



GC3 | Green Chemistry &
Commerce Council

Green Chemistry and Commerce Council (GC3) Innovators Roundtable: The Role of Tools, Labels, and Retail in Promoting Safer Chemistry

April 25-27, 2007

Lowell, Massachusetts

BACKGROUND:

In November, 2005 the Lowell Center for Sustainable Production at the University of Massachusetts Lowell, along with the Batten Institute at the Darden School of Business at the University of Virginia, sponsored *Green Chemistry Through the Supply Chain: An Innovators Roundtable*. Close to 70 leaders from 50 forward-acting companies, government agencies, academia, and NGO's came together at the roundtable to talk about existing barriers to and opportunities in the application of Green Chemistry design principles and safer chemicals selection by the private sector.

After two and a half days discussing 1) how firms work within their companies, with their supply chains and customers to move away from suspect chemicals and toxicity, and expand the demand for safer chemicals; 2) the potential impacts of European chemicals policies; and 3) tools for choosing safer chemicals drivers of and barriers to innovation, the group decided there was a desire to keep working together and formed the Green Chemistry and Commerce Council (GC3).

The mission of GC3 is to promote and support green chemistry and Design for Environment (DfE) research, practices and purchases nationally among states, federal agencies and other companies by:

- Implementing green chemistry, green engineering, and design for environment throughout supply chains and share strategies to overcome barriers;
- Promoting education and information on safer chemicals and products that can increase demand by a broad range of consumers; and
- Identifying existing and needed information on toxics hazards, risks, exposures and safer alternatives to promote "green chemistry" as defined in the 12 Principles of Green Chemistry.

GC3 members created three workgroups with short-range action plans:

- Advancing DfE and Green Chemistry
- Tools for Chemical Assessment and Safer Design
- Drivers for Innovation and Marketing

In addition, a group formed to help organize a follow up meeting. This meeting entitled *Green Chemistry & Commerce Council Innovators Roundtable: The Role of Tools, Labels, and Retail in Promoting Safer Chemistry* was held in Lowell Massachusetts on April 25-27, 2007.

The GC3 is based at the University of Massachusetts Lowell's Lowell Center for Sustainable Production, which provides staffing and coordination.

GREEN CHEMISTRY & COMMERCE COUNCIL INNOVATORS ROUNDTABLE: THE ROLE OF TOOLS, LABELS, AND RETAIL IN PROMOTING SAFER CHEMISTRY

Over 60 representatives of business, academia, government, and non-governmental organizations from around the country and the world attended the April, 2007 roundtable to engage in lively, thoughtful, forward looking discussion about how to advance green chemistry. The desired outcomes of the meeting were to:

- Share information, experience and understanding among a diverse group of companies and other stakeholders on advancing the implementation of green chemistry and design for environment internally.
- Explore the opportunities for the GC3 to influence markets (retailers and companies up and down supply chains) and public policy towards implementing green chemistry and design for environment.
- Assess the need for tools, including hazard assessment databases, to support firms in implementing design for environment and green chemistry.
- Assess labels and other tools that can distinguish the work of GC3 companies in the marketplace.
- Promote education and information sharing on new policies and initiatives that could influence green chemistry and design for environment, such as the European REACH legislation.

The meeting was a mix of presentations, tours, and small and large group discussion, and ended with recommendations for next steps for GC3 participants to take. Speaker slide presentations, when used, can be found at <http://www.chemicalspolicy.org/news.shtml>

WHAT THE GC3 HAS ACCOMPLISHED SINCE 2005

(Joel Tickner, Project Director, Lowell Center for Sustainable Production; Jan Stensland, GC3 founding member and President of Inside Matters; and George Wilkish, GC3 founding member and Principal Engineer for Quality Assurance at Tyco/Ma-Com)

Joel Tickner opened the Roundtable by giving attendees a background of the first Roundtable in 2005, how the GC3 has developed, and where it is heading. Common themes and lessons identified in 2005 and through the work of the GC3 are:

- Green chemistry and DfE are here to stay
- Innovation around green chemistry and safer alternatives are good for business
- Moving to safer alternatives is a continuous process
- Companies can't be environmentally sustainable if they're not economically sustainable
- Change is happening due to a number of drivers

- Barriers still exist
- Partnerships and collaborations— across firms, between firms and government, and between firms and NGO's— are critical
- There are substantial needs/barriers to safer chemicals, materials and products that are similar across companies and that a group of companies with a similar dedication can fulfill together
- Dialogues among companies, governments, and NGO's can be a powerful motivator for change

Since the GC3 was formed, it has created a mission and beginning strategy for expansion; increased membership; held numerous widely attended conference calls and discussions; formed three active working groups; become a well recognized 'household' name among stakeholders; and broadened support for DfE and green chemistry. More coverage in the press about the environment and toxic hazards, state efforts to promote green chemistry and corporate efforts to support and promote safer products have all helped to create an atmosphere where GC3 efforts are being well received. Companies are moving forward with policies to promote green chemistry and design for environment and a wide range of people— from manufacturers to end users to governments and NGO's— are asking suppliers about green chemistry options. The US Green Building Council, for example, has seen sharp growth in membership and a growing interest in green chemistry.

The GC3 can help influence the following areas: ensuring adequate resources for government programs supporting DfE and green chemistry; distinguishing safer products from less safe ones and supporting preferable treatment for safer products; developing and identifying tools and support so that companies can move towards safer materials; ensuring good communication up and down supply chains to facilitate change; and educating consumers, purchasers, and manufacturers about safer options.

THE POWER OF RETAIL

(John Whalen, Blu Sky Sustainability, who works with Wal-Mart; Martin Wolfe, Director of Product and Environmental Technology, Seventh Generation; and Coleen Kohlsaar, Environmental Affairs Manager, Levi Strauss)

Retailers are a part of the supply chain who, until recently, have not been very involved in sustainability discussions. Recently however, large retailers have started pursuing sustainability issues. They will play an increasingly important role in sustainability discussions if deep changes are going to take place. Some of the questions coming into play in these discussions, are: How can communication with retailers regarding needs and opportunities for safer chemicals be improved? What is the role of retailers in pushing for and defining safer products? What is the role of suppliers in offering help and guidance to retailers? How can the GC3 influence retailers in making informed moves to safer and sustainable products?

Case Study: Wal-Mart

Retail giant Wal-Mart's sustainability efforts were driven by their CEO after Hurricane Katrina brought home the issues of global warming, of the communities they served, and led to questions that changed the direction of the company. Wal-Mart has adopted three sustainability goals:

To be supplied 100% by renewable energy:

- Stores 25% more efficient in 7 years
- Fleet 25% more efficient in 3 years

To create zero waste:

- 25% reduction in solid waste in 3 years

To sell products that sustain resources and the environment:

- 20% supply base aligned in 3 years

Wal-Mart has already beaten its energy and solid waste goals. In one case, they worked with Unilever to concentrate and compact their bottles of *All* brand detergent. Using a formulation of the detergent that had a 3x concentration, *Small and Mighty All* saved 478.1 million gallons of water, 20.7 million gallons of diesel fuel, 2.79 million truck trips, and 128.9 million pounds of plastic resin. In addition, because more units of the detergent can be stocked on the shelves at one time, it cut down on product out-of-stocks by 50%, and saved over \$91 million in labor costs. Wal-Mart is now looking at other opportunities for conservation in raw materials, agriculture, and mining.

