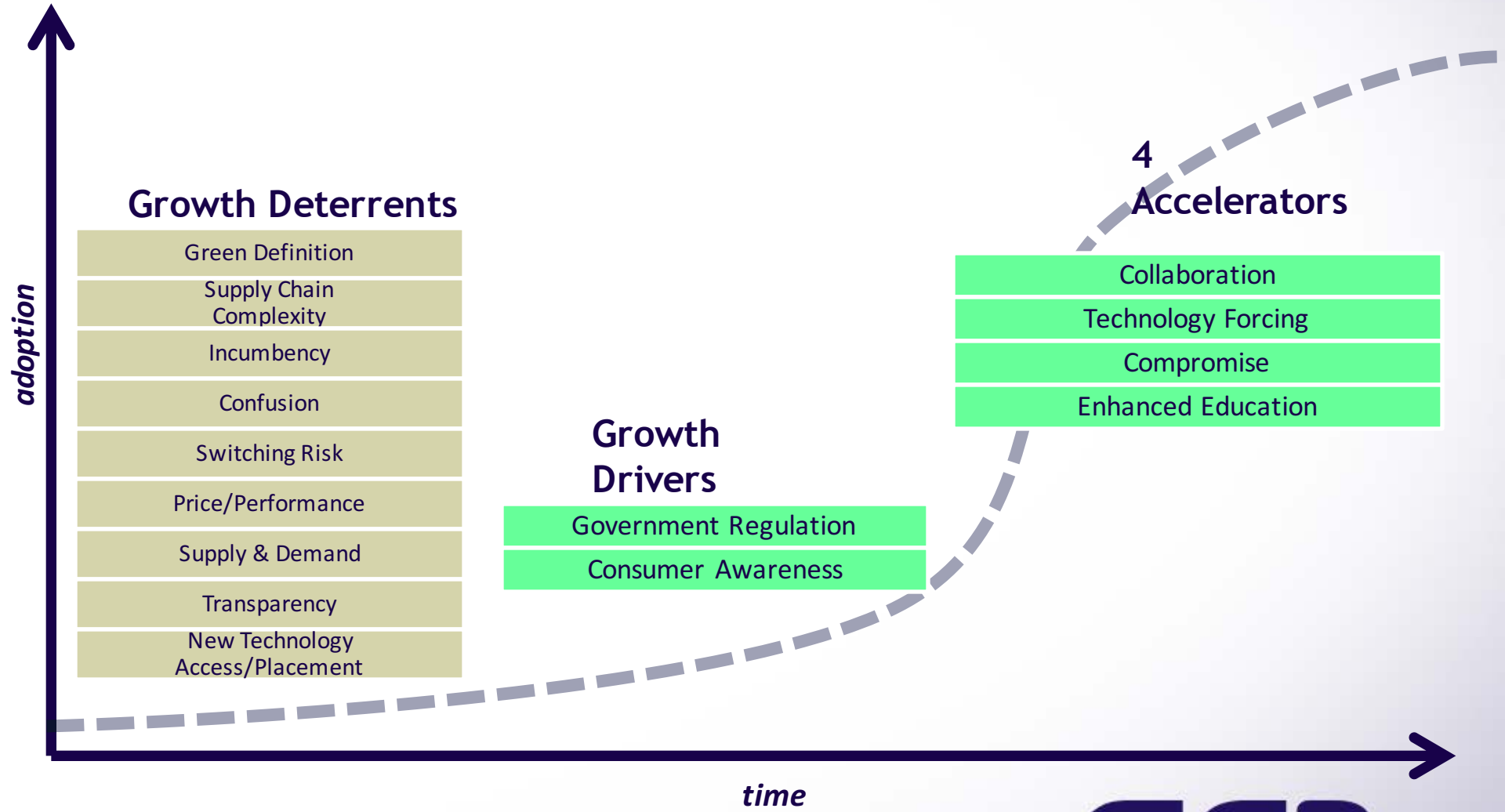
Green chemistry will be mainstream when:
It is embedded in the sustainability goals, innovation, R&D and sourcing strategies of firms through design guidelines, personnel hiring and reward practices, and metrics
It is an integral part of all chemistry education, including workplace education
It is a core element of all government and private sector funding for chemistry and materials research and sustainability initiatives
Products of green chemistry are readily available throughout the value chain at high performance and reasonable cost
An ecosystem of green chemistry entrepreneurs is flourishing


GREEN CHEMISTRY &
COMMERCE COUNCIL

GC3 Strategic Research Initiative Reports

http://greenchemistryandcommerce.org/

The four accelerators should be part of the toolbox to drive change



An Agenda to Mainstream Green Chemistry

Green Chemistry & Commerce Council

November 2015

Priority Strategies

1. *Enhance Market Dynamics* by continuing to build a comprehensive, ongoing understanding of green chemistry enablers, market drivers, and obstacles.
2. *Support Smart Policies* by designing and advocating for innovative state and federal policies that increase the supply of and demand for green chemistry solutions.
3. *Foster Collaboration* by facilitating the flow of information about green chemistry solutions and assembling partnerships to tackle priority challenges.
4. *Inform the Marketplace* by disseminating information about green chemistry business, economic, and health benefits, as well as opportunities and funding.
5. *Track Progress* by improving green chemistry metrics and periodically gathering and reporting data on progress.

