

American
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Inc.



Editor
Elizabeth Scharman,
PharmD

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President's Corner

Michael McGuigan, MD



The Program Committee met in mid-November to rough out the NACCT meeting to be held in San Francisco on October 4-9, 2005.

One change in the meeting structure will be parallel sessions. In the past, certain sessions (e.g., major symposia, authors with posters) ran unopposed.

Because of an increasing demand for more and more sessions, no session will run unopposed. The only possible exceptions will be sessions held in the evening. Hopefully, this change will mean that there will always be some activity that will interest every participant.

Abstracts will be due by April 1, 2006. The submission process will be the same on-line one we used for the 2005 meeting.

The hotel, Hyatt Regency on the Embarcadero, is ideal for our meeting! There are plenty of meeting

rooms on three floors with easy access to all of them. In addition, there are literally dozens of restaurants around the hotel.

For the odd time when one is not attending riveting scientific sessions or less than riveting committee meetings, the location of the hotel could not be better for enjoying the city. The hotel is located across the street from the renovated Ferry Building (don't go in hungry!) and within walking distance to Fisherman's Wharf, Ghiradelli Square (chocolate!), the ferry to Alcatraz, Chinatown, and Coit Tower.

Getting around town is easy — there is a BART station right at the corner of the hotel. This makes getting in from the airport a cinch — take the BART from the airport, get off at the Embarcadero station and you are right there!

Speaking of meetings, don't forget about the XXVI International Congress of the European Association of Poisons Centres and Clinical Toxicologists. This meeting will be held on April 19-22, 2006 at the Prague Hilton Hotel in Prague, Czech Republic.

Best wishes to everyone for the upcoming holiday season!

Building an International Occupational and Environmental Research Agenda

Jefferey Burgess, MD, MPH and Daniela Peclová, MD, PhD

Our standing as specialists in Clinical/Medical Toxicology within the larger field of medical specialists requires that we contribute to the overall advancement of understanding of the mechanisms and clinical outcomes of poisonings, including the development and testing of new potential treatments. Occupational and Environmental Toxicology is an important area within the broader field of Medical Toxicology, and also extends into other medical specialty areas, particularly including Occupational and

Environmental Medicine. Clinical toxicology has the following objectives, as published by the American Academy of Clinical Toxicology, American College of Medical Toxicology and the European Association of Poison Centres and Clinical Toxicologists.

- Promote the study of health effects of poisons on humans and animals
- Encourage development of new therapies and treatment in clinical toxicology

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- Encourage research into all aspects of poisoning
- Collaborate with international and integrational organizations including the WHO and European Communities
- Advance the science and practice of medical toxicology

While currently our membership is involved extensively with general clinical toxicology issues, a more limited number of us are focused on occupational and environmental toxicology, and an even smaller number work internationally. The relatively small number of individuals focused on occupational and environmental toxicology is not commensurate with the great need for expertise and research in these areas. Recognized deficiencies include often

limited information in humans on effects of acute and chronic chemical exposure; regulatory limits which are often based on animal studies alone; very few antidotes which are available for acute chemical exposure, and extremely limited information on effects of chemical mixtures. Internationally, there is a greater need to focus on chemical exposures with known adverse human

health effects, questions concerning the effects of exposures in unique populations, and a wider range of exposures. The importance of chemical exposures throughout the world is illustrated in Table 1.

As a field, we face significant challenges to addressing issues of occupational and environmental toxicology. These include increasing the visibility of clinical toxicology; promoting research training opportunities for clinical toxicologists/fellows; improving funding opportunities for occupational and environmental clinical toxicology research; and finding mechanisms to support research in developing nations and bringing their scientists to international meetings

Research opportunities are provided by a number of agencies internationally. Among them in the United States are the Centers for Disease Control and Prevention (CDC) including the National Institute for Occupational Safety and Health (NIOSH), the Environmental Protection Agency (EPA), the National Institutes of Health (NIH), the Department of Defense (DOD) and others, and internationally the World Health Organization (WHO), especially the International Programme on Chemical Safety (IPCS) and vari-

ous country agencies and organizations. Within the United States, specific grant opportunities include but are not limited to: NHLBI PA-05-058 “Lung Response to Inhaled Highly Toxic Chemicals” <http://grants.nih.gov/grants/guide/pa-files/PA-05-058.html>; U.S. Army Medical Research & Materiel Command Peer Reviewed Medical Research Program (PRMRP); AACT Multi-center Research Grant, support from pharmaceutical and other companies, and private foundations.

In order to highlight current research being carried out by clinical toxicologists from AACT and EAPCCT as well as research and funding opportunities for occupational and environmental toxicology, we organized a seminar entitled “Building an International Occupational and Environmental Research Agenda” at the 2005 North American Congress of Clinical Toxicology in Orlando.

An additional goal of this symposium was to foster interaction among NACCT attendees and our invited speakers. These speakers included Jefferey L. Burgess, MD, MPH and Daniela Pelclová, MD, PhD from AACT and EAPCCT, respectively, Charles Geraci, PhD, CIH from NIOSH, Andrew M. Geller, PhD from the EPA, Randolph Long, PhD from the Department of Homeland

Security, Tim Meredith, MD, from WHO/IPCS, and Ian Whyte, MD from the Department of Clinical Toxicology and Pharmacology, Hunter Area Health Service, Newcastle Mater Misericordiae Hospital, Australia.