Additionally, Wal-Mart has created Sustainable Value Networks, or multi-stakeholder groups consisting of suppliers, NGO's, government, academics, as well as the three parts of the company: Sam's Club, Wal-Mart, and International. One of the sustainable products networks is the Chemicals Intensive Products Network (CIPN). The mission of the CIPN is to provide customers affordable and effective products where all ingredients are preferred for "Mother, Child and the Environment" and are delivered in the most efficient and effective way. This mission covers any products that Wal-Mart sells or uses that are composed primarily of chemical ingredients, and are of primary relevance, utility and/or concern to parents. Their vision of success is a store with no warning labels.

There are three areas of action for the CIPN:

- Preferred Chemicals Principles: favoring products that do not contain chemicals harmful to human health or the environment. When the company suspects that an ingredient in a product or the product itself is capable of causing harm, it will act to find better alternatives.
- Priority Chemicals Plan: drives innovation away from chemicals of concern, with a goal of addressing 20 Priority Chemicals over two years. The first three priority chemicals are Popoxur, Permethrin, and Nonyl Phenol Ethoxylate.
- Scorecard: assesses products against the preferred chemical principles, and rewards innovation.

To date, only one product has been reformulated to meet these guidelines. One challenge is that small players, who tend to have small investments in technology and small customer bases, generally are the ones to bring innovative new technologies to market. Wal-Mart is looking at where they can convene a supply-chain wide design charette with a primary supplier plus upstream suppliers to see where opportunities exist for breakthrough change. One past example where this strategy worked was with organic cotton: by going directly to farmers and understanding their issues the company learned that a significant barrier to the organic cotton market was that farmers did not receive any income while their fields transitioned from

conventional to organic practices. Understanding this, Wal-Mart made a commitment to buy cotton from these farmers, then went to clothing manufacturers and told them they would make the organic cotton available to them and commissioned products to be made. Wal-Mart now carries an organic cotton line that is cheaper than comparable organic lines.

Wal-Mart wants to build relationships with suppliers and be on the leading edge of what suppliers are doing. Suppliers that demonstrate a commitment now to Wal-Mart's environmental priorities have branded product preference and placement on shelves. Wal-Mart will help companies that want to partner with them to promote their products. For example, Wal-Mart was able to double the sale of compact fluorescent bulbs last year, and is expected to do so again this year - they were placed at eye level with information about their environmental benefits.

Case Study: Seventh Generation

As a manufacturer, Seventh Generation designs products that are compatible with the environment, innovative in a way that is disruptive and will capture the attention of the consumer, healthy and safe, transparent and natural, relevant in consumers' lives, effective, and have an impact. It does cost more to make a product that meets these objectives, but consumers will pay premium prices if they get premium performance.

Seventh Generation products and ingredients must be:

- *Vegetable derived*: but may be modified with petrochemical or mineral components to improve performance
- *Non-hazardous to the environment*: should not contribute to known environmental hazards such as global warming, ozone layer depletion, hormone-mimicking, etc.
- *Biodegradable*: as defined by European Union standard OECD 301
- *Phosphate-Free*
- *Chlorine-free*: including hypochlorites, cyanuric chloride, and other substances that release chlorine, hypochlorite, or similar substances into the environment
- *Not acutely toxic*: as defined by the Consumer Product Safety Commission (CPSC) for oral, dermal, and inhalation routes of exposure
- *Not chronically toxic*: ingredients should not be on the EPA or International Agency for Research on Cancer (IARC) lists of known human carcinogens, probable carcinogens, or suspected carcinogens
- *Hypoallergenic*
- *Free of Volatile Organic Compounds*: unless no alternatives are available to achieve a specific performance objective. No petrochemically derived solvents may be used.
- *Not derived from or tested on animals*: (CCIC Principles)
- *Free of genetically modified organisms*: in the US, corn and soy are 60 and 80% GMO respectively.

(The company has not yet found a good tool to determine mutagenicity.)

To convey information about their products to consumers, Seventh Generation partners with retailers. The company performs a lifecycle inventory and produces an environmental savings statement for each of their products. This information is then provided to retailers to help educate consumers through shelf displays and good product presence to drive more sales. In certain stores, Seventh Generation products placed near conventional products outsell the

conventional ones. Seventh Generation's web site also encourages their customers to patron those retailers which carry their products.

You can make a difference.

If every household in the U.S. replaced just one bottle of 25 oz. petroleum based dishwashing liquid with our vegetable based product, we could save **81,000 barrels of oil**, enough to heat and cool 4,600 U.S. homes for a year!

Environmental Savings Statement 2006 Forecast Estimates

Your consumers saved...
27,000 gallons of
Petroleum



Enough to Drive 670,000
miles



Your consumers prevented...
191,000 lbs of
Phosphates



From entering our lakes
& streams

Case Study: Levi Strauss

Levi Strauss no longer owns its manufacturing services, outsourcing manufacturing to overseas facilities. The company therefore fits more in line with the role of a retailer, but still has influence over the production of their products. One tool for this influence is the company's environmental standards concerning effluent and a list of restricted substances; these standards must be met by the contracted manufacturing facilities as they are verified by a third party. Suppliers must sign a statement saying they understand the restricted substance list and will follow it. Levis has the right to return products and end their relationship with the supplier if they don't follow these guidelines.

Most recently, Levis is working to market "eco-jeans" that are certified by a third party to meet sustainable textile standards.

General points of discussion:

- Wal-Mart's scorecards. The textile one is in the pilot stage, and the chemical one has not been developed. There may be an opportunity for GC3 participants to influence its development. The answer to how a high score will benefit a supplier is evolving, and also whether the scorecard, label, or some other mechanism will be used to educate consumers.
- The role of purchasers is shifting from just looking at prices, to understanding more complex systems and ways of thinking. Buyers for Wal-Mart each hold \$4 billion per year in purchasing power and are beginning to be educated about general environmental principles, why environmental protection is important, as well as about better products in their particular category. They need a framework for decision-making that addresses the complexity of choices but is easy to use. Well-educated purchasers will help drive lasting, meaningful change.
- Questions were asked of the panelists regarding the social aspects of their products. For example, Permethrin is widely used to prevent malaria in developing countries, yet that is one of Wal-Mart's target chemicals and could impact the production of that chemical. Seventh Generation is balancing their demand for products from crops with the possibility that that could lead to deforestation, pesticide use, and other problems, and they are starting to look more closely at how their decisions affect agricultural

- issues. Another company said that his company is looking at social implications of their products, which mainly are agricultural. Understanding of the federal Farm Bill, farm issues and the growing demand for biofuels is becoming increasingly important.
- One participant stated that supplies of recycled paper for packaging are dwindling, and Wal-Mart and other retailers could help by reaching out to the community to help support recycling programs. John Whalen responded that Wal-Mart is interested in taking a cradle to cradle approach to materials management and is open to suggestions on how to do that.
 - Some final comments were that there is lots of opportunity in designing sustainable products, and that consumerism and sustainability must be balanced. It doesn't make sense to use renewable energy sources to fuel an inefficient system.

HOW TO STAY AHEAD OF THE REACH CURVE

(Andrew Fasey, Protection Through Knowledge; Cathleen Shelton, DuPont Global Product Stewardship Manager; Mark Newton, Environmental Policy Manager at Dell; and Bob Israel, JohnsonDiversey's Director of Corporate Product Responsibility and Environmental Leadership)

Europe's new chemicals legislation, Registration, Evaluation and Authorisation of Chemicals (REACH) passed in December 2006 and will enter into force on June 1, 2007. What are the implications of REACH for manufacturers and users of chemicals in the US? How have companies turned REACH into an opportunity? How have companies used REACH to communicate with their supply chains and create improved materials management schemes? How can companies not just comply with REACH, but stay on the innovators curve ahead of regulations? How can REACH benefit those companies that do not have European markets? Andrew Fasey, a lead author of REACH, gave an update on REACH and addressed these and other questions, a synopsis of which is below. An updated paper on REACH can be found in Appendix A.

