Green Mountain Local Section of the American Chemical Society

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Green Mountain Section website: http://membership.acs.org/g/greenmt

Officers 2010

Chair..... Beth Medeiros
Chair-Elect..... Heather Bean
Secretary..... Jody Chamberlain
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Alternate Councilor.....Jeffrey Byers

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PR/Web Master.....Fiona Case
Awards ..... Michele Johnson
Gov't Affairs .....Sarah Locknar
Newsletter Editor...Willem Leenstra

Upcoming Events

April 2 – Math and Science Fair, Norwich University, Northfield, VT

May 17 – Tour of Seventh Generation, Burlington, VT

ACS website: www.Chemistry.org

GMLS April Newsletter

"Earth Day 2011"

Date: **Wednesday, April 20, 2011**
Time: **Talk at 5:30 PM -- Dinner to follow**

Speaker: **Deborah Gaynor, Ph.D.**
Phoenix Chemistry Services
North Ferrisburg, Vermont
[biography can be found on the next page]

Title: **"Measuring Environmental Contaminants in Air: Methodologies and Case Studies"**
[synopsis can be found on the next page]

Location: **Cabot 085**
Norwich University
Northfield, Vermont

For directions to the talk's venue, use the Norwich University link: www.norwich.edu. Once at their homepage, click on the "New Students" link, followed by the "Visiting Campus" link, to find directions.

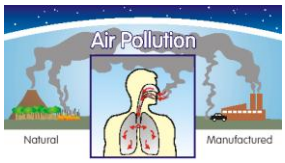
Dinner: **Sarducci's Restaurant**
3 Main Street
Montpelier, Vermont

If you wish to join us for dinner after the talk, please RSVP Richard (Dick) Milius at 802-485-2228, or via e-mail to milius@norwich.edu as soon as possible for an approximate headcount, but by noon, **Monday, April 18** at the latest. For directions, see www.sarduccis.com

Biography for Dr. Deborah Gaynor

Dr. Gaynor, founder and principal of Phoenix Chemistry Services, has more than 20 years of analytical chemistry and environmental management and consulting experience. She earned her doctoral degree in Analytical Chemistry from Dartmouth University in 1991. For eleven years she worked closely with the USEPA through the Contract Laboratory Program (CLP). Dr. Gaynor has provided training for Target software for chromatographic instrumentation, in laboratories serving the needs of environmental, petrochemical, pharma-ceutical, and clinical industries. She has extensive experience in the development and performance of analyses of environmental samples, including solid and liquid matrices and biota, on GC and GC/MS systems, while ensuring compliance with quality assurance programs. She has managed the GC/MS section of a large environmental laboratory, and has worked as the Quality Assurance Officer of a microbiology laboratory.

Synopsis of This Month's Talk



We can choose to drink tap water, spring water, or bottled water, and we can choose to buy and eat organically grown foods, but unless we live in a completely artificial bubble environment, we must breathe the ambient air. Yet, measurement of natural and anthropogenic materials in air has traditionally been the poor stepchild of environmental investigations. The "hottest" current topics of interest in this field include: vapor intrusion/soil gas, greenhouse gases, indoor and outdoor ambient air, stack emissions and fugitive emissions, particulate material, aerosols, inorganics, nanoparticles, and airborne contaminants of concern (asbestos, dioxins/furans, PCBs, PAHs, etc.). Sampling equipment suited for these various applications includes technologies such as filters, absorbent tubes, inert (Tedlar) bags, remote spectroscopy, and passivated stainless steel canisters, and many of these may be adapted for sampling in environments ranging from the troposphere to underneath a concrete slab, or even within an exhaust tower in an incinerator or blast furnace. Methodologies are also matched to the application. The Compendium of USEPA air toxics methods provide analytical capabilities for several national programs, including the Clean Air Act of 1990, the Toxics Air Monitoring System (TAMS), and the Urban Air Toxics Monitoring Program (UATAMP). These methods are used for indoor and ambient air, and are known as "Consensus" methods; they are not written into the regulatory framework as prescriptive methods, but are inherently performance-based. The stated goal of environmental measurements is to protect human and ecological health; to that end, all EPA regions have recently established a single set of limits for health risk from environmental contaminants; these limits are called the Regional Screening Levels (RSLs).