Dr. Burgess presented “Exposure to combustion products: Acute and long-term effects (and arsenic too!)” describing his work with firefighters and miners exposed to smoke and diesel exhaust, respectively, and also with smoke inhalation victims. This work centered on the measurement of cytokines and other inflammatory mediators in sputum as biomarkers of lung inflammation and serum pneumoproteins as measures of lung permeability. The results of studies of lung inflammation and biomarkers of DNA damage in populations exposed to low-levels of arsenic in their drinking water were also presented.

Dr. Pelclová presented “New Risks of Traditional Occupational Exposures: Current Occupational Research in Czech Republic” describing her clinical research with a unique population with an extremely high exposure to dioxin, including one worker who died

Table 1: Industrial accidents resulting in significant loss of life

Year	Location	Origin	Product	Deaths
1984	India, Bhopal	Leakage	Methyl isocyanate	2,800
1989	USSR, Acha Ufa	Explosion	Gas	575
1984	Mexico, Ixhuatepec	Explosion	LPG	>500
1975	India, Chasnala	Industry	?	431
1993	Columbia, Remeios	Release	Crude oil	430
1983	Egypt, Nile River	Explosion	LPG	317
1979	USSR, Novosibirsk	Plant	Chemicals	300
1993	Thailand, Bangkok	Toy factory	Plastics	240
1998	Cameroon, Yaoundi	Transport	Petroleum	220
1978	Spain, San Carlos	Transport	Propylene	216

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within 2 years after exposure. She also presented her research on workers with silicosis and asbestosis, including the measurement of ANCA in blood and 8-isoprostane in exhaled breath condensate in workers with asbestos as compared with disease-free controls. Funding for these projects has been received from the Ministry of Education of Czech Republic (Research Project No. MSM 0021620807) and from the Czech Internal Grant Agency of the Ministry of Health (Projects No 8107-3/2004 and No 8109-3/2004).

Dr. Geraci presented “Setting a National Research Agenda: Inputting into the Process” describing how NIOSH determines focus areas for research projects, including those carried out internally and those funded externally. At the current time NIOSH is preparing the National Occupational Research Agenda (NORA) for the next decade, after the first NORA priorities were established in 1996. The preparations for the next decade of NORA will kick-off at the 2006 NORA Symposium April 17-20, 2006 in Washington D.C., and will involve developing sector-specific research agendas to bring research practice to the workplace. Sectors include agriculture, forestry and fishing; construction; mining; manufacturing; healthcare and social assistance; services; transportation, warehousing and utilities; and wholesale and retail trade. As compared with the first decade, the second decade will involve greater stakeholder participation and more focus on research to practice. As clinical toxicologists, we can provide input on top clinical toxicology problem areas, in a sector or across sectors. In addition, AACT and ACMT can work with NIOSH through recently established memorandum of understandings. More news is available from NIOSH through their E-news (www.cdc.gov/niosh/enews), we can provide input into the process (www.cdc.gov/niosh/nora) and we can volunteer for the Sector Research Councils (NORACoordinator@cdc.gov) and as a group to the Cross-Sector Research Council.

Dr. Geller presented “EPA Perspective on Environmental Toxicology Research” which described the rationale behind EPA’s toxicology research. Human Health Research reduces uncertainties in the extrapolations necessary in the risk assessment process. This research can also be used to devise predictive models. Particular areas of research include high-to-low dose, inter- and intra-species, and in vitro to in vivo extrapolations and mixtures research as they apply to particulate matter, air toxics, drinking water, endocrine disruptors, and pesticide use. In addition to informing risk assessments, EPA’s health research is used to help design public health interventions. EPA’s research is arrayed across a continuum from source to exposure to health effects, with important contributions from clinical, epidemiological, and animal studies. To demonstrate the relationship between these kinds of studies, Dr. Geller discussed results of air quality studies, including increases in hospital admis-

sions for respiratory and cardiovascular disease with increases in PM10 exposures. Decreased heart rate variability in persons with cardiovascular disease has been observed with particle exposure in both ecological and chamber studies. Mechanisms of particulate effects derived from human and animal studies include interactions of the lung with the heart and brain through cytokines and soluble factors and also from the brain to the heart through altered autonomic nervous system output. Research opportunities include fellowships and visiting scientists in the Office of Research and Development labs (www.epa.gov/ord) and the \$50 million STAR grant program (www.epa.gov/ncer).

Dr. Randolph Long presented “Chemical Countermeasures Science and Technology Program.” He reviewed the chemical threat spectrum including chemical warfare agents, toxic industrial chemicals, and non-traditional agents. The major program emphasis areas for the Department of Homeland Security include threat awareness and characterization, detection, contamination assessment, decontamination and restoration, and laboratory networks. He described the PROTECT Chemical Early Warning System, already deployed in several major transit systems, which involves a networked set of detection tools to improve warning and response. DHS is nearing completion of a rapidly deployable capability for high-throughput analysis of environmental samples to assess contaminated area and facilitate restoration. They are also working to reduce the overall time to restore a critical facility following a chemical attack and to establish a chemical lab response network with partners from EPA, CDC, DoD and FBI which can process large number of samples including analysis of unknown samples. The program expects to realize substantive improvements in understanding of threats and their impacts, more robust detection tools, qualified methodologies for decontamination and guidelines for use, and an adequate laboratory capability to support forensics, contamination assessment and restoration. Non-governmental participation in Chemical Countermeasures is generally through the Homeland Security Advanced Research Projects Agency (HSARPA), which is responsible for extramural programs. Opportunities for competitive programs can be found by monitoring the following websites: www.dhs.gov, www.hsarpasbir.com, www.hsarpabaa.com, and www.fedbizopps.gov.

Dr. Meredith presented “Meeting research needs of developing & developed countries through the International Programme on Chemical Safety” describing