REACH will impact chemical use and supply globally, and withdrawal of some substances is inevitable. Through regulatory requirements that shift based on the potential toxicity of substances (the less toxic the substance the cheaper the REACH process), increased information about substances that will impact manufacturer liability and consumer choice, and changes in relationships, REACH is structured to encourage replacement of dangerous substances with better alternatives, and will help make a shift from 'green' marketing, to 'green' manufacturing. It will have not only direct, but indirect impacts on how products and processes are designed and made, and will lead to innovation around better alternatives.

Also important is that REACH will create a cultural change in how companies throughout the supply chain, exporters, national authorities, and consumers do business and work together: if companies don't have data about the substances they use, they will have no market; legal and technical issues and requirements will lead to greater sharing of information on substances, including to customers, more sharing of information among companies, and changes in how supply chain entities work together; and business decisions will be more linked to technical areas and vice versa. REACH is an ongoing, continuous obligation, and will impact all aspects of business.

Companies can prepare for REACH by mapping their supply chains; identifying vulnerable products that may be impacted by the law; identifying alternative substances, suppliers, and processes; creating an inventory of their substances; and identifying future activities. This will help identify any vulnerabilities and allow lead time to prepare for alternatives. One of the most important things manufacturers and importers should do is *pre-register* their substances. Pre-registration will allow substances listed as 'phase-in' to take advantage of phase-in deadlines, and enable registrants of the same substance to prepare a single Hazard sheet. Pre-registration occurs from June 1 to November 30, 2008. If pre-registration deadlines are missed, stricter guidelines will have to be followed. Downstream users have to ensure that the substances supplied to them are registered; otherwise, they may be withdrawn. Some substances (known as the 'new' substances) are already considered as being registered, so there is no need to pre-register them.

There are many problems that are going to come up with REACH but there are also opportunities: companies will act more holistically; it may spur the removal of Substances of Very High Concern, it provides more information on substances and forces communication up and down the supply chain regarding not just price, but the management and impacts of these substances, and will lead to better ways to manage substances and processes. REACH also provides new business opportunities in product stewardship, provision of alternate substances or processes, data collection, services, and the opportunity for companies to think differently about design. Dow and the World Business Council for Sustainable Development have developed guidelines for more sustainable design:

- Service rather than a product (such as chemical leasing)
- Durability (less disposal and replacement costs)
- Reuse (design for end of life)
- Mass (per service of the product)
- Energy (per service of the product)
- Safety (avoid toxicants and emissions)
- Resource use (renewable, recyclable, biodegradable, etc.)

There is a big range of projected costs and benefits of REACH. A study at Lancaster University showed that there are large benefits from environmental regulation in terms of protecting human health and reducing damage to ecosystems. But these benefits are not weighed in our society as highly as the costs to industry. The firms that will stay ahead of the REACH curve will be those that can perform better while reducing human and environmental impact.

A panel of representatives from companies that have been working with REACH provided their perspectives and information about how they are approaching REACH, and advice for other companies.

Case Study: DuPont

REACH will add confidence and transparency to DuPont's product stewardship efforts, defined as the business process responsible for the management of a product throughout its existing lifecycle, focusing on the health, safety and environmental issues at each phase. They will be registering 400-500 chemicals; they believe there are probably an additional 3,000 chemicals that

suppliers will have to register, or else the supply chain will be jeopardized. They are aware that a company's lack of preparation can impact their company as without compositional information on their products, it will be impossible to prepare for compliance and pre-register. DuPont is asking suppliers now about their intentions regarding REACH compliance. They expect that some things will fall between the cracks, and are trying to develop a strategy to deal with that.

DuPont are considering participating in Substance Information Exchange Forums (SIEFs) created as part of REACH to help with the collection of information and with decision making, but are not sure how SIEFs will work and how they will deal with proprietary information.

REACH's list of substances of high concern will be a driver for substitution: when that list becomes public, the public will start demanding substitutions. DuPont has a good idea now of what will likely be on the list and has started thinking about substitutions. Compliance will be complicated and expensive, and implementation plans voluminous. But companies can make the best of REACH opportunities by developing a set of principles for dealing with its uncertainty.

Case Study: JohnsonDiversey

As a formulator, JohnsonDiversey is caught between customer demand for safer products, and manufacturers who may not have the technology to meet that demand. Chemical assessment will help them understand their complete portfolio, take out the bad, build on the good, and source needed materials. JohnsonDiversey will evaluate substances on behalf of their suppliers, or their suppliers can fill out a detailed form.

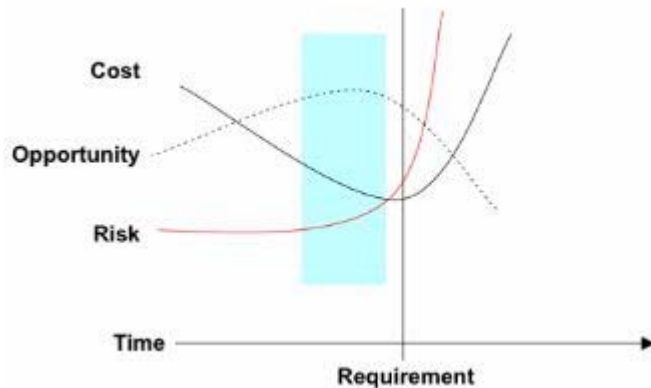
The company is working with their supply chain to stay ahead of REACH and identify shortcomings, risks, and opportunities. Will REACH close the gap between hazard vs. risk assessment? Both have a place in company decisions. Customers usually focus on product hazards, not risk or lifecycle impacts, and customer acceptance is key.

Case Study: Dell

Dell has already identified needs, timelines, and responsibilities for REACH implementation now through 2018, including pre-registration and registration for various classes and quantities of substances. Regarding materials management, Dell suggests taking a precautionary approach to product chemical content, follow global standards, make informed decisions with respect to substituting materials, and develop a good network of stakeholders (including investors, critics, competitors, academia, NGOs) to identify the next challenges. Companies can lead industry standards if they act before regulation requires them to do so.

Managing the supply chain is also critical. Strong supplier specifications and clear procurement requirements including compliance thresholds and potential exemptions; declarations of conformity for each part (with separate part numbers and labeling requirements); declaration of conformity at the system level; and analytical test audits of components are critical. If everything a firm is looking for regarding environmental impacts in a specification can not be met, it may still be possible to negotiate something as a placeholder for later expansions. Company procurement officials may be open to adding more rating criteria if they think it will help detract points from respondents and therefore make evaluation easier.

While California's Prop 65, RoHS, and WEE have helped put infrastructures in place that can be leveraged for REACH, it has still been a big challenge to get interest in REACH. Up-front cultural change is needed in all steps in the lifecycle of the product: from design to disposal. The timing of addressing cost, opportunities and risk associated with environmental improvement is critical: if started too early, infrastructure and markets are not mature enough to respond; if started too late, there may also be problems finding suppliers, and getting lost in the marketplace.



General Points of discussion:

- Printers: printers intentionally release chemicals, which would make them covered by registration under REACH. There is still discussion on whether the cartridge would be considered an article or the ink a preparation.
- Testing: there has not yet been a spike in product testing as a result of REACH.
- Where are we on the cost/opportunity/risk curves? It may be getting late to act.
- Costs for REACH implementation: it is impossible to know, but costs will vary depending on volume and type of substance.
- SVHC list: will be published in 2010?
- Military exemptions by contractors: is at the discretion of member states.
- Products and processes: both covered by REACH. Catalysts, lubricants, etc. that are used in processes are covered by REACH.
- Nanotech: nanotech carbon tubes are substances covered in REACH.

