

# Triad Chemical Times

August, 2009

Volume 41, Number 5



September Event Announced—see page 3!

## September Section Meeting:

*"The National Toxicology Program  
(NTP) Evaluation of Bisphenol A"*

Dr. Kristina A. Thayer  
Of

Center for the Evaluation of Risks to  
Human Reproduction

### CNC-ACS 2009 Officers

Dr. John Chapman	Chair
Dr. Harry Gan	Chair-Elect
Ms. Janice Foushee	Secretary- Treasurer

### *In This Issue...*

Committee Chairs	2
<b>September Event Announced</b>	<b>3</b>
Upcoming CNC Section Events	6
ACS News	8
Local Interests	12
Directions	16

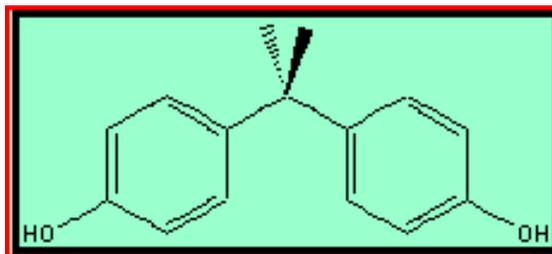
**Thursday, 17 September 2009**

**(7:00 pm)**

**Syngenta Crop Protection, Inc.  
(auditorium)**



<http://membership.acs.org/cnc/>



### 2009 Executive Committee

<u>Office</u>	<u>Officer</u>	<u>E-mail</u>	<u>Phone</u>
Chair	John Chapman	<a href="mailto:chapman9145@bellsouth.net">chapman9145@bellsouth.net</a>	558-6424
Chair-elect	Harry Gan	<a href="mailto:ganh@rjrt.com">ganh@rjrt.com</a>	741-0903
Secretary/Treasurer	Janice Foushee	<a href="mailto:jfoushee@ashland.com">jfoushee@ashland.com</a>	333-2738
Councilor ('11)	Robert Yokley	<a href="mailto:TR6VOL@triad.rr.com">TR6VOL@triad.rr.com</a>	595-7530
Councilor ('09)	Dave MacInnes	<a href="mailto:david_macInnes@guilford.edu">david_macInnes@guilford.edu</a>	316-2262
Alternate Councilor ('08)	Paul Weller	<a href="mailto:wellerp@elon.edu">wellerp@elon.edu</a>	278-6225
Alternate Councilor ('08)	Anna Sequeira	<a href="mailto:asequeira@peoplepc.com">asequeira@peoplepc.com</a>	998-7638
Director ('11)	Bill Eberle	<a href="mailto:bill.eberle@syngenta.com">bill.eberle@syngenta.com</a>	632-7569
Director ('11)	Tim Ballard	<a href="mailto:tballard@en-cas.com">tballard@en-cas.com</a>	785-3252