Priority Actions

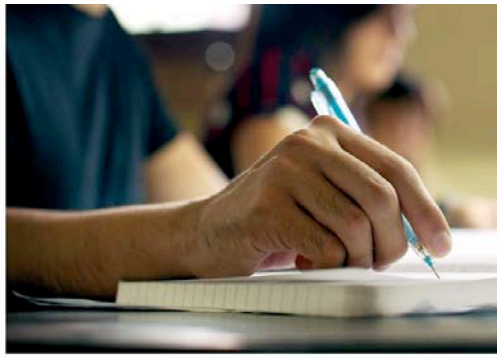
1. Promote “Sustainable Chemistry R&D Act of 2015” or similar
2. Convene a National Summit on Green Chemistry Education
3. Developing a program to track progress, including key metrics
4. Continue to advance collaborative supply chain partnerships

How do we move from concept to implementation?

- Foster supply chain collaboration to drive innovation and scale
- Develop tools to support collaboration, innovation and action
- Support smart policies that build federal leadership and accelerate research and commercialization
- Develop clear case examples of barriers and successes
- Tell more coherent, compelling stories and business case.

GC3 Project Groups

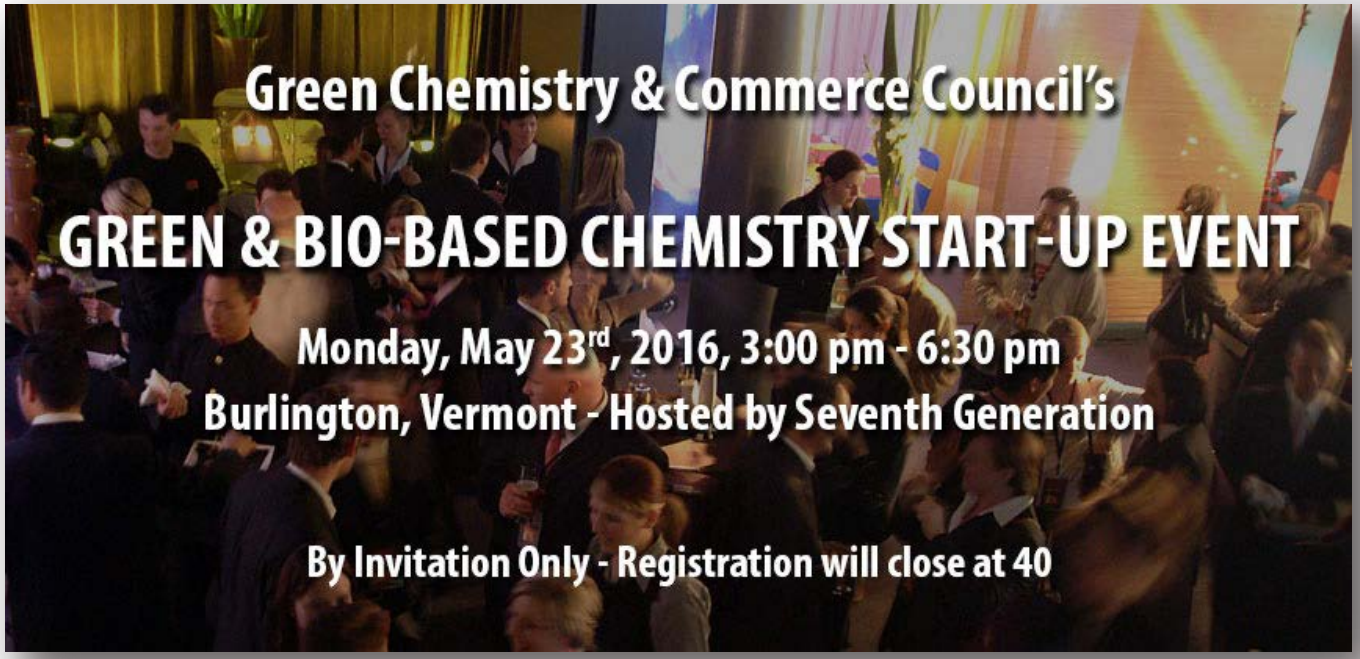
Innovation



Education

Retail

Mainstreaming



Attend to:

- Discover new ingredients/materials for products
- Build relationships with innovative start-ups
- Find new partnership and investment opportunities
- Help accelerate green chemistry start-ups

Preservatives Collaborative Innovation Challenge

Goal: Develop a model for collaborative pre-competitive effort to develop and Commercialize Safer Chemicals

- Goal to expand palette of safe and effective preservatives for personal care, household and institutional products
- Competing companies collaborating to accelerate innovation to benefit all

Need Statement & Development Criteria for New Preservatives for Personal Care & Household Products

Designed to:

Motivate and guide R&D within the chemical supplier, entrepreneurial, and academic communities

