

THE Central Arkansas



CHEMIST

The Newsletter of the Central Arkansas Local Section of the American Chemical Society

October, 2002

For our October meeting, we welcome Dr. Thomas A. Holme from the University of Wisconsin - Milwaukee.

“Boron: It’s Not Just for Rocket Fuel Anymore”

As an element involved in important compounds, boron has a rich history. The rocket fuels programs in the 1950s were followed by its use as hydroboration agents continuing to today. Increasingly, compounds that contain boron have been found to have surprising physiological activities. First proposed for usage in boron neutron capture therapy (BNCT), a variety of boron containing compounds have been synthesized and screened for biological behavior. This talk will focus on those compounds that contain boron-nitrogen dative (or adduct) bonds. The history of this synthetic effort with its origins in BNCT will be noted as well as some of the more intriguing biological behaviors such as lowering of cholesterol levels and anti-inflammatory actions. The possible role of Lewis acid-base chemistry and the use of computer modeling to investigate that role will be discussed.



General Meeting

Monday, October 28

Parkview High School
Babbs Independence Hall

- 5:30 p.m. Dinner with Speaker
Tony Romas (West Little Rock)
- 7:30 p.m. Program
Thomas A. Holme
“Boron: It’s Not Just for Rocket Fuel Anymore”

*To obtain driving directions, visit
membership.acs.org/c/centralarkansas*

Speaker’s Biographical Sketch

Prof. Holme is an Associate Professor of Chemistry at the University of Wisconsin - Milwaukee. He does science research in computational chemistry, where his interests lie in the study of main group elements that play a role in physiological activities of molecules or surfaces. This work involves both quantum mechanical calculations and development work for parameters in molecular mechanics level studies. He also has a research interest in Chemistry Education, particularly assessment. He will assume the responsibilities of the Director of the Examinations Institute later this year. His work in outreach to the general public was recognized in 1999 with the Helen Free Award for Public Outreach.

Looking Ahead

November 14 Analytical Chemistry Applications in Forensic Science, Ouachita Baptist University, 7:30 pm.

Remember that you can always stay informed by visiting the section website at membership.acs.org/c/centralarkansas

Local Section News

We had a diverse turn out for our September meeting at UCA. High School chemistry teachers from Plainview-Rover, Hector, and Parkview, along with chemists from ATU, UCA, UAMS and the Arkansas State Crime Laboratory attended. The speaker (Thomas Crawford) emphasized the importance of teaching children chemistry and how it plays a role in our daily lives. He performed a variety of chemical demonstrations and provided hand-outs of those demonstrations.

We are still looking for those interested in taking on a leadership role in our local section. Officer positions include chair-elect, secretary, treasurer, and councilor. We also have committees that could use your help (career resource, public relations, awards, and National Chemistry Week committees). We would love to see some new faces get involved with our section. If you are interested or know of someone who would be, please contact Cindy Moran at cindy.moran@ascl.state.ar.us

Ever at a loss as to what's going on in the section? Simply visit the section's website:

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

You'll find the section's meeting schedule, announcements, and information about services provided by the section, along with other useful links.

National News



Don't forget about National Chemistry Week! Oct. 20-26 "**Chemistry Keeps Us Clean**"

Check out the link below for ideas on NCW activities for children in 3rd to 6th grades.

<http://chemistry.org/portal/resources?id=108381d8c52e11d6ffc66ed9fe800100>

Local Section Highlights

Local Chapter Members Respond to Catastrophic Chemical Release in Knoxville, Tennessee and Assist in Protecting Workers, Protecting Communities, and Limiting Liabilities

Dr. Glenn Millner, Dr. Jay Gandy, and Dr. Jeffery Moran specialize in toxicology, work for the Center for Toxicology and Environmental Health, L.L.C. (CTEH), and are active members in the American Chemical Society and the Central Arkansas Section. You may also recognize Dr. Moran as the Central Arkansas Chair-Elect and Chair for the past three years. Dr. Jay Gandy and Dr. Glenn Millner hold faculty appointments at the University of Arkansas for Medical Sciences, and Dr. Gandy is the current Chair *pro tem* of the Department of Environmental and Occupational Health. These local toxicologists were part of the primary toxicology emergency response team that responded to the oleum release in Knoxville, TN, which required the evacuation of approximately 3,000 people (Chemical and Engineering News, September 23, 2002). Oleum, also known as fuming sulfuric acid, is sulfuric acid containing 20-65% free sulfur trioxide. Sulfur trioxide exists as a colorless liquid, a fiber-like crystal, or a gas and is used in the manufacture of sulfuric acid. Regardless of physical state, sulfur

trioxide rapidly reacts with water in air or in solution to produce additional sulfuric acid. Although the reactivity of this chemical makes it useful for industrial applications, this reactivity also makes oleum particularly toxic if exposures are not minimized.

CTEH's portable real-time meteorological weather station being used during the oleum release in Knoxville, Tennessee.