GC3 WORKING GROUPS

Each of the three working groups— Tools for Chemical Assessment and Safer Design, Advancing Design for the Environment and Green Chemistry, and Drivers for Innovation and Marketing Safer Products—gave an overview of what they have achieved since Darden, issues and challenges they are facing, and their goals for the discussion. Roundtable participants later broke into groups to follow up, and reported back to the full group

Tools for Chemical Assessment and Safer Design

Background

The Tools Working Group put together a database, in the form of a spreadsheet, of available resources for chemical assessment. The reasons that this database was created include:

- Chemical users have a hard time finding meaningful information about how to use, safely work with, and dispose of chemicals;
- MSDS', while required by OSHA, often lack information to understand toxicity, long-term hazards, environmental fate, properties, and even composition;
- Information on many chemicals or modeling tools can be difficult to locate, if they even exist.

This group looked at a range of sources of chemical data and modeling programs and organized the information by: environmental/chemical properties, chemical properties/toxicity/safety, chronic toxicity, multiple databases (including subscriber), and modeling programs/assessment tools. The goals of the new database are to provide a single location with multiple resources for chemical properties, toxicity, and environmental data; provide links for each resource rather than recreate a database where information would need to be updated; and provide a place for users to comment about the database, its ease of use, limitations, etc. The group sees the database as eventually being something GC3 participants could use to determine the hazard characteristics of new products or determine if particular chemicals are of higher or lower concern. The database could also be put into a different format, making it more easily searchable by keyword.

Some of the questions the Tools working group has been working to answer are:

- Is this database the best way to help industry obtain health, safety, and environmental information for chemicals?
- Is it a valuable tool? How can it be made more valuable?
- Should the working group move forward with the database, and if so, in what way?
- Is there a way for companies to find information to help them with hazard assessments? Is it possible to search for hazard profiles with current information? Would that information be useful to have?
- How do interested parties identify chemicals of higher or lower concern? Do they use lists or other processes that could be incorporated into this database?
- Could a wiki technology be useful for building the database? This might allow databases that are most interesting and useful to show up at the top, and users could comment on their usefulness.

Roundtable members brought up these additional questions:

- How can the GC3 ensure the quality of the information in this database?
- What questions should the database be designed to answer?
- How can the database identify data gaps in such a way that a chemical lacking hazard data isn't interpreted as being safe for use?
- Is it possible for the database to alert firms to possible synergistic effects of using multiple chemicals?

Break-out group discussion

The working group had a wide ranging discussion about tools needed to promote safer chemistry. The group discussed what information was needed to make the spreadsheet more useful. In particular, given the broad range of databases (over 200 identified), the group decided a good starting point would be to identify common endpoints companies examine when assessing hazard and determining whether a substance is of lower or higher concern. There have been several attempts to do this, such as the Toxics Use Reduction Institute Five Chemical Alternatives Assessment, the DfE program, and McDonough Braungart Design Chemistry (MBDC). One point raised is that formulators/users have different needs and that it is important to look at individual ingredients and at products as a whole to identify potential synergistic and interactive effects. The group discussed a series of endpoints including:

Human Health

Acute Toxicity:	LD 50; LC 50; Irritation; Corrosivity Systemic toxicity?
Chronic Toxicity:	C,M,R Neurotoxicity Endocrine Disruption (though some debate exists as to how it is defined) Developmental Toxicity Sensitization

Environmental

Fate:	Persistence and Bioaccumulation
Toxicity:	Acute/Chronic Aquatic toxicity (algae, daphnia, fish)
Global:	Global Warming Potential Greenhouse gas generation Ozone Depletion (and ground level ozone creation) Eutrophication Acid Deposition

Physical/Chemical

Vapor Pressure
Flammability
Explosivity
Oxidizer
Corrosivity/pH

Based on this list of endpoints, the database can be narrowed down to focus on preferred databases/sources to gather data for them. A further question is then how to determine criteria for higher and lower concern for each of these endpoints. This question was left relatively unanswered as companies will likely differ in how they determine lower or higher concern and at what point exposure information may come into that equation. However, participants did discuss the value of somehow defining what is a safer or less safe chemical. A final question is how companies determine which information to use if a substance does not have data for a particular endpoint and what is the decision flow for using data on surrogate chemicals – ie Structure Activity Relationships. The group recognized the need to develop a decision tree for chemicals where experimental data do not exist.

As an initial GC3 report, the group agreed that it would be useful to create a list of “restricted” substances, that is, substances that participants in the GC3 do not use or avoid if possible

(restricted and of concern substances). Concern was expressed that substances not on the master list could be perceived as being acceptable when they might not be. In addition, chemicals may be on lists due to performance rather than environmental health and safety issues. A straw poll ultimately determined that the list should include strongly discouraged substances, banned substances, and the criteria used to determine them. This consolidated list of restricted substances could be used to promote safer chemistry.

Next steps:

1. By May 31: the Lowell Center will set up a system to synthesize “restricted” lists received from companies (see Step 4).
2. By May 31: Draft decision tree (Mark Rossi and Buzz Cue) for using alternative data sources
3. Early June: conference call to discuss 1 and 2
4. By June 30, companies will send Melissa Coffin their “restricted substances” lists and criteria they use to determine these lists. These lists will have all attribution removed from them.
5. By July 31, Lowell Center will create a list of endpoints with a preliminary list of databases/sources of information.
6. By September 30, GC 3 participants comment on sources.
7. By September 30, Draft of article analyzing RSLs

Advancing Design for Environment (DfE) and Green Chemistry in Government

Background

The key achievement of the DfE working group was the development of a letter in support of the DfE program at EPA. The letter (see Appendix B) was signed by 25 GC3 participants, and sent on February 1, 2007 to Steve Johnson, US EPA Administrator, and copied to the House Interior, Environment and Related Agencies Subcommittee as well as the Senate Interior, Environment Subcommittee. The letter introduced the GC3, requested that EPA fully support financially its Design for the Environment Program, discussed the DfE program’s success in reducing toxics, and requested a meeting with the Administrator.

Interest in green chemistry within companies, by government, and in the mainstream media, has had a noticeable increase in the past year. DfE is emerging as a legitimate player, and its logo is becoming well respected alongside Greenseal and Canada’s Environmental Choice. The federal Office of Management and Budget gave the DfE program the third highest rating among EPA programs. DfE work is the center for thinking on hazard reduction, has many applications, and supports many other programs. The group’s focus has been on spreading their work more effectively, and has come up with a list of next steps. These include providing information to states about DfE and advocating for the DfE approach and recognition of products that go through DfE review; working to promote environmentally preferable product purchasing and the inclusion of DfE reviewed products along with EcoLogo and Green Seal eco-labeled products; better broadcasting the information, protocols, and frameworks in the various projects that are part of DfE; discussing the relationship between DfE and green chemistry and ways to jointly

advance them both in government and in commerce; and/or generating additional outreach materials on various aspects of DfE and its benefits.

The working group has raised the following points and questions through their work over the past year:

- How will the DfE working group's efforts integrate with work of the Tools working group?
- Is it possible to integrate scholarship for green chemistry into K-12 education as well as college curricula?
- How can DfE be marketed in a way that allows end users of substances to understand the program's value?
- How can the GC3 support the field of green chemistry as an investment area for venture capitalists?
- What is the 'elevator speech' on green chemistry?
- As the GC3 grows, it represents companies in many states and opens an opportunity to work with legislators to promote GC3 on both the state and federal levels.
- We should advocate for continuous improvement: more than green chemistry, we're always seeking greener chemistry.
- Consumers aren't interested in the methodology in labeling a product green, they simply want to know that it's safe to use and is environmentally benign.