This talk will comprise a discussion of the techniques, tools, and methodologies used for sampling and measuring toxic and hazardous volatiles in indoor and ambient air, as well as the quality assurance criteria and tools that allow highly sensitive measurements to be used in support of investigations and monitoring at contaminated sites, where those sites happen to include homes, schools, and businesses. The target risk in residential air for carcinogenic compounds is set at 1 incremental lifetime cancer risk per million people (1E-06) in the RSL tables; for example, the current national RSL for tetrachloroethene (PCE) is 60.04 pptv (0.41 ug/m^3). In 2007, the Vermont Department of Health proposed a new in-state guideline (Hazardous Ambient Air Standard, or HAAS) for PCE in ambient air of 26.55 pptv (0.18 ug/m^3). This is based on a 70-year residential exposure, in contrast to the much higher federal level of 0.41 ug/m^3, which is based on a 30-year residential exposure. Statewide, excluding samples from Vermont's two largest and most industrialized cities (Burlington and Rutland), annual averages from the most recent study maximized at 0.24 ug/m^3. A case study will be presented that features a monitoring and analysis program at a state hazardous site in Vermont which has been under remediation and monitoring (primarily for PCE) since 1984. Conclusions will be drawn about how critical a carefully designed monitoring program is for such a sensitive site.

Fiona Case Receives the 2010 Emerald Award

The ACS Green Mountain Local Section Emerald Award was presented during the 2010 Holiday Party. The award went to Fiona Case in recognition of years of dedication and hard work for our local section. She has served as local section Chair during an unprecedented continuous four years, 2007-2010! Among the numerous other assignments Fiona has taken on, she has most notably served as one of the principal organizers of the 2008 ACS Northeast Regional Meeting (NERM).

Congratulations, Fiona!

Vermont Science and Math Fair Needs Judges

On Saturday, April 2, Norwich University will once again host our state's Science and Math Fair. The organizers have asked us for help in finding additional judges as this year's number of entries appears to be especially high. The commitment would be for just that Saturday morning for about four hours, starting at 8:30, and finishing with a complimentary lunch. The Green Mountain Local Section will award prizes for the best chemistry entries at various levels – anyone with at least one year of college chemistry is invited to represent us.

This is an exciting and rewarding opportunity to talk to aspiring middle and high school scientists, and their teachers as they showcase the results of their scientific inquiry.

If you are able/willing to help out, please contact Tricia Finkle or Carl Pinkham via the official VSSMF website http://vssmf.pbworks.com to let them know you'd like to participate.

The Global Water Experiment

During this International Year of Chemistry 2011, school students around the world will be invited to explore one of Earth's most critical resources, water. The results of their investigations will contribute to a global experiment on water quality. The launch of the Global Water Experiment will coincide with World Water Day 2011 (http://www.unwater.org/worldwaterday) which will be celebrated in Cape Town, South Africa, March 20-22, 2011.

This endeavor will possibly become the biggest chemistry experiment ever. Students around the globe will have the opportunity to perform four water-related activities. One of these is the measurement of pH of their closest body of water. Details of the activities are listed on http://water.chemistry2011.org/index.html.

Teachers will be getting a separate mailing, but anyone who participates is encouraged to submit their data in accordance with the instructions, and to also let us know their results so that we might publish their contributions in a future edition of this newsletter.

New Officers at the GMLS

You may have noticed that the masthead of this newsletter has incurred some changes. After a 4-year stint as our Chair, Fiona Case has decided to step down from that position. She has been the section's glue – with her energy and enthusiasm ensuring that our GMLS remain as strong as it can be. She has agreed, however, to continue as webmaster for the time being. The section sincerely thanks Fiona for her tremendous efforts on our behalf. Taking her place at the helm (in addition to her duties as Treasurer) is Beth Medeiros. Beth has served as Chair in the past, so our section is in good hands.

Also stepping down is Martin Case who has occupied the Alternate Councilor position for several terms. The section appreciates Martin's willingness to serve in this capacity, and especially extends once more a salute of gratitude for his contributions as Program Chair of the 2008 NERM, recognizing that program content drives the success of a scientific meeting. Jeffrey Byers, a professor at Middlebury College, has agreed to step into the vacated position.

The new face above belongs to our new Chair-Elect, Heather Bean. Heather received a B.S. in Chemistry from The Georgia Institute of Technology in 1999, after which she worked for Merck in Albany, Georgia. In 2002 Heather returned to Georgia Tech to pursue a Ph.D. in Chemistry under the guidance of Nicholas Hud, and received her degree in 2008. She spent one year as a Postdoctoral Researcher at Texas A&M with Thomas Wood, and then moved to the University of Vermont as a Postdoctoral Researcher in the laboratory of Jane Hill, where she is currently exploring the applications of SESI-MS to the diagnosis of bacterial infections.

Holiday Fun

We close with a snapshot of our 2010 Holiday Party at the Swift House Inn in Middlebury.

Join us next December, won't you!