### 2009 Committee Chairs

Awards (11)	Robert Yokley	<a href="mailto:TR6VOL@triad.rr.com">TR6VOL@triad.rr.com</a>	632-2142
By-Laws & Job Manual (1)	<b>OPEN</b>		
Education (10)	Yulia Basova	<a href="mailto:ybasova@yahoo.com">ybasova@yahoo.com</a>	834 -2335
• ChemSense (10)	<b>OPEN</b>		
• Nat'l Chemistry Olympiad (11)	Janis McDonald	<a href="mailto:janis.mcdonald@westchestercds.org">janis.mcdonald@westchestercds.org</a>	869-2128
• Science Center Advisor (11)	Jerry Walsh	<a href="mailto:Jlwalsh@uncg.edu">Jlwalsh@uncg.edu</a>	334-5672
• UNCG H. S. Lab Day (1)	Jerry Walsh	<a href="mailto:Jlwalsh@uncg.edu">Jlwalsh@uncg.edu</a>	334-5672
Environmental Affairs	Dr. Gladys S. Van Pelt		288-1783
Earth Day	Rebecca Roberts	<a href="mailto:rebecca.roberts@syngenta.com">rebecca.roberts@syngenta.com</a>	632-6244
Government Relations	Edward Robinson	<a href="mailto:erobinson@lortobco.com">erobinson@lortobco.com</a>	335-6625
Hospitality (4)	Pat Duffy	<a href="mailto:pduffy@tppharma.com">pduffy@tppharma.com</a>	841-0300 x114
Information Dissemination (1)	Karl Sienerth	<a href="mailto:sienerth@elon.edu">sienerth@elon.edu</a>	278-6217
Local Section Career Program Coordinator	<b>OPEN</b>		
Long Range Planning (3)	<b>OPEN</b>		
Member Education (2)	Dennis Chesney		454-4184
Membership (4)	<b>OPEN</b>		
Minority Affairs (10)	Julius Harp		
	Teresa Joy	<a href="mailto:tjoy@ashland.com">tjoy@ashland.com</a>	
National Chemistry Week (10)	Janice Foushee	<a href="mailto:jfoushee@ashland.com">jfoushee@ashland.com</a>	333-2738
		<a href="mailto:thomas.mayer@syngenta.com">thomas.mayer@syngenta.com</a>	
Newsletter Editor (4)	TJ Mayer		632-6079
Nominating (10)	<b>OPEN</b>		
Project SEED (3)	Jill Harp	<a href="mailto:Harpj@wssu.edu">Harpj@wssu.edu</a>	750-2213
Professional Relations (3)	<b>OPEN</b>		
Analytical Sub-Group	Bill Eberle	<a href="mailto:bill.eberle@syngenta.com">bill.eberle@syngenta.com</a>	632-7569
Public Relations & Publicity (2)	Tim Ballard	<a href="mailto:tballard@en-cas.com">tballard@en-cas.com</a>	785-3252
Public Affairs (Regs, Legis)(9)	Edward Robinson	<a href="mailto:erobinson@lortobco.com">erobinson@lortobco.com</a>	335-6625
• Sci. Advisor-Howard Coble	Dave MacInnes	<a href="mailto:dmacinne@guilford.edu">dmacinne@guilford.edu</a>	316-2262
• Sci. Advisor-Richard Burr	Liliana Garcia	<a href="mailto:garcial@wssu.edu">garcial@wssu.edu</a>	750-2548
Speakers Bureau (ad hoc) (2)	<b>OPEN</b>		
Student Affiliate Coordinator (2)	Paul Weller	<a href="mailto:wellerp@elon.edu">wellerp@elon.edu</a>	278-6225
Web Page (1)	Kent Kabler	<a href="mailto:kent.kabler@syngenta.com">kent.kabler@syngenta.com</a>	632-6014
Women Chemists (1)	Teresa Neal	<a href="mailto:tneal@lortobco.com">tneal@lortobco.com</a>	335-6602
Younger Chemists Chair (9)	<b>OPEN</b>		

Number in ( ) following committee indicates the month that committee reports



**DEADLINE FOR NEXT NEWSLETTER**

Please submit materials for the **next** newsletter no later than the **10<sup>th</sup> of the prior month**. Electronic submissions are preferred, but hardcopy submissions are also accepted. Submit via email (attach a MS-Word file if possible) or on a diskette or CD. Committee reports presented at a meeting can be given to the editor for publication in the newsletter. The newsletter editor reserves the right to modify submissions, but will make every attempt to avoid changing the pertinent information.

**SEND MATERIALS TO:** Thomas J. Mayer, PO BOX 18300, Greensboro, NC 27419  
or [thomas.mayer@syngenta.com](mailto:thomas.mayer@syngenta.com)



### Speaker Bio:

Dr. Thayer is Acting Director of the National Toxicology Program's (NTP) Center for the Evaluation of Risks to Human Reproduction (CERHR), located on the campus of the National Institute for Environmental Health Sciences (NIEHS). The mission of CERHR is to conduct literature-based evaluations to determine the potential risk of environmental exposures on human reproduction and development. These evaluations are used by the public, research scientists, clinicians, and regulatory agencies. For example, CERHR evaluations were cited as the basis for listing of 5 different phthalates, 1-bromopropane, 2-bromopropane, and methanol as reproductive or developmental toxicants under California's Proposition 65. In September 2008, CERHR completed its evaluation of bisphenol A and the Center is currently in the process of evaluating soy formula and genistein. Dr. Thayer has been a staff scientist at CERHR since July 2007. Previously, she held positions in the NTP Office of Liaison, Policy, and Review and the NIEHS Office of Risk Assessment Research. Prior to joining the NTP/NIEHS, she was a senior scientist at the World Wildlife Fund and then at the Environmental Working Group.