Break-out group discussion

Because the DfE program is housed at EPA, the concept of design for environment is well defined and easily discussed. Green chemistry, however, is harder to define and is segmented across sectors, companies, and states. Is green chemistry a part of DfE or is it another entity all together? Can this working group support both separately or should they come together? Should the GC3 work individually with states, industry, or the federal government? Is it better to support state green chemistry and DfE efforts (such as California, Massachusetts and Washington) in order to drive federal level programs, or to support federal level programs create one national approach? Is creating a universal standard even possible if states want the ability to tailor a program to their particular wants and needs? This group also discussed taking a possible role in making the DfE program more transparent so that states can mimic it locally. There are diverse research, policy, NGO and industry activities going on the state and federal levels that could benefit by being united into one conversation about green chemistry and DfE. The GC3 should try and make this happen.

Next Steps

1. Follow up with EPA to schedule a meeting discussing companies' support for DfE and green chemistry programs at the federal level.
2. Write a guidance document to help states/industry define and promote DfE and green chemistry. The working group could collect best practices from GC3 members for input into this guidance document.
3. Advance the Green Chemistry Research and Development Act of 2005 currently in the US Senate (more information will be gathered by the Lowell Center about the bill, why it is languishing, and how to support it, and send it to GC3 participants).
4. Lowell Center will look into distributing copies of Anastas and Warner's book on Green Chemistry to GC3 members

5. Find out what other conversations are going on throughout the country, such as a recent meeting at the Harvard Business School in February 2007, and try to merge them into this conversation.

Drivers for Innovation and Marketing Safer Products

Background

The Drivers working group started its work by reviewing themes that came up during the 2005 Roundtable, and interviewing some of the work group members. It found that there are a number of drivers and obstacles to innovation in the development of safer products, and in marketing such products:

Drivers:

- Regulations (REACH, ROHs, LEED)
- Emerging technologies (industrial ecology, green chemistry and engineering)
- Costs of 'Brown' (clean up, hazardous materials management, regulatory compliance)
- CEO and company leadership (ie, Ray Anderson at Interface, including in employee performance reviews success in reaching sustainability goals, competition developing between companies to become 'greener')
- Pressure (consumers, NGO's)
- Increased opportunity (good PR)

Obstacles:

- Chemical Data Gap (lack of information up and down supply chain)
- Lack of "Green" definition (companies can't distinguish themselves from 'greenwashers', perceptions that good for the environment means worse quality)
- Lack of regulation (businesses are asked to voluntarily replace legally acceptable materials with insufficient direction, and in a changing political and regulatory environment)
- Lack of incentives (lack of government support, high cost of reformulating may not pay off, hard to influence the middle of the supply chain)
- Short-term approach of American businesses that conflicts with longer-term payback of sustainability (quarterly returns)
- Other (reduced number of suppliers, inertia to change)

Based on this information, the working group identified a number of potential areas of focus, including developing and promoting a third party labeling system, defining green or coming up with a different term, mainstreaming 'green,' filling the chemical data gap, working with companies to look long-term, and encouraging investment in sustainable companies. The group decided to follow up on two of these areas: developing and/or promoting a credible third party endorsement system, and defining 'green.' The group started on the first task by researching and comparing existing eco-labels, understanding the impact they have had and on what parts of the supply chain, making sure they encourage continuous improvement, and seeing how they define safe, green etc.

Scott Case, from Terrachoice, an environmental marketing firm, and an international expert in labeling, talked about Canada's EcoLogo and issues around environmental labeling. The

EcoLogo is a well-recognized and respected logo among consumers. It recognizes the DfE program and any company with DfE certification can go through a streamlined process to receive the EcoLogo. Labels have made it easier for institutional purchasers to make decisions and to specify environmentally preferable products, and retailers are now beginning to see the value. But people are beginning to ask tough questions and raise concerns about greenwashing. He raised some questions that should be asked of labels and the labeling process:

- What is the standard that lets a product claim itself as green?
- How was that standard developed?
- What is the verification process that ensures that the product meets the standards it claims to meet?
- How transparent is this information?

Break-out group discussion

The Drivers group discussed some of the labels used for ‘green’ marketing and what they covered. Most of the credible labels are either government or quasi-government sponsored. Some of the labels discussed were:

- Cradle to Cradle
- DfE (as information from REACH and HPV program are more available, it will help DfE become a stronger program)
- E-Peat (electronics)
- Blue Angel (most recognized label in world: More than 85% of consumers in Germany recognize it, and 78% can explain what label means. But it doesn’t encourage continuous improvement.)
- Environmental Choice
- Underwriters Lab (UL)
- Energy Star
- Scientific Certification Systems
- Pharos
- Home Depot’s new label
- Iso Type 1 label (multi attribute label, looks at variety of impacts; consensus stakeholder process to develop standard)
- Food labels (also multi-attribute—consumers can choose from attributes that relate to their areas of concern)

The working group touched upon a wide range of questions:

- Do labels make a difference (and to whom)? Do consumers pay attention to labels or are they more useful to government and institutional purchasers?
- How can a label incorporate best/lifecycle/green/socially responsible practices?
- Can one label be useful across a range of markets and products?
- Is it better to have a label, or to increase the credibility of company brands?
- Where does lifecycle fit in to the discussion?
- Would a multi-faceted label, like a nutrition label, be workable, which could include things like recycled content, toxics, energy use, social attributes, etc?
- Should social aspects of a product matter (i.e. deforestation resulting from palm oil demand? Palm oil is renewable, but may not be sustainable)

- Retailers are determining what is ‘green’ right now-how do we push retailers, and others, to have substance behind their labels and marketing? The FTC has guidelines for the use of ‘environmentally friendly’ - are there opportunities to use this in some way?
- What role should retailers play in this picture: showcasing products with credible labels, developing their own certifications, working together to drive the market, educating consumers, etc.?
- How should consumers be educated about the labels and what is behind them, what to care about, and questions to ask about a product?
- How do we work to make sure products, as well as labels, are credible and actually “greener”?
- What criteria do socially responsible investors consider when investing in companies? Should we look at those screens?
- Are there other forms of communication besides labels that should be evaluated?

Next steps:

- Develop desired criteria that would be applicable to all labeling / branding schemes. Criteria should include transparency, clarity, and promotion of continuous improvement, and the label / brand should provide enough information so people can make decisions.
- Learn more about the DfE program to consider how it could be used as a label for consumer products
- Think about how to promote DfE to manufacturers, retailers, and procurement officials; encourage manufacturers to get suppliers to go through DfE
- Research investment interests and screens
- Look at web sites, call centers, etc. as other vehicles for communication
- Get procurers and marketers to communicate
- Meet with retailers to encourage communication – share work of the GC3 and it’s members, and discuss product clarification i.e. the development of criteria applicable to all labeling / branding schemes.

NEXT STEPS FOR THE GC3

The GC3 was formed over a year ago and has remained informal and coordinated by Lowell Center staff. Looking forward, how should the GC3 structure itself in the short term? It is clear that the GC3 and its individual companies involved can play an important role in advancing DfE and Green Chemistry. Participants discussed some of the strengths of the GCs including: its working groups; networking and open discussion; sharing experiences with likeminded companies; new ideas generation; and creating clout for companies supportive of DfE and green chemistry. Participants thought, however, that to maintain its impact the GC3 should not try to deliver on too many commitments as successes and impact is what is going to keep companies involved.

Should the GC3 make its network more formal, or keep it informal?