Guide collaborative sponsorship of technology searches, R&D, testing, and evaluation of new technologies

http://greenchemistryandcommerce.org/projects/preservatives-project

Green Chemistry Innovation Portal

- Connect and expand green chemistry community online
- Foster discussions & information exchange within the green chemistry community

greenchemistryportal.org

JOINT STATEMENT ON USING GREEN CHEMISTRY AND SAFER ALTERNATIVES TO ADVANCE SUSTAINABLE PRODUCTS

Retailers are on the front lines of consumer concerns about the health and environmental impacts of chemicals in products. In response, retailers want to leverage their ability to help catalyze innovation and new solutions. Since spring 2014, thought leaders from seven major retailers[1,2] and five major chemical manufacturers[3] have been in dialogue about improving product sustainability and finding ways to accelerate the development and scale up of green chemistry solutions as well as increase transparency in the value chain. Green chemistry, focused on the design and application of safer chemical products and processes, is a core element of many firm's sustainability and/or sustainable chemistry programs. Retailers have shared feedback from their customers, their concerns about hazardous chemicals in products, and their priorities for safer products. Chemical manufacturers have shared publicly available information on their research, development, and commercialization processes, their processes for evaluating product safety and sustainability, the types of information they need to make the business case for pursuing green chemistry solutions, and their challenges in bringing these alternatives to market.

GC3 GREEN CHEMISTRY & COMMERCE COUNCIL
Business Mainstreaming Green Chemistry

Developed by the Green Chemistry & Commerce Council (GC3) with participation from the following companies:

Walmart, Staples, Target, BASF, The Home Depot, Chemours, Best Buy, Dow, AkzoNobel, CVS Health, Eastman

http://www.greenchemistryandcommerce.org/projects/retail

GC3 Safer Chemistry Training for Business

GC3 Safer Chemistry Training Webinars

A full list of our educational safer chemistry webinars is shown in the table below. Click on any webinar title (in the first column) to learn more about the webinar and to view an archived version. You can also click on a presenter's name to read a brief bio. Each presenter has been assigned a *chemistry rating* indicating the level of chemistry knowledge recommended for viewing their presentation. The ratings range from 1, indicating no specific chemistry knowledge needed, to 5, indicating an advanced chemistry education is recommended.

Webinar Title and Description	Presenters	Chemistry Rating
Foundations for Green Chemistry and Green Engineering		
Green Chemistry: Benign by Design One of the fathers of green chemistry, Dr. John Warner, provides an introduction to green chemistry, as well as ideas for how to build this concept into education and practice.	**John Warner** Warner Babcock Institute for Green Chemistry	1
Introduction to Green Engineering Green engineering applies principles similar to those of green chemistry to process and product design. In this webinar, experts in green engineering introduce principles, tools, and examples of this practice.	**Julie Zimmerman** Yale University	1
	Matthew Eckelman Northeastern University	1
	Julie Schoenung University of California Davis	1
The Role of Policy in Green Chemistry Research and Adoption This webinar provides an overview of the range of policies that can affect chemical design and product development and adoption, with examples from a major chemical manufacturer.	**Robert Giraud** DuPont Company	1
	Joel Tickner Green Chemistry & Commerce Council	1
Green Chemistry in Business		
The Value of Green Chemistry	**Helen Holder** Hewlett-Packard	

On-line green chemistry professional education

http://greenchemistryandcommerce.org/safer-chemistry-training/webinars/

GC3 Innovators Internship

- Students spend 10-12 weeks at GC3 member company, learning the skills needed by industry in a sustainability position
- Interns attend the GC3 Innovators Roundtable
- This year's internship openings are at:
  - HP
  - 2 at VF
  - Company in Minnesota

Lessons learned

- There is strong interest in value chain and academic to industry collaboration to accelerate green chemistry.
- Innovative efforts and change are not always simple to implement – patience and perseverance
- Need to expand the network – more sectors, levels of the value chain, C Suite and international
- We need to learn, test, and act

Roundtable desired outcomes

- Learn about new business strategies and emerging policy issues that influence the application of green chemistry in industry
- Network and discuss challenges and solutions to mainstreaming green chemistry
- Form new business partnerships
- Design and get involved in strategic, collaborative GC3 projects

Logistics

- Agenda
- Receptions
- Logistics
- Staff/Advisory Committee
- Evaluations

GC3 Advisory Committee

- John Frazier
- Bob Israel, Valspar
- Al Iannuzzi, Johnson & Johnson
- Rich Liroff, Investor Environmental Heath Network
- Roger McFadden, Replenish and Roger McFadden LLC
- Ken Zarker, Washington State Department of Ecology
- Al Innes, Minnesota Department of Pollution Control
- James Ewell, GreenBlue
- Bob Buck, Chemours

Ground Rules

- Respectful, honest dialogue and listening
- Please keep electronic device use to a minimum (or outside)
- Chatham House Rule: Participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed

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12th Annual Innovators Roundtable

May 2017

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Grand Rapids, MI

Thank you!

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