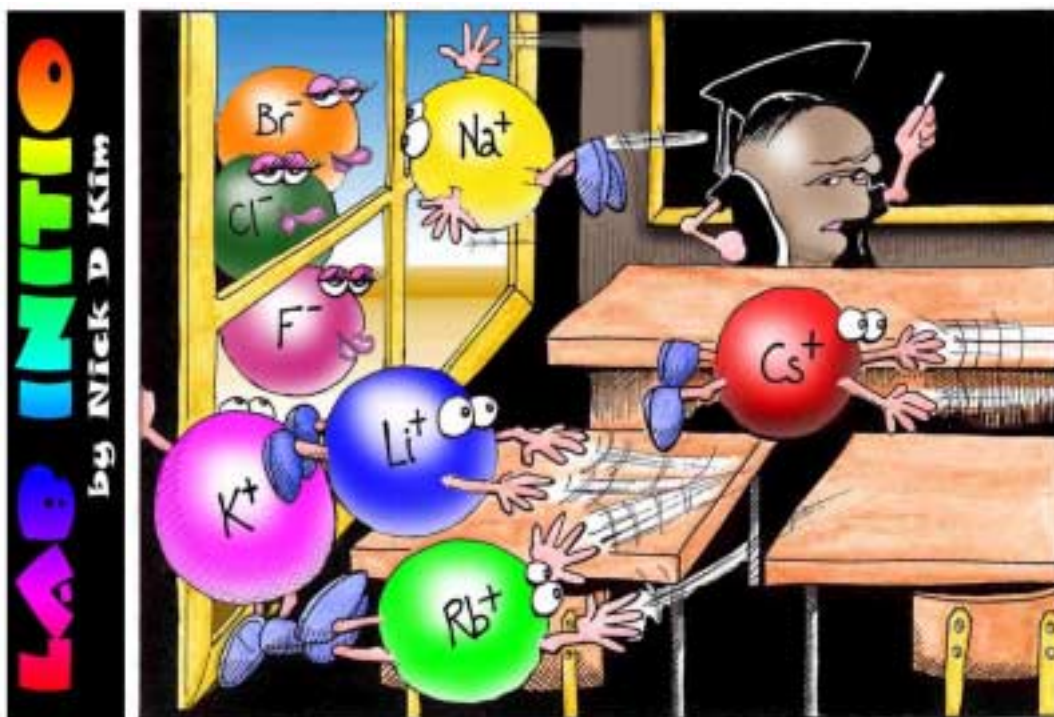
Initial emergency responders called the CTEH Help Desk (1-866-TOX-CTEH) and requested CTEH's assistance in air monitoring and toxicological support. CTEH actively responds to catastrophic chemical releases, such as oleum, and provides air monitoring and toxicological support. The CTEH initial toxicology emergency response team included the aforementioned toxicologists, three industrial hygienists, two chemical engineers, and one information specialist. Response equipment included colorimetric detectors, integrated air sampling equipment, and sophisticated air dispersion modeling software known as SAFER STAR. The toxicology emergency response team reviewed applicable toxicological literature and air monitoring methods and interacted with incident command and the United States Environmental Protection Agency (USEPA) by preparing appropriate air monitoring and site-safety plans. These plans provided for continuous "Hot Zone" and community air monitoring, toxicological appraisals, and toxicological advice to minimize exposures in work areas and in the surrounding communities. CTEH's medical staff also interacted with potential treating physicians and provided the latest toxicological information pertaining to potential exposures to oleum.

CTEH's response assisted in allowing clean-up operations to proceed, allowing evacuated families to return home, allowing closed schools to be reopened, assisting physicians in accurately diagnosing potential exposures, and calming heightened community concerns. The incorporation of SAFER STAR in the approved air monitoring plan was instrumental in demonstrating to incident command, local responders, and USEPA that the release site was being sufficiently monitored to provide adequate protection to responders and the communities. The back calculation module of SAFER STAR estimated the extent of the release during the emergency response, estimated worst-case releases during clean-up operations, minimized potential evacuation zones, and assisted emergency response personnel in preplanning for subsequent catastrophic releases. These examples demonstrate how local ACS members are actively involved in emergency responses and how their expertise limits liability by helping protect workers and communities.

If you have an article that you would like to have considered for publication in our newsletter, send it to cindy.moran@ascl.state.ar.us for review.

Perspective

Hope helps us see the future. Courage helps us create it. --Anonymous



"Perhaps one of you gentlemen would mind telling me just what it is outside the window that you find so attractive...?"

The *Central Arkansas Chemist* is published as needed by the Central Arkansas Local Section of the American Chemical Society. Section Chair, Jeffrey Moran, Center for Toxicology and Environmental Health, 501-614-2834, jmoran@cteh.com; Chair-Elect, Cindy Moran, Arkansas State Crime Lab, 501-227-5747, cindy.moran@ascl.state.ar.us. Address all correspondence to the Section Secretary, Cindy Moran. Newsletter contributions should be sent directly to the Section Secretary in electronic form. The Central Arkansas Local Section Web site is <http://membership.acs.org/c/centralarkansas>