Most people liked the informality of the GC3 network, felt it helps keep the dialogue open, is appropriate to meet the GC3’s mission, and makes it easier for companies to participate. Participants felt that as soon as the GC3 becomes too formal it may be harder to have the open discussion that has characterized the effort to date. As such, it is better at this point to have

“participants”, rather than “members”. However, it may need to get more formal as it grows or as the organization matures. Everyone agreed that the process of developing and getting signatures for the DfE letter of support worked well with the current structure. The Green Chemistry Institute’s Green Pharmaceuticals group, The World Business Council for Sustainable Development might be organizational models for the GC3. It is also important that this group liaise with other efforts such as those by Green-Blue, the Green Chemistry Institute, and Five Winds.

How big should the GC3 be?

Discussion went in several directions: 1) identify sectors that are underrepresented (pharmaceuticals, building materials, footwear, raw materials suppliers, retailers) and get a diverse group of participants; 2) take the GC3 message to other business groups, create synergies, and keep the GC3 relatively small; 3) don’t limit participation; 4) actively promote the group through articles, press releases, giving handouts and CD ROMS, and 5) grow the group to about 120 people and then limit participation. No final decision was made at the meeting.

As the GC3 grows, how do we make sure those involved with GC3 don’t undermine its mission?

The mission statement states that participants should agree with it. Group norms should be developed, including that participants work positively towards the mission of the GC3. The Lowell Center should develop some operating procedures to help solidify these norms.

How should the GC3 get funding from members?

There may be a possibility for outside funding, but everyone agreed that GC3 participants should fund the organization. Most people said that it would be easier to pay fees for meetings that would cover some of the GC3 funding needs, than it would be to pay organizational dues, membership, or even make a charitable donation to the Lowell Center. Meetings could happen annually and the registration fee should be under \$1,000. There may be other vehicles for fundraising, such as charging for web access, which can be explored as they arise.

What should the structure of the GC3 be?

There was agreement that the GC3’s affiliation with the Lowell Center is important, but that all of the decision-making responsibility should not be shouldered by staff at the Lowell Center. Meeting volunteers agreed to form an Advisory Committee to steer the GC3.

It was suggested that a fourth working group be created to help participants with REACH questions.

WRAP UP

The goals of the GC3 are encompassed by a National Academy of Sciences National Research Council report published in 2005, *Sustainability in the Chemical Industry: Grand Challenges and Research Needs*, that lists 8 grand challenges; 1) green and sustainable chemistry and engineering; 2) life cycle analysis; 3) toxicology; 4) renewable chemical feedstocks; 5) renewable fuels; 6) energy intensity of chemical processing; 7) separation, sequestration, and utilization of carbon dioxide; and 8) sustainability education. Hurricane Katrina had a

transformative effect on Wal-Mart - will REACH, or something else, be our Katrina? Changes may be more gradual, and we need to keep paying attention to signals.

The best way to make a path is to just start walking. The GC3 has started a discussion among a group of people dedicated to an idea that is forming, that is creating solidarity and linking people together: let's see where it goes. We have the right people, the right issues, and the right timing to strategically engage, and there is currently a new sense of opportunity in the US.

Appendix A:



Lowell Center for Sustainable Production

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

REACH is Here

Andrew Fasey, Protection Through Knowledge

June 1, 2007

After many years of publicity, negotiations, and preparations REACH is now a reality. REACH entered into force on 1 June 2007. Some duties may not apply for several years but others come into effect immediately. Do you know which duties will affect you and when? Whilst the REACH Regulation is agreed there are still many uncertainties to deal with; for example, how REACH applies to you, your suppliers and customers, the interpretation of the legal text, and guidance not being completed yet. This is a quick summary of the key elements that may affect you now or in the near future and key issues of concern.

Why REACH is important to you

- REACH will impact chemical use and supply in the EU and wider
- Withdrawal of substances from the market is inevitable; is this going to happen in your supply chain?
- Greater information generated by REACH will affect your liability
- Imports into the EU; importers and customers will require help (scientific, technical etc)
- Any legislation of the size and scope of REACH will provide opportunities as well as threats. There will be benefits as well as costs. Don't get into a 'bunker mentality'; take advantage of the opportunities and benefits.

Key Messages

- REACH entered into force on 1 June 2007: it will affect your business either directly or indirectly. If a substance (on its own, in a preparation, or in an article) you use or import or manufacture requires registration failure to do so will mean that it should be withdrawn from the market and/or manufacture stopped.
- Registration of 'phase-in' substances (existing substances listed on EINECS, the European Inventory of Existing Chemical Substances) is staggered over 11 years (2007-

2018), depending on quantities manufactured or imported per year per manufacturer or importer: make sure you understand whether this applies to your business, and what information you will need to provide accordingly for registration.

- Registration and other REACH costs will be finalised in an EU Regulation by 1 June 2008. It is likely that there will be reduced fees for joint registrations, and SMEs.
- The pre-registration period, 1 June – 30 November 2008, is for manufacturers and importers wishing to take advantage of the later deadlines for ‘phase-in’ (existing) substances to make a pre-registration to the new European Chemicals Agency in Helsinki – this is not necessarily a straightforward process, start gathering the information now.
- If you fail to pre-register your substance(s) within the period above, you will not be able to register them using the staggered ‘phase-in’ periods, but will instead have to register them straightaway to be able to continue manufacturing them or placing them on the market.
- There are new requirements for manufacturers/suppliers to provide information down the supply chain (Safety Data Sheets), from 1 June 2007: make sure you are familiar with these to be able to comply.

Timing

REACH entered into force on 1 June 2007 as the start of a process that is planned to last at least 11 years and possibly appreciably more. The principle milestones concerning the various registration deadlines over the next 11 years are summarised below:

- **1 June 2007:** REACH entry into force;
- **1 June 2008 – 30 November 2008:** Period for pre-registration by manufacturers and importers (registrants) of the phase-in substances they intend to register according to the various phase-in deadlines. In general terms phase-in substances are those listed on EINECS (the European Inventory for Existing Chemical Substances);
- **30 November 2010:** Registration deadline for registrants supplying a pre-registered phase-in substance above 1,000 tonnes per year, or a CMR cat.1 or 2 substance above 1 tonne per year, or an R50-53 substance (PBT/vPvB) above 100 tonnes per year;
- **31 May 2013:** Registration deadline for registrants supplying a pre-registered phase-in substance above 100 tonnes per year;
- **31 May 2018:** Registration deadline for registrants supplying a pre-registered phase-in substance above 1 tonne per year.

Actions Now

Whilst the precise actions to be taken now will depend on each individual company and their substances and supply chains they may include:

- Identifying substances for pre-registration by you (in general terms those you manufacture or import)
- Identifying substances you want to ensure that your supplier will pre-register (in general terms those you depend on for your business)
- Researching alternative substances, suppliers and/or processes for those substances that may be vulnerable to withdrawal from your supply chain
- Putting in places plans to introduce new, and update existing, safety data sheets (SDS)
- Developing an inventory of your substances and their supply chains
- Identifying the implications of REACH for your business
- Identifying information that you consider to be confidential (a next step will be to see whether this information can be protected under REACH)
- Following developments on issues where uncertainty remains (e.g. requirements for substances in articles)
- Improving communication up and down the supply chain (i.e. talk to your suppliers and customers about how to address the consequences of REACH as effectively and efficiently as possible)

Pre-registration

Prior to the Registration process starting for phase-in substances, there is a pre-registration period from 1 June – 30 November 2008, during which ‘pre-registrations’ of substances that companies (manufacturers or importers) intend to register are submitted to the European Chemicals Agency (ECHA). Based on this information all potential registrants, and potentially downstream users, will form a Substance Information Exchange Forum (SIEF), to share data and associated costs in producing a single hazard data-set for the substance.

