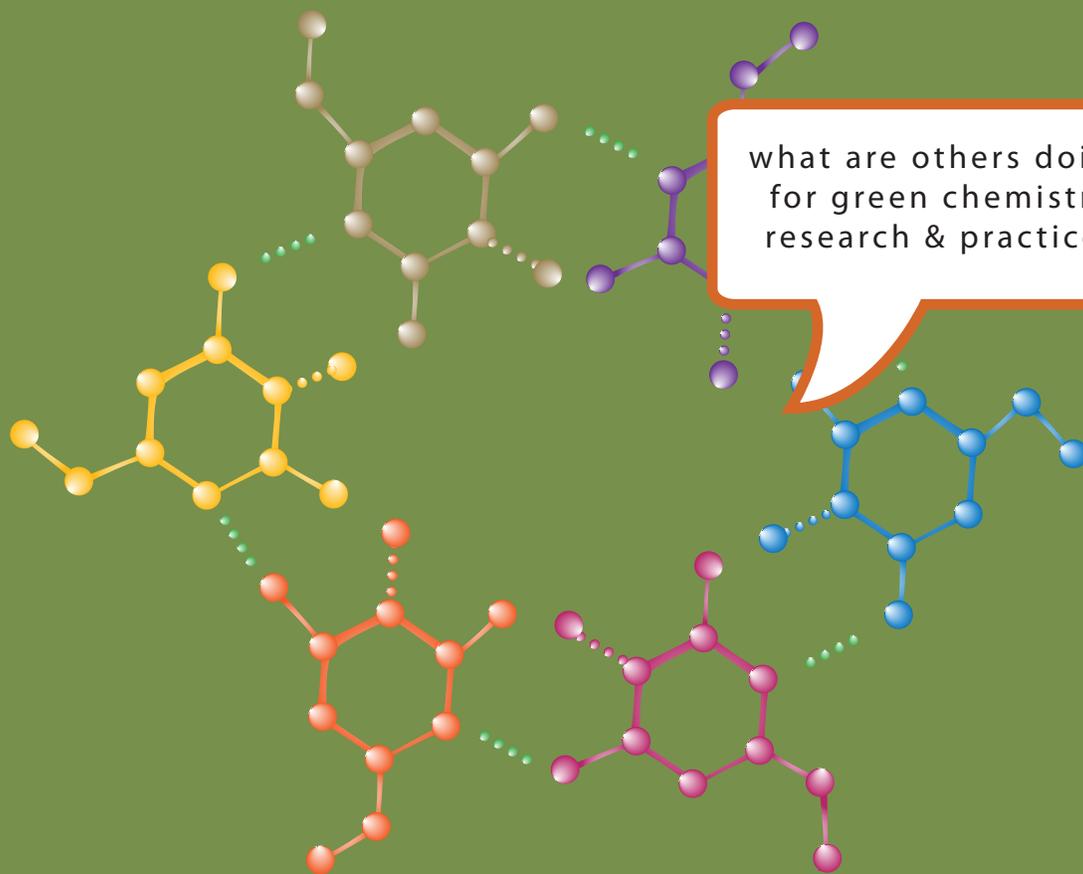


US EPA ARCHIVE DOCUMENT

New England Green Chemistry Networking Forum

US EPA ARCHIVE DOCUMENT



transformative dialogue about new ways to
achieve a safe and green sustainable future.

**Dec 16
2010**

MIT Faculty Club
Cambridge, MA

Welcome

Welcome

Welcome to the New England Green Chemistry Forum! We hope that the day will provide you the opportunity to network and collaborate with people both within and outside your field, who are interested in incorporating the principles of green chemistry into their products, portfolios, work, curricula and policies.

We are interested in networking with others working to make green chemistry the mindset for chemistry education, practice and product development in New England. We want to ensure that in our future, the design of chemical products and processes will reduce or eliminate exposure to highly toxic substances and the use or generation of hazardous substances through out a chemical products' life cycle, including its design, manufacture, and use.

Format for the day:

The Forum has been designed to maximize the opportunity for networking, so there are no presentations, panels or tracks. We want you to engage with other participants, learn from each other and build new collaborations that help build capacity for green chemistry in New England. There will be poster and table exhibits and we encourage you to take some time and visit with the authors of these exhibits.

what should the next generation
of environmental attorneys know?

how are organizations building
green chemistry into their
sustainability profile?

is green chemistry offered at
the middle school level?