### Speaker Abstract:

#### ***The National Toxicology Program (NTP) Evaluation of Bisphenol A***

In December 2005, the NTP Center for the Evaluation of Risks to Human Reproduction (CERHR) initiated an evaluation of the potential for bisphenol A to cause adverse effects on reproduction and development in humans. The NTP-CERHR selected bisphenol A for evaluation because it is a high production volume chemical used primarily in the production of polycarbonate plastics and epoxy resins. Polycarbonate plastics are used in some food and drink containers; the resins are used as lacquers to coat metal products such as food cans, bottle tops, and water supply pipes. In addition, bisphenol A is used in the processing of polyvinyl chloride plastic and in the recycling of thermal paper. Some polymers used in dental sealants and tooth coatings contain bisphenol A.

The primary source of exposure to bisphenol A for most people is assumed to occur through the diet. The highest estimated daily intakes of bisphenol A in the general population occur in infants and children. The NTP-CERHR evaluation of bisphenol A proved to be scientifically challenging and highlighted many of the issues relevant to the study of endocrine disruptors, including the potential for “low” dose effects and the types of studies used to assess endocrine activity.

The NTP-CERHR evaluation was completed in September 2008 and is available as part of the NTP-CERHR Monograph on Bisphenol A that includes the NTP Brief on Bisphenol A and the final report of an expert panel that was convened by the NTP-CERHR to thoroughly review the published literature. The NTP Brief provides the public, as well as government health, regulatory, and research agencies, with the NTP’s conclusions regarding the potential for bisphenol A to adversely affect human reproductive health or children’s development.

The NTP reached the following conclusions on the possible effects of exposure to bisphenol A on human development and reproduction. Note that the possible levels of concern, from lowest to highest, are negligible concern, minimal concern, some concern, concern, and serious concern.

- The NTP has *some* concern for effects on the brain, behavior, and prostate gland in fetuses, infants, and children at current human exposures to bisphenol A.
- The NTP has *minimal* concern for effects on the mammary gland and an earlier age for puberty for females in fetuses, infants, and children at current human exposures to bisphenol A.
- The NTP has *negligible* concern that exposure of pregnant women to bisphenol A will result in fetal or neonatal mortality, birth defects, or reduced birth weight and growth in their offspring.
- The NTP has *negligible* concern that exposure to bisphenol A will cause reproductive effects in non-occupationally exposed adults and *minimal* concern for workers exposed to higher levels in occupational settings.

Dr. Thayer’s presentation will discuss the NTP-CERHR evaluation of bisphenol A and emphasize sources of scientific complexity and uncertainty in the literature.

**Thursday, 17 September 2009**  
**(7:00 pm)**  
**Syngenta Crop Protection Auditorium**



**Please congratulate our 70, 60 and 50 year Members!  
They will be honored at the September Meeting.**

**70 year member**

Dr. Murray Senkus

**60 year members**

Dr. Paul H. Cheek  
Milton Heffler

**50 year members**

Dr. Herbert J. Bluhm  
Richard Fairfield  
J. Thurman Freeze  
Dr. Astor Y. Herrell  
Gerald Holden  
Dr. Roy E. Smith  
William Templeton  
Dr. Gladys Van Pelt

---

## Upcoming Central NC Section Events

---



<b>Thursday 17 September, 2009 Syngenta</b>	<b>Section Meeting: Dr. Kristina Thayer</b> <i>“The National Toxicology Program (NTP) Evaluation of Bisphenol A: Summary and Update.”</i> <i>(6:30 social, 7:00 presentation)</i>
<b>18-24 October National Chemistry Week</b>	<i>(TBD)</i>
<b>TBD October/November, 2009</b>	<b>Section Meeting: Tour speakers</b> <i>(TBD)</i>
<b>Thursday 3 December, 2009 Christmas Banquet</b>	<b>Section Meeting: CNC-ACS Christmas Banquet</b> <i>(7:00 pm Hawthorne Inn)</i>



---

**CHILDCARE will be AVAILABLE upon prior notice**

---

---

**If childcare is needed in order for you to attend our events. Please access our website and click on the childcare icon and select the event you wish to attend. Please update the form if you cannot make the event so we have ample time to cancel our commitment.**

---

**-- Please Support Our Newsletter Sponsors --**



**LAB SUPPORT**  
A DIVISION OF ON ASSIGNMENT

## OUTSTANDING PEOPLE

Lab Support is the leader in the scientific professional staffing industry. We specialize in placing qualified degreed scientists on contract, contract-to-hire and direct hire assignments in laboratories in over 50 major markets throughout the United States and Canada.