Why is Pre-registration so Important?

- **First duty for most under REACH**
- **Vital for all**
- **Applies to ‘phase-in’ (existing/EINECS) substances**
- **EU Importers: have to pre-register ingredients in preparations**
- **EU Manufacturers: have to pre-register the substances they manufacture**
- **Applies to substances in articles ‘intended to be released’**
- **Applies to intermediates subject to registration**
- **Downstream Users: have to ensure the substances supplied to you and on which your business depends are registered up the supply chain to reduce any threat of substance withdrawal**
- **Consequences of failure to pre-register**
 - Possible withdrawal of the substance from the market
 - Early registration as a non-phase-in substance which may be impossible for many
 - Uncertainty
 - N.B. Downstream users are able to publish through the Agency their need for a substance if it is not on the list of pre-registered substances

Summary

- **Timing? 1 June 2008 – 30 Nov 2008**
- **Why?**
 - To allow phase-in substances to take advantage of the phase-in deadlines
 - To enable all registrants of the same substance to prepare a single hazard data-set
- **What information needs to be provided?**
 - Substance name
 - Potential registrant details (or 3rd party representative)
 - Deadline for registration
 - Similar substances (for read-across).
- **How?**
 - Agency publishes list of all those pre-registering substances on its website
- **Then?**
 - Pre-SIEF (to identify whether the pre-registrations are really of the same substance or whether one SIEF in practice has to be broken down into several smaller ones)
 - Start of the SIEF (Substance Info Exchange Forum); can also include DUs and other non-registrants. The SIEF has a duty under REACH to share data and prepare a single hazard data-set.
 - Normally a consortium will be formed which is the legal construct for managing the data sharing process i.e. there will be contracts between the participants governing how it will work.
 - A hazard data-set will be agreed per substance (opting out is possible in some cases).
 - Each registrant makes their own registration at the appropriate deadline.

	Manufacturer	Importer	Downstream User
Pre-registration	<ul style="list-style-type: none"> • Any substances that you manufacture that need to be registered? • What volumes per year of substances do you need to register? • Any isolated on-site or transported intermediates that need to be registered? • Check with your downstream users about the uses of the substance that they would like you 	<ul style="list-style-type: none"> • Assess whether the volumes of substances imported on their own or in preparations or in articles (intended to be released) meet registration thresholds. 	<ul style="list-style-type: none"> • Check that your supplier(s) is/are going to register substances that you use – especially any that are essential to your continued business. • Ask your supplier(s) to treat certain uses as ‘identified uses’. Some uses you will want to keep confidential in which case you may have to carry out your own chemical safety assessment for that use • If any substance supplied may not be registered (i.e. withdrawn from the market in due course),

	to treat as 'identified uses' and subject to an assessment to identify how they can be used safely (chemical safety assessment).		<p>identify alternative substances, processes or suppliers. An option may be to manufacture or import the substance yourself.</p> <ul style="list-style-type: none"> Identify the relative importance of substances, and plan for feasible alternatives, possible future restrictions, or their possible removal from the market.
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N.B. A pre-registration of a substance will mean that it will normally be registered later and placed on the market. However this will not be the case if:

- the pre-registration has been made by another DU who only wants to make sure that he will be allowed to import or manufacture the substance until the end of the transition period (3, 6, 11 years) in case no other suitable supplier is available
- a manufacturer or importer only pre-registered a substance in order to use up the registration period for phase-in substances and to market the substance until the end of this period without having the intention of marketing the substance in the longer term.

Safety Data Sheet (SDS)

One of the first parts of REACH to have practical effect will be the requirements for SDS. REACH introduces some changes which will enter into force on 1 June 2007. The immediate changes can be summarised as:

- SDS now have to be provided for PBT (persistent, bioaccumulative, and toxic) and vPvB (very persistent, very bioaccumulative) substances and preparations containing these substances in concentrations $\geq 0.1\%$
- exposure scenarios, if prepared up the supply chain for a substance, should be annexed to the SDS
- the format for SDS is slightly changed (sections 2 and 3 change order)

Making any changes required by 1 June 2007 is unrealistic and this is recognised by most if not all EU member state competent authorities. It is the author's view that the enforcement authorities are unlikely to take any enforcement action over any purely administrative change (i.e. change of order of headings 2 and 3 - after all how many prosecutions do you see over SDS which are poor and probably illegal?). If you have a reasonable plan to update the SDS as and when appropriate (e.g. when other changes need to be made as a result of REACH, by a rolling plan of action) there should not be a problem. The timescale should be kept reasonable e.g. brought fully up to date within 2 or 3 years. You should however have a system in place to check whether the new SDS requirements (e.g. immediately for PBTs, vPvBs, later for 'substances of

very high concern' (SVHCs), as CSAs come on stream) apply and if they do to prepare and supply the SDS accordingly.

Substance in Articles (SIA): Latest News

REACH requires substances intended to be released from articles to be registered the same as other substances on their own or in preparations. However, there is considerable debate between the authorities and stakeholders on exactly what these requirements mean, in particular, how an article is defined. This debate is important as there are some widely used 'products' which may fall into the definition of article or be treated as preparations; for example, are adhesive tapes articles or preparations which are 'contained' on tape? Another example is whether a printer ink cartridge including ink is an article or whether the cartridge is an article and the ink should be treated as a preparation. The latter interpretation would certainly add clarity. A further issue is whether an article is the object as imported or the parts of which it is made; for example is a pair of jeans an article or should it be broken down into the material, the zip, and buttons. The REACH text does not make this clear and many influential parties are arguing that an article should be homogeneous. This latter interpretation would have major ramifications for industry.

Guidance (RIP 3.8: Substances in Articles) is being developed which should:

- Provide the means for industry to identify which substances are (intentionally) released from an article and in what amount they are present in those articles
- Identify when action is needed by producers and importers of articles
- Set-out what action is subsequently needed: identify the use of a substance in production of an article up the supply chain, register, notify or no action

It is expected that the guidance will be finalised in June 2007.

European Commission Support – 'Navigator'

The European Commission is producing vast amounts of guidance to help industry cope with REACH. However this is likely to run into many thousands of pages and even then will often only be understandable to experts. This will be impossible for most companies to cope with. In recognition of this the Commission is developing a tool called 'Navigator'. This will ask a series of questions and according to the answers given direct you to the relevant parts of the guidance. This tool is not ready yet but should be helpful.

Guidance

The European Commission is funding a number of projects to develop guidance (known as RIPs – REACH Implementation Projects). This process started in 2004 and has involved stakeholders throughout. The legislative text leaves margin for interpretation on how to meet the requirements of REACH in several key areas. The RIP projects provide an important way for companies to understand what is expected of them to ensure compliance; however it must be noted that the RIPs are only guidance and there may be other ways to comply.

Summary of Progress on RIPs

The following projects have been finished:

- RIP 3.2-1A: Technical Guidance Document (TGD) on preparing the CSR (Scoping) & RIP 3.2-1B: TGD on preparing the CSR (Draft CSA)
- RIP 3.3-1: TGD on information requirements (Scoping)
- RIP 3.5-1: TGD on Downstream User requirements, preliminary study
- RIP 3.9-1: Preliminary study on Socio-Economic Analysis
- RIP 3.10: TGD on Identification and Naming of Substances in REACH
- RIP 4.4: TGD on the preparation of Annex XV dossiers

The projects are currently running or near completion:

- RIP 3.1: Guidance on Registration
- RIP 3.2-2: TGD on preparing the CSR
- RIP 3.3-2: TGD on information requirements
- RIP 3.4: TGD on data sharing
- RIP 3.5-2: TGD on Downstream User requirements
- RIP 3.7: Guidance on preparing an Authorisation Application
- RIP 3.8: Guidance on fulfilling the requirements for articles
- RIP 3.9-2: Guidance on carrying out a Socio-Economic Analysis
- RIP 4.1/4.2 Guidance on Dossier/Substance evaluation
- RIP 4.3/4.5: Guidance document on inclusion of substances in annex XIV and guidance document on priority setting for evaluation

One project is still to start:

- RIP 3.6: Guidance on Classification and Labelling under GHS

N.B. RIP 3 activities are aimed at industry and RIP 4 at authorities.