Format

10:00 – 12:00 Networking

The enclosed list of exhibits provides brief abstracts for each. They're organized in six different areas, based on strategic groups. Please spend time talking with those exhibiting and presenting posters. A more detailed description of these groups is also enclosed; the groups are:

- Education
- Government
- Industry
- Investment and Development
- Healthcare
- Advocacy/NGOs

12:00 – 1:30 Lunch

Lunch will be provided. We have organized tables with topical discussions where you will have the opportunity to meet with peers and focus the conversation on specific aspects of green chemistry, although you should feel free to have your own networked discussions.

Table Topics:

- ▶ Green Chemistry 101
- ▶ Green synthesis on nano particles
- ▶ Green separations
- ▶ Green Chemistry Business Models
- ▶ Good examples that have been invented and commercialized
- ▶ What do investors look for in green chemistry businesses?
- ▶ Who have been prior Presidential Green Chemistry Challenge award winners? Have these shown successful business results?
- ▶ If you had 15 minutes to prepare for an investor meeting, what would an inventor/entrepreneur need to know?
- ▶ State approaches to green chemistry
- ▶ Using science to rapidly prioritize chemicals
- ▶ Green Chemistry in Higher Education
- ▶ Green Chemistry in K-12

1:30 – 3:00 Strategic Direction

Each of the strategic groups will meet to discuss future directions and to map out how they will develop and implement their action plans. Please join one of the groups so that you can stay engaged with moving green chemistry forward in New England and take advantage of the opportunity to shape the strategic direction.



LinkedIn is a social media tool available to help continue the conversation on green chemistry and the connections made today. Please join the LinkedIn “New England Green Chemistry Networking Forum” Group while you’re here. (Computers and assistance are available in the Registration area after 11a.m. for sign-up.)



You might see a video crew today. They may ask you for 5 minutes to answer a few questions about your interest in green chemistry and your experience at the Forum.

what are some of the current green chemistry activities in New England ?

New England Green Chemistry Strategic Focus Groups

U.S. EPA Region I and Office of Research and Development (ORD) convened New England leaders in green chemistry during the summer and fall of 2010. From these meetings a strategic plan was agreed upon as well as a structure for moving forward. A coordinating committee was formed by U.S. EPA Regional Administrator Curt Spalding, U.S. EPA ORD Assistant Administrator Dr. Paul Anastas and John Warner, Warner Babcock Institute of Green Chemistry. From this committee co-leads were selected for six strategic groups.

These groups are in different stages of organization, but they are each working to develop a strategic plan for identifying, developing and supporting a stakeholder group focused on advancing the principles of green chemistry and sustainability. The strategic plans will include identifying projects, policies and efforts that will further the goals of the New England Green Chemistry Challenge to:

- Increase awareness and understanding of green chemistry.
- Understand the interrelationship of green chemistry and sustainability.
- Build consensus among government, business, education and other interest groups to focus energy towards a safer, greener approach.
- Support a transformative dialogue about new ways to achieve a safe and green sustainable future.
- Foster a New England economy that is based on local resources, labor force, research capacity and expert knowledge.
- Stimulate the New England economy and increase employment through innovative, green approaches to manufacturing and investment in new green businesses.
- Catalyze the prosperity of New England businesses and ensuring their sustainability through green solutions.

how does green chemistry apply to electronics manufacturing?

what skills are
required for green
chemistry jobs?

Strategic Focus Groups:

Education (K-12, Colleges & Universities)

The education group is focused on building a vibrant self-sustaining green educational community. The core purpose of the group is to prepare a workforce grounded in the principles of green chemistry in order to meet the needs of the general public.

Government Programs & Strategies

The government group's mission is to develop an action plan that will identify government initiatives, strategies, projects and opportunities to advance green chemistry in the Region.

Business

This group will focus on identifying the most effective ways of incorporating green chemistry principles into the R&D, design, manufacture, packaging and distribution of products, as well as in creating marketing opportunities and demand for green chemistry. It will also explore how green chemistry principles can enable a sustainable lifestyle and promote economic growth.

Investment & Development

The investment group will explore funding opportunities for R&D, innovation and commercializing green chemistry technologies. It will review venture capital and economic development options and formats that will support the incorporation of green chemistry principles into products, services and education.

Health Care

The health care group will focus on educating health-affected constituencies and health professionals on the best available science, linking toxic chemicals exposure with health threats. They also advocate for the replacement of toxic chemicals with safer alternatives.

Advocacy & Demand (Non-Government Organizations)

NGOs have focused on outreach and education and encouraging critical industrial sectors that rely on toxic chemicals in production and use to invest in green chemistry solutions. They also advocate policies that seek to replace unnecessary toxic chemicals with safer alternatives. This creates incentives to bring greener chemicals to market to protect public health and the environment.

Presentations

Organization	Name	Title	Abstract
Actio	Kathleen Hurley	Software for managing product chemistry	Product stewardship starts with green chemistry and relies on Actio software. For over ten years, Actio's SaaS technology has been successfully handling: chemical management, substance-level regulatory compliance, correct reporting to agencies.
Beth Israel Deaconess Medical Center	Wei Shi and Amy Lipman	Green Opportunities in Biomedical Research	Beth Israel Deaconess Medical Center (BIDMC), a Harvard teaching and research hospital, is establishing a sustainable lab program to reduce the volume of toxic chemicals in their research labs by replacing them with safer alternatives. Because we are concerned about the production, use, and disposal of toxic chemicals in our biomedical research labs, BIDMC is exploring existing Green Chemistry innovations to reduce the overall negative environmental and health impact of our biomedical research.
Beyond Benign	Amy Cannon	Beyond Benign	Beyond Benign is a non-profit dedicated to transforming the education of scientist to include green chemistry and sustainable science. This table will include resources and information about green chemistry and Beyond Benign programming for K-12 through college level educators and students.
Boston College	Laura Kliman	Platinum-Catalyzed enantioselective Diboration of unsaturated Hydrocarbons: Versatile Tools for Synthesis	The stereospecific functionalization of carbon-boron bonds is a very useful method to access a variety of highly functionalized organic compounds. The reactive diboron species produced in the reaction are used in a diverse range of multi-step, one-pot procedures to arrive at highly complex products without the need for purification of intermediates.
Bridgewater State College	Ed Brush	Where is Green Chemistry? An Undergraduate Students Perspective	Students in introductory organic chemistry at Bridgewater State University were asked, "Where is Green Chemistry?" Provided only with a short list of topics and no background, a surprisingly diverse collection of answers were received, many reflecting personal concerns of the students.
Cytec Industries Inc.	Amy Essinfeld	iSUSTAIN(TM) Green Chemistry Index - A Tool for R&D	Cytec Industries Inc., in collaboration with Dr. John Warner, has developed the iSUSTAIN(TM) Green Chemistry Index tool. It provides researchers with guidance for improvement of the overall sustainability of their products and processes.
Earth Ecocentric LLC	Sherry Day	Drug Buster Enviro Friendly Drug Disposal System	DRUG BUSTER the Revolutionary Drug Disposal System. Protect your family and the environment from the dangers of improperly disposed medications. Fast, eco-friendly and responsible.
Environmental Health Strategy Center	Michael Belliveau	Bioplastics from Maine Potatoes & Woodchips	A consortium of Maine manufacturers, agricultural business groups, University of Maine researchers, nonprofit organizations, and consulting engineers and scientists are working to develop the technology to sustainably produce the bioplastic polylactic acid (PLA) from locally sourced feedstocks.

Organization	Name	Title	Abstract
Gordon College	Ben Stewart	The Gordon College - "Beyond Benign Partnership for Green Chemistry Outreach"	For several years a number of undergraduate science students (chemistry, biology and kinesiology) have worked in partnership with the Beyond Benign Foundation to provide green chemistry outreach in high schools, museums, etc.
Gordon College	Irv Levy	40 Shades of Green	This poster introduces the many ways that an interested faculty member can infuse their work with the principles of green chemistry beginning with manageable small steps. Of special significance, the green chemistry education community has developed a robust network of dedicated professionals who are happy to assist any faculty who wish to bring a greener shade of chemistry to their classrooms.
Government Agencies	Richard Enander	State Approaches to Green Chemistry	Member of the New England states will discuss current activities supporting Green Chemistry. This govt group hopes to move the New England States beyond pollution prevention and waste minimization to safer, greener, sustainable programs and activities supporting the economic growth of New England.
Gradient	Kim Reynolds Reid	Chemical Ranking Approaches	The Green Chemistry movement and increasing consumer scrutiny has prompted many companies to seek approaches that can be used to evaluate their practices and chemicals, with the goal of increasing protection of human health and the environment. In response to this movement, various stakeholders, including regulatory agencies, manufacturers, and non-profit organization, have developed ranking and scoring tools to evaluate and assess chemicals.
Green Schools	Robin Organ	Green Schools	Green Schools is a 501(c) 3 Non-profit organization whose mission is to create greener & healthier learning environments through education and awareness. We offer a number of environmental educational programs for schools and communities.
Health Care Without Harm	Bill Ravanese	Transitioning to Bio-Based Plastics in Healthcare	Health Care Without Harm has been engaged in bringing a safer chemicals framework to the health-care sector and assisting hospitals, Group Purchasing Organizations and manufacturers in transitioning from toxic chemicals to safer alternatives. This poster briefly chronicles some of these achievements and sets the frame for recent partnering efforts in transitioning to bio-based plastics in healthcare.
Lowell Center for Sustainable Production	Yve Torrie	Green Chemistry and Commerce Council	The Green Chemistry and Commerce Council (GC3) is a business-to-business forum for participants to discuss and share information and experiences related to advancing green chemistry and design for environment, and sustainable supply chain management in commerce.

Organization	Name	Title	Abstract
M.D. Stetson Company, Inc.	Andrea Glass	Going Green	What is Green Cleaning? A green cleaning program is one that combines environmentally preferred products with good sound cleaning procedures, training and expertise to create an effective and safe cleaning program. What is Code:Green? Code:Green is a collaboration and partnership between MD Stetson and its green committed end-user customers. MD Stetson's Environmental Stewardship Principles is clean for health first and appearance second.
Massachusetts Office of Technical Assistance and Technology	Rich Bizzozero	Green Chemistry Success: OTA Partnership to Promote Green Mfg and Foster Economic Development	A collaboration with UMass Dartmouth in Fall River, and the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC) to jointly develop a technology. This project holds the promise of delivering a cleaner process with much more efficient method of transferring colors to the textile substrate, which will reduce chemical inputs, chemical wastes, wastewater discharges, and the consumption of energy.
Massachusetts Office of Technical Assistance and Technology	Rich Bizzozero	Connecting Companies with Greener Chemistry Alternatives: Gov't Technical Ass't Efforts	The Office of Technical Assistance and Technology (OTA) provides non-regulatory, strictly confidential services to toxics users including; compliance assistance and on-site technical support to reduce toxics use, improve energy efficiency and conserve water and other resources. OTA sponsors workshops and conferences; recruits businesses using innovative technology to host demonstration site events; develops resource tracking software tools; and publishes advisory and guidance publications, newsletters, and case studies.
New England Board of Higher Education	Fenna Hanes	STEM Problem Based Learning	The New England Board of Higher Education (NEBHE) has been awarded a three-year \$900,000 grant from the National Science Foundation (NSF) for a project titled Problem Based Learning (PBL) for Sustainable Technology: Increasing the STEM Pipeline to increase the number of job-ready workers by engaging high school and college students with challenging instructional materials and innovative teaching methods.
New York State Pollution Prevention Institute	Anahita Williamson	New York State Pollution Prevention Institute	NYSP2I is developing a set of green chemistry curriculum modules for use in NYS High School Chemistry classes. The goal of the green chemistry modules is to reduce the amount and toxicity of hazardous materials in NYS high school labs and expose high school students to sustainability concepts.
Northeast Waste Management Officials' Association (NEWMOA)	Terri Goldberg	Pollution Prevention in the Northeast	NEWMOA's has been working on pollution prevention initiatives in the Northeast for the past 20 years that are designed to promote green chemistry, green engineering, and design for the environment. Resources are available through the Pollution Prevention Resource Exchange (P2Rx) and the Energy and Materials Flow and Cost Tracker (EMFACT), a software tool that helps small and medium-sized manufacturing facilities track materials and energy use.

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Northern Essex Community College	William Heineman	Laboratory Science Program	Northern Essex Community College offers a two year Laboratory Science Program for Technician Training with a track in Environmental Analysis. This program highlights NECC's commitment to serving the workforce needs of the Merrimac Valley and our diverse student population. The Laboratory Science Program, in partnership with Beyond Benign, is committed to using Green Chemistry in the laboratories, teaching the principles, and preparing a trained workforce fluent in Green Chemistry context and practice.
Nypro Inc.	Micheal McGee	Benign Chemistry for Coating, Inks and Adhesives – Enabling Sustainable Plastic Solutions	Nypro; a world leader in advanced plastics manufacturing and related value added process technologies, is committed to the advancements of sustainable and responsible manufacturing. Nypro collaborates with our partners throughout the value chain to reduce the overall effect of coatings, inks and adhesives on the environment, focusing on three distinct areas: VOC reduction, increased content of bio-renewable materials and the development of a monocoat.
Science and Technology Magnet High School	Therese Natoli	Green Chemistry in the High School	The 12 Principles of Green Chemistry and STEM (Science, Technology, Engineering and Math) skills, provide an innovative approach to learning chemistry concepts. This display includes a demonstration of 3 labs: Conductivity, Freezing Point Depression and Toxicity. The class' results were tabulated, organized, analyzed and shared setting the stage and creating a forum for sustainable green chemistry practices in a high school chemistry course.
Silent Spring Institute	Ruthann Rudel	Silent Spring Institute: Environment and Women's Health Research	Our studies of exposure to common commercial chemicals in homes have demonstrated that indoor environments are an important source of chemical exposure and many chemicals in common use have endocrine disrupting potential or other potential health effects.
Stockholm Environment Institute	Eric Kemp-Benedict	Resource Scarcity, Climate Change, and the Low-Carbon Economy: Doing Business in a Finite World	A green economy would place multiple, and rising, claims upon scarce resources. The 3C Consortium has commissioned a study on how rising demand for scarce metals and biomass could impact upon the strategic goals of industries. This poster describes the problem and introduces the project.
Toxics Use Reduction Institute at UMass Lowell	Liz Harriman	Green Chemistry at the Massachusetts Toxics Use Reduction Institute	The Massachusetts Toxics Use Reduction Institute at UMass Lowell has been promoting and sponsoring green chemistry research in academia and industry since the mid-1990's. Areas of interest include safer alternatives for known toxic substances in plastics and resins, particularly stabilizers and flame retardant additives.

Organization	Name	Title	Abstract
Ultimo Measurements	Frank Lubrano	Alternative to Gamma Radiation for Process Control	Ultimo's Percussion technology measures the density and/or viscosity of virtually any loose solid or liquid material without using nuclear radiation. Our proprietary Percussion technology uses an electro-mechanical, software-driven, non-invasive, instrument to measure the bulk density of materials moving through production on a real-time, inline basis.
University of Massachusetts Boston	Jonathan Rochford	Green Chemistry at UMass Boston	The Chemistry Department at UMB has embraced a broad definition of Green Chemistry in all its research initiatives and in its development of the first doctoral program in Chemistry focusing on Green Chemistry. Current research highlights include the development of environmentally benign synthetic methods, phase separation-based fluoros technologies for chromatography-free separations, recyclable reagents, and catalysts. We are also studying proton coupled electron-transfer and charge-separation at molecule-semiconductor interfaces, towards application in photovoltaics and solar-catalysis. Applied energy highlights include fuel cells, supercapacitors, hydrogen storage materials, and alkaline batteries.
University of Rhode Island	Eugene Park	Vacuum Cycle Nucleation	Vacuum Cycle Nucleation (VCN) is a new part cleaning process that can replace toxic/hazardous chemicals and is more effective than aqueous ultrasonic systems for precision parts cleaning. VCN has already received SBIR funding support and is being commercialized.
University of Rhode Island	Brenton DeBoeef	Green Chemistry at the University of Rhode Island	The University of Rhode Island is developing green solutions to many important issues. This poster describes two of these efforts: the development of a new chemical process for synthesizing biaryls via double C-H activation and the synthesis of novel biofuels from cellulose.
U.S. EPA New England	Dwight Peavey	Moving Schools to Safe, Green and Sustainable Solutions	The Environmental Protection Agency Region 1, in cooperation with Brandeis' Environmental Studies Program, formed "Integrated Chemical Management" program partnerships with 18 Massachusetts communities (21 high schools & 20 middle schools) during the summers of 2009 and 2010. Through on-site assistance, all mercury was removed, all chemicals were inventoried, a chemical database was established and chemicals were properly stored.
U.S. EPA Office of Research and Development	John Leazer	Nano-catalysis: Synthesis and Applications	Nano-catalysts play an increasing role in chemical synthesis. Herein, we present an efficient, green, and cost effective synthesis of nano-catalysts as well as their unprecedented use as catalysts.

Organization	Name	Title	Abstract
U.S. EPA Office of Research and Development	Michael Gonzalez	Designing Sustainable Chemical Processes	As evident in literature and practice, the goal of sustainability is now being applied to the chemical sector to reduce the negative effects upon the environment and it's. In order to achieve sustainability with respect to the life-cycle of a chemical, researchers must have the ability not only to minimize or eliminate this risk across the life-cycle, but also be able to access and quantify any remaining risk and ensure the research direction taken is in a more sustainable direction. As the life cycle of a chemical is mapped out, it is evident there are many areas of opportunity that exist for improvement to the current state as well as regions for areas of new research. It is the goal of this research to demonstrate that a chemical must not only be improved at the synthesis stage, but also can be manipulated at any stage of the life-cycle with direct and indirect benefits and consequences.
U.S. EPA Office of Chemical Safety and Pollution Prevention	Brian Segal	U.S. EPA Green Chemistry Program	The U.S. EPA Green Chemistry Program promotes the design, manufacture, and use of innovative chemical products and processes that reduce or eliminate the use or generation of hazardous substances.
U.S. EPA Office of Research and Development	Douglas Young	Software to Predict Toxicological and Physical Properties	The Toxicity Estimation Software Tool (T.E.S.T.) has been developed to estimate toxicological values for aquatic and mammalian species considering acute and chronic endpoints for screening purposes within the Toxic Substance Control Act (TSCA) and European Union's REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) programs.
Worcester State University	Margaret Kerr	Fostering International Exchange Through the Development of an Undergraduate Green Chemistry Research Course	A new course developed to promote green chemistry research at Worcester State University was offered for the first time in the fall of 2009. Worcester State University students worked closely with exchange students from Thailand on a project titled "The Synthesis of Greener Polymers". The exchange program was developed to enhance collaborative research between Worcester State University and Chulalongkorn University in Bangkok. The research course was designed to provide fundamental research skills for undergraduates who are interested in pursuing a career in the chemical sciences.
Worcester State University	Meghna Dilip	Cleaning to Separations: The spectrum of green at Worcester State	This poster is a summary of undergraduate research conducted under my supervision at Worcester State. Ionic Liquid based aqueous biphasic systems (salt-salt ABS) are novel green separations media. We have been able to demonstrate the partitioning s well as decolorization of indigo dyes in a salt-salt ABS. We have also been able to demonstrate partitioning of metals such as copper and chromium in the same systems. Additionally, we are working towards fundamental understanding of these systems using solvatochromic probes. Another project we are engaged in is the "green" claims behind several multipurpose cleaners in the market. As an undersgraduate research project, a student investigated the chemistry behind such claims and what it means to be green.

Organization	Name	Title	Abstract
Yale University	Evan Beach	Center for Green Chemistry and Green Engineering at Yale	The Center for Green Chemistry and Green Engineering at Yale conducts basic research and engages in policy, communication, and outreach initiatives with the goal of catalyzing the effectiveness of the GC&GE community.
Yale Center for Green Chemistry	Adelin Voutchkova	Towards the Rational Molecular Design of Chemicals with Reduced Aquatic Toxicity	We seek to develop approaches for the rational molecular design of chemicals with reduced toxicity based on physiochemical properties and molecular orbital energies. This work shows guidelines for reduced acute aquatic toxicity that have been validated for three different aquatic species

how can state government help promote green chemistry?

I'm Interested in brainstorming ideas about cradle-to-cradle synthesis and production strategies!

how can green chemistry help my community?



beyondbenign
green chemistry education