All of our Account Executives make "Quality Assignments" because they have a background similar to that of our clients and our employees.

If your company is looking for outstanding lab personnel or if you are an outstanding scientist seeking a new career offering variety, opportunity and a great benefits package, call Lab Support today.

**Providing scientific staffing support to the greater North Carolina region:**

Greensboro/Triad Area.....	919.319.9950
Raleigh/Triangle Area.....	919.319.9950
Charlotte Area.....	704.679.7170
Nationwide.....	800.998.3332

**[www.labsupport.com](http://www.labsupport.com)**

\* Pictured above are actual working Lab Support scientists.

LS706A-01004-NP000K-0109

[jfbrady@bellsouth.net](mailto:jfbrady@bellsouth.net)    [www.jfbrady.net](http://www.jfbrady.net)

***James F. Brady, Ph.D. LLC***

**Immunoassay development and validation**

**Sample analysis                      GLP compliant**

**GMO, small molecule assays our specialty**

**Fax 336-785-3262    Cell 336-708-0097**



## This Month in Chemical History

Harold Goldwhite, California State University, Los Angeles

[hgoldwh@calstatela.edu](mailto:hgoldwh@calstatela.edu)

### Part- I

In one of my recent, periodic forays, in search of interesting older books on chemistry I purchased a volume on “Chemistry of Insecticides and Fungicides” by Donald E. Frear, Ph.D., Assistant Professor of Agricultural And Biological Chemistry, the Pennsylvania State College. This book was originally published by the D. Van Nostrand Company, Inc. in New York in 1942 and obviously had some popularity. It was reprinted in 1943 and in 1945; my copy is of the third printing. It was apparently the first book by a U.S. author on this topic.

Donald Frear was a widely recognized expert on the chemistry and analysis of pesticides. His career is summarized in the second volume of “American Chemists and Chemical Engineers”, Wyndham D. Miles and Robert F. Gould, Editors, Gould Books, Guilford Connecticut, 1994. Following his B.S. from Penn State in 1926 he earned an M.S. at the University of New Hampshire two years later. His association with Penn State resumed in 1930, as an instructor in animal nutrition. He earned his Ph. D. there in 1937 and was appointed Assistant Professor. He was promoted to Professor in 1944.

Frear’s scientific and authorial output was prodigious. He was the author of over 30 books, counting various editions, and over 125 articles. He was editor of “The Pesticides Handbook” for over 20 years. Penn State opened in 1968 its Pesticides Research Laboratory and Frear was appointed its Director and Professor of Chemical Pesticides. His research focused on pesticide analysis and he was a pioneer in the detection of DDT residues in soils and animals. He also contributed largely to the study of mineral requirements in the nutrition of farm animals. He developed elegant techniques for assaying various pesticides, including biological systems for microassays. He was one of the most distinguished chemists working on agriculturally related subjects

in the period 1930 to 1970. Frear died in 1973, at the age of 67; he is buried in State College Pennsylvania.

The book I purchased recently has the “classic” look of a Van Nostrand scientific book, immediately recognizable for its period. It is bound in black, with the spine decorated in maroon and gold with the title, author, and publisher. I have a handful of similar volumes in my library, but the company moved away from that recognizable style in later years.

In his Preface Frear notes that the book is the outgrowth of the notes he used in a graduate lecture course on the subject of insecticides and fungicides, and to make it as useful as possible he included an extensive bibliography to help readers in their search for further information.

To put the period of this book into context it was written before the introduction of halogenated hydrocarbons and phosphorus-centered compounds as insecticides. These compounds revolutionized the field after World War II, with some far-reaching consequences, some of which, like the detection of DDT residues, became the subjects of Frear’s later research. In the following column I will look at the state of pesticide and fungicide chemistry in 1940.

## **Part- II**

In my last column I looked at the career of Donald E. H. Frear who wrote what is probably the first book on the subject published in the U.S., namely “Chemistry of Insecticides and Fungicides”, in 1942. In this column I will sketch the nature of insecticide chemistry at that period, prior to the introduction after World War II of halogenated hydrocarbons and phosphorus-centered compounds for the treatment of agricultural pests.

In a quite complete Introduction Frear discusses ecological factors and the many ways in which control of insects in agriculture can be achieved including mechanical, biological, genetic, nutritional, climatic, and chemical. The rest of the book focuses on this last category. Frear divides insecticides into stomach poisons or protective insecticides; and contact poisons or eradicant insecticides. The stomach poisons are compounds ingested by

insects that poison them, and these chapters make, frankly, scary reading. “The arsenicals are the most widely used group of stomach poisons....The world consumption of arsenic (as arsenic (III) oxide) in 1937 has been estimated as 120,000,000 pounds of which 50 to 60 per cent were used in the United States.” Given the U.S. population at the time, that’s getting on for one pound of arsenic (III) oxide per head of population per year.

The nature of the arsenicals is of some interest. Paris green was first adopted in the mid-1860s against the Colorado potato beetle. “This voracious insect, a native of the Rocky Mountains, where it fed upon native solanaceous plants, began to spread eastward as soon as the westward march of agriculture invaded its natural habitat. The insect soon came to feed exclusively upon potatoes, and to spread with great rapidity....by 1874 it was found on the Atlantic seaboard, having covered a distance of approximately two thousand miles in fifteen years.” Paris green was effective against this beetle “and between 1880 and 1900 it was probably the most commonly used insecticide, with London purple a close second.”

Paris green went by several names: Emerald green, French green, Schweinfurter Gruen, and Mitis green. It is a mixture of copper metarsenite and copper acetate in usually about a 3:1 ratio. It is made by boiling a mixture of basic copper acetate (verdigris), arsenic (III) oxide, and acetic acid, and is a green (!) powder. London purple is less well-defined than Paris green. It was made from a purple residue from dyestuff manufacture that contained substantial amounts of calcium arsenite and calcium arsenate. It was of quite variable composition and was superseded by other arsenicals like lead arsenate and sodium arsenite.

Lead arsenate was the most widely used arsenical in the early 1940s with consumption of about 60,000,000 pounds in the U.S. in 1938; this compounded the heavy metal toxicity of lead with that of arsenic, and Frear recognized that of course. He recommended the use of calcium arsenate rather than the lead salt. The chemistry of the lead arsenates is complex and many individual compounds are noted including monolead orthoarsenate; dilead orthoarsenate; trilead orthoarsenate; lead metarsenate; lead pyroarsenates; and a number of basic or hydroxyarsenates. Commercial lead arsenate contained a number of these compounds.

After the arsenicals come the compounds containing fluorine. These were widely used, particularly as household insecticides. Once again all these compounds are highly toxic to all living organisms and must be used very carefully. Useful fluorides included sodium fluoride, used against termites and roaches ( four million pounds used in the U.S. in 1936); zinc fluoride used as a wood preservative; and several fluosilicates.

The contact insecticides include a number that are still in use today. Nicotine is a familiar poison still used against aphids and other insects with soft bodies. The pyrethrums, derived from chrysanthemum flower heads, are ingredients of many current commercial pesticides useful against houseflies, mosquitoes, and other flying pests. Unlike nicotine the pyrethrums are relatively non-toxic to warm-blooded animals and so are particularly applicable as household insecticides. The active principles, trivially named pyrethrins, are several in number containing cyclopropane and cyclopentane derivatives. Some of their complex structures were partially elucidated by Staudinger and Ruzicka in the early twentieth century.

Fumigants are still widely used in agriculture; there is currently concern about the use of methyl bromide and methyl iodide in this application. Frear discusses many even more toxic fumigants including HCN, carbon disulfide, carbon tetrachloride, ethylene oxide, and dichloroethyl ether among others.

Among fungicides pride of place goes to copper compounds including the venerable Bordeaux mixture for fungi attacking grape vines; this is a mixture of copper sulfate and calcium oxide in water. Second only to copper compounds are the mercurials used to disinfect seeds including ethyl mercuric chloride and hydroxymercurichlorophenol

The final chapters of this valuable text discuss wetting and spreading agents and both macro and microanalytical methods, some of which were developed by the author.

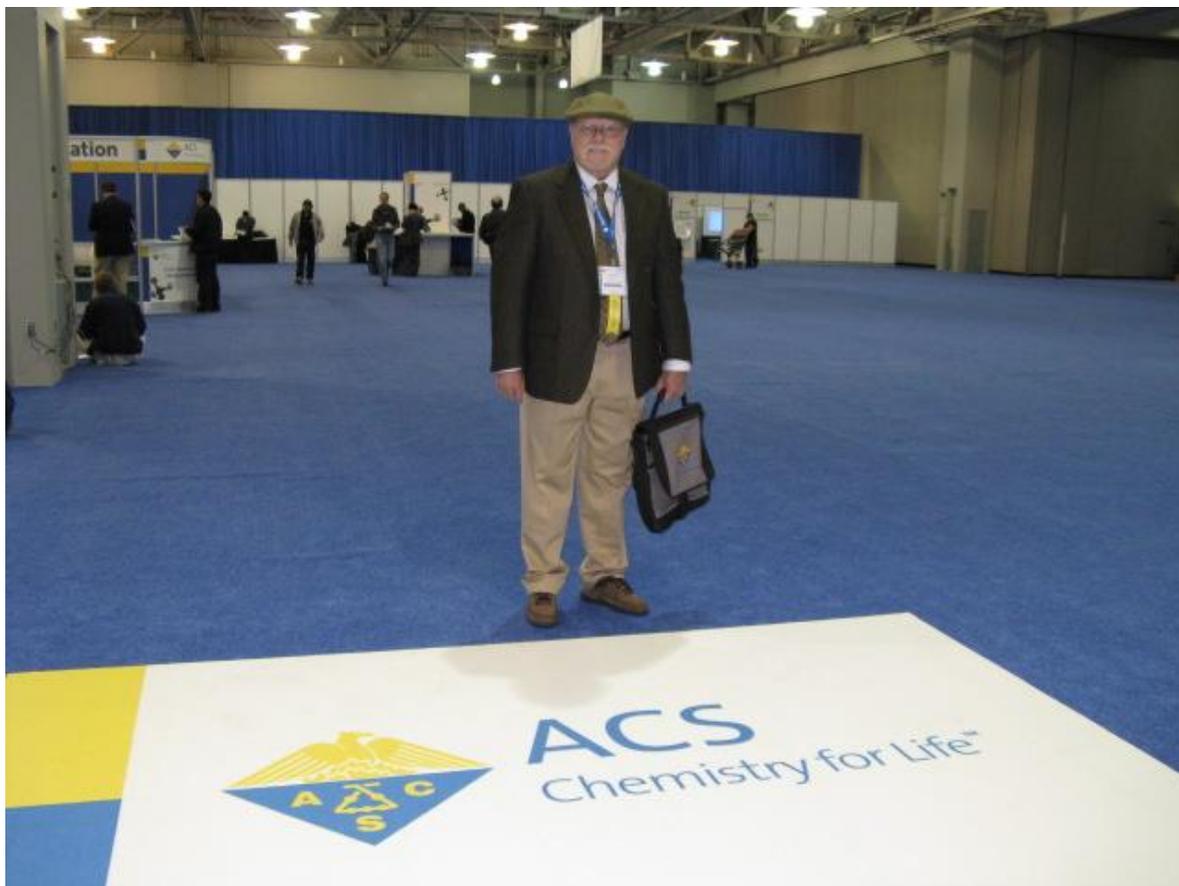
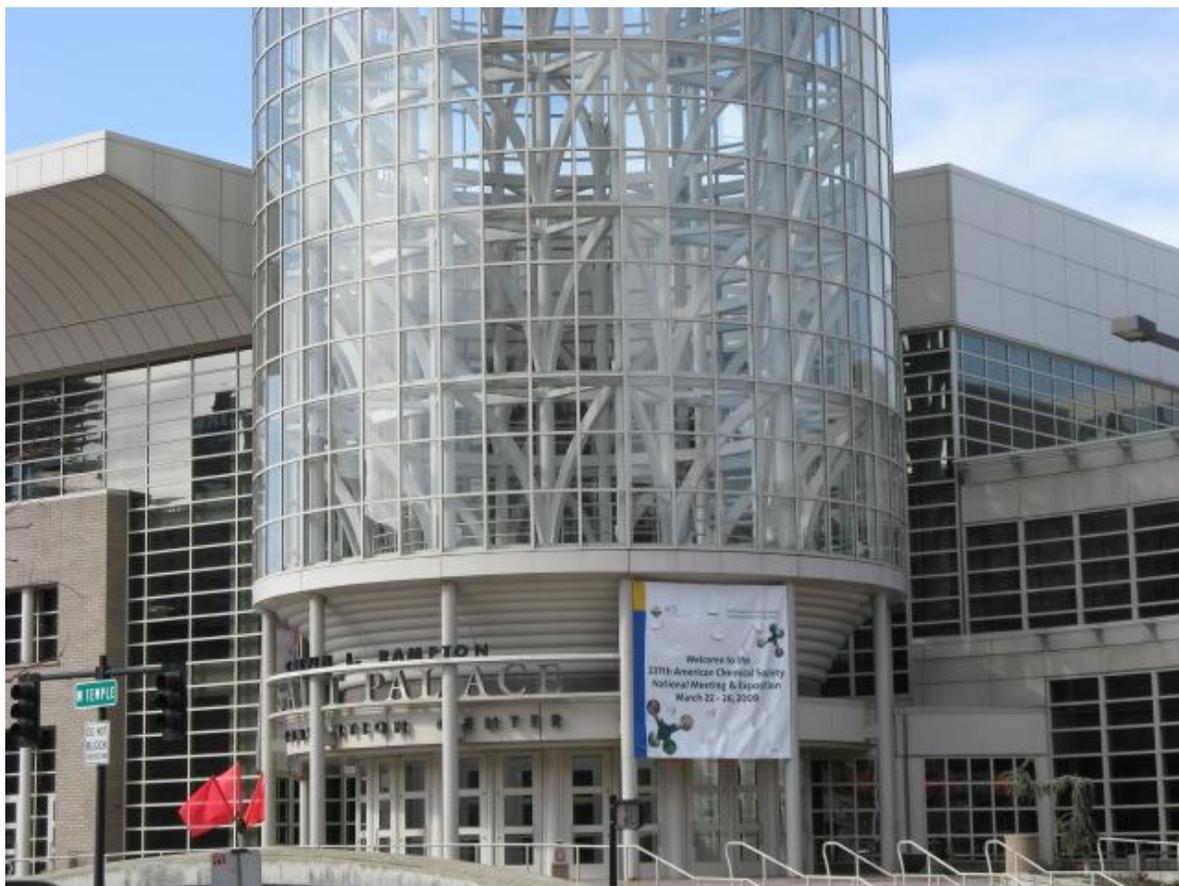


**Councilor Report for the  
237th ACS NATIONAL MEETING  
SALT LAKE CITY, UT  
MARCH 22-26, 2009**

**Dave MacInnes  
Robert Yokley**

There were a number of council actions this year. For the first time we were given clickers in our voting. We rose to the challenge and by electronic ballot, the Council selected Nancy B. Jackson and Cheryl A. Martin as candidates for 2010 President-Elect. These two candidates, along with any candidates selected via petitions, will stand for election in the Fall National Election. The Council received one petition for consideration: the Petition on Election Timelines 2009. According to the proposing committee, this petition presents election procedure refinements that are intended to provide a fair, consistent, and equitable process, which balances the concerns and needs of participants, as requested by Councilors and candidates. Action is expected on the petition at the fall Council meeting. The Council voted to permit the Committee on Chemistry and Public Affairs to amend a portion of its charge from: “a. Identify and analyze legislative, regulatory, research and other science policy issues that impact upon the chemical sciences and technologies” to “a. Identify and analyze legislative; regulatory; research; Science, Technology, Engineering, and Math (STEM) education funding; and other science policy issues that impact upon the chemical sciences and technologies.” We received extensive briefings on the Society’s finances, which showed that in spite of the economic challenges faced in 2008; the Society’s operating performance held up well. Total revenue was approximately \$450 million, up just over 3% from 2007. The Society’s Net from Operations was \$9.7 million, and \$560,000 favorable to budget. This is the fifth consecutive year of positive operating results. However, in 2008 ACS was adversely impacted by the historic collapse in the capital markets, which resulted in a sharp decline in the Society’s unrestricted net assets from \$212 million at December 31, 2007, to \$60 million at December 31, 2008. There were two factors driving this decrease, both related to the poor

performance in the capital markets. These are substantial investment losses and a sizable increase in pension liability from the Society's Defined Benefit Pension Plan. For this and other reasons, action was taken in 2007 to close the Defined Benefit Pension Plan, and, in 2008, to freeze benefit accruals for all Defined Benefit Pension Plan participants in 2009. It is in this context that the Board received a detailed briefing from management at this meeting on the framework of the 2009 Contingency Plan. In 2006, the Society had the foresight to develop a robust Contingency Plan that contemplated potential threats from many different sources, their probability of occurrence, likely duration and financial impact. The updated 2009 Plan covers all operating and administrative units as well as member programs, and identifies new and emerging threats. ACS management has also updated the mitigation strategies to respond to the threats and ensure the Society's long-term financial sustainability. Society management and the Board of Directors are closely monitoring financial performance versus the budget. In addition, significant reductions in discretionary spending have already been implemented and additional cost control measures are under consideration. However, despite the 2 adverse impact of the economic downturn, the Society remains highly liquid with more than \$275 million in cash and investments, and limited debt of \$30 million. After a lengthy discussion and rejection of two amendments through vigorous use of our clickers, the Council VOTED to set the member dues for 2010 at the fully escalated rate of \$145. This rate is established pursuant to an inflation-adjustment formula in the ACS Constitution and Bylaws. A special discussion item was again put on the Council agenda for this meeting. After viewing the results of a Councilor survey as a preface to the discussion on what can ACS do to attract new members during these challenging economic times there was a lively discussion that focused on the value of ACS membership and on growth opportunities among students, international scientists, high school teachers, technicians, diverse ethnic groups and others. As of March 25, 2009, the ACS spring national meeting had attracted 10,668 registrants as follows: Regular attendees 5,781; Students 3,439; Exhibitors 780; Exposition only 411; and Guests 257. It was noted that this is the largest group of student attendees we've seen at a national meeting. At the close of 2008, Society membership totaled 154,024, compared to 160,052 for year-end 2007. In 2008, ACS completed the transition of its 15 year-old membership fulfillment system to a new, more robust system. We ended by voting to approve the Professional Employment Guidelines, as submitted by the Committee on Economic and Professional Affairs. These guidelines offer a broad spectrum of recommended practices in employment for professional scientists and their employers



---

## Local Interests

---



# CNC-ACS Adopt-a-Stream cleanup

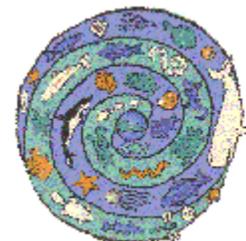
*CNC-ACS Adopt-a-Stream cleanup scheduled to coincide with Greensboro Beautiful BIG SWEEP. Please contact TJ Mayer to volunteer.*

*336-632-6079 or [thomas.mayer@syngenta.com](mailto:thomas.mayer@syngenta.com)*

*Date: Saturday September 19, 2009*

*Time: 9am – 12 noon*

*Where: Our CNC-ACS Adopt-a-Stream (Downtown Greensboro at West Smith St and Prescott St)*



*[Greensborobeautiful.org](http://Greensborobeautiful.org)*

---

## Directions

---



### Directions to Syngenta

#### Traveling West on I-40 in Greensboro:

- ✚ Take **Exit # 213**.
- ✚ At the top of the exit ramp, go straight through the traffic signal onto **Swing Road**.
- ✚ Follow Swing Rd past the Radisson and turn **left at the “Entrance 2” sign**.
- ✚ **Park in the parking area on the left**.
- ✚ Enter the glass double doors to the right of “E” Building. Check with security and they will direct you to the site auditorium or L-Bldg.

#### Traveling East on I-40 in Greensboro:

- ✚ Take **Exit # 213** and follow the exit ramp around to the top.
- ✚ Turn **right at the traffic signal** and pass over I-40.
- ✚ Turn **left** at the very **next traffic signal** onto Swing Road (immediately after crossing I-40).
- ✚ Follow the remainder of directions from the I-40 West directions above.

---

## AMERICAN CHEMICAL SOCIETY

### CENTRAL NORTH CAROLINA SECTION

2401 Doyle Street Greensboro, NC 27406-2911



<http://membership.acs.org/c/cnc/>