RIP 3.5: Downstream-User Requirements

A key RIP will be RIP 3.5; guidance for downstream users. This identifies DU obligations under REACH regarding use of substances, exposure scenarios, the information they should have available, and information to communicate up and down the supply chain.

The guidance will build on the experiences from an earlier scoping study, other ongoing activities and experience from the preparation of examples of exposure scenarios under RIP 3.2. The project includes 4 case studies where implementation of exposure scenarios and applicability of the guidance will be piloted. The acceptability of exposure scenarios to manufacturers/importers as well as to downstream users is crucial to the overall success of REACH and will be a crucial element of the work. Tools for simple and workable communication, especially on exposure assessment, risk management, and exposure scenarios (ES) must also be developed. It is expected that the guidance will be finished 3rd quarter of 2007.

Problem Areas

There could be some difficulties at the start of the REACH process with regard to pre-registration and the first registration deadline. It is possible (the author believes likely) that many phase-in substances will not be pre-registered by their potential registrant. The implication of failure to pre-register is that the registrant would be required to register the substance immediately otherwise they should be withdrawn from the market and/or EU manufacture stopped. Immediate registration would be a huge burden for most companies and is likely to mean that many substances are withdrawn from the market. Another problem for pre-registration is ensuring that the substance is correctly identified. If this is not done correctly it will have implications for the continued use and supply of such substances; the authorities will need to decide how they address such cases. The first registration deadline is only two years after the end of the pre-registration period. This is very little time for all registrants of the same substance to agree the hazard data set for the substance; this will require consortia to be established with legal agreements on how they operate, data and costs to be shared and possibly, non-animal, testing undertaken. It is possible (again the author would say likely) that many phase-in substances will not be registered to the deadline; in theory this would mean that they also should be required to be withdrawn from the market and/or EU manufacture stopped.

Conclusions: Act Now!

- Decisions are being taken now by many companies on how they will deal with the challenges posed by REACH
- You need to understand the potential implications of REACH (direct and indirect effects) for your business
- A key to making REACH work for you is to develop supply chain relationships; supplies may be at risk and customers may be at risk
- Identify and assess alternatives if there is the potential for substance withdrawal from your supply chain; alternatives can be substances, processes, or suppliers
- REACH needs careful management – put a system in place
- Most importantly at this time identify substances for pre-registration by you or your suppliers and make sure this action is taken

Appendix B:



February 1, 2007

Steve Johnson, Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Mr. Johnson,

We, the members of the Green Chemistry and Commerce Council (GC3), write today to encourage you to fully support financially the U.S. EPA's Design for the Environment Program (DfE). The DfE Program is uniquely suited to help accelerate progress in sustainability by working with industry sectors including chemical manufacturers, formulators and chemical users – a huge segment of industry. DfE's distinctive qualifications are based partly on its location in your organization.

The GC3 is a voluntary arena for representatives from approximately 60 US companies invested in greening their supply chains to meet, talk, and learn from the experiences of other firms participating in this endeavor. Our mission is to promote and support green chemistry and DfE research, practices, and purchases nationally among states, federal agencies, and other companies by:

- Implementing green chemistry, green engineering and design for environment throughout supply chains and share strategies to overcome barriers;
- Promote education and information on safer chemicals and products than can increase demand by broad range of consumers; and
- Identifying existing and needed information on toxics hazards, risks, exposures and safer alternatives to promote “green chemistry” as defined by the 12 Principles of Green Chemistry.

In addition to businesses, the GC3 includes a broad range of participants with expertise and interest in sustainability and green chemistry from academia and non-governmental organizations.

The organizations participating in the GC3 recognize that there is a growing market for safer products and green chemistries. As leaders in our fields, we also recognize that we must work in partnership with others to both create sustainable supply chains and differentiate our products as being truly sustainable. Our goal is to move beyond compliance with regulatory requirements to innovative product design and stewardship for the 21st century. We appreciate the fact that DfE encourages and recognizes greener chemistry, and provides industry with a credible touchstone that lets us know (and helps us communicate internally and externally) when we have innovated successfully and are on the road to sustainability. We would like to have greater access to DfE Programs so that we can show progress in developing and using green chemistries and continue to lead change in our diverse industrial sectors.

DfE's unique capacity is due in part to its strategic partnerships within the EPA. Because DfE is co-located with the New Chemicals Program in the Office of Pollution Prevention and Toxics, it has access to the technical tools and expertise of that program. DfE uses these tools to assess the environmental profiles of chemicals in commerce and safer alternatives, and then disseminates these findings. Because DfE develops this information in a multi-stakeholder context, with environmental advocates, as well as businesses, business leaders can take action with confidence. Chemical manufacturers and users can act on DfE Partnership generated information to make and use chemicals that protect the environment and human health. Businesses who participate in the DfE Partnership and act on information developed therein are recognized as leaders, both by EPA and the environmental community.

The impact of your DfE program is impressive. One example is DfE's Furniture Flame Retardancy Partnership. Pentabromodiphenyl ether - the flame retardant used to make furniture foam fire-safe - is found in increasing amounts in people and the environment. When the manufacturer of pentaBDE agreed to a voluntary phase-out of this chemical, the furniture industry and the chemical industry joined with DfE and environmental groups to evaluate alternatives. Over the course of a few months, the DfE partnership enabled the industry to protect property and save lives with alternative flame retardants that were also safer for the environment.

DfE Partnerships encourage innovation in chemical products that help protect the environment, while meeting or exceeding performance demands and providing a market advantage. For example, the DfE Formulator Program partners with formulators of products—ranging from cleaners to holding tank treatments to aircraft conversion coatings—to identify formulations that are less toxic to humans and the environment throughout their lifecycle. The Formulator Program provides recognition for those products that are the best in their class with respect to functionality and green chemistry. As participants in the program, we know that DfE understands that change is difficult and formulation chemistry is complex, as are the technical and business challenges we face as manufacturers as we optimize and balance performance, cost, and environmental concerns. That is why DfE technical assistance and expertise is so valuable to us: it is scientifically rigorous and credible. Leaders in industry and environmental advocates alike

highly value DfE partnerships because they offer meaningful information, technical guidance and even recognition for products that are safer for the environment and human health.

We congratulate you on the success of your DfE Program in protecting the environment and human health. We understand that measurement of environmental results is critical to EPA programs. We know first hand that DfE produces measurable results and that through DfE we are partners with EPA in achieving and reporting those results. By helping firms who are truly committed to protecting the environment differentiate themselves as leaders in sustainability, DfE helps us grow our businesses and we help EPA report improved environmental results.

We believe that the DfE program should be a high priority in your Agency and that DfE should be provided with greater resources to enable the program to broaden its beneficial impact both on the environment and on business. We would welcome the opportunity for an in-person meeting to present the case for DfE resources. The Lowell Center for Sustainable Production is serving as the main contact for the GC3; in the case that a meeting is possible, please contact Dr. Joel Tickner at (978) 934-2981 or Joel.Tickner@uml.edu.

Sincerely,

Lowell Center for Sustainable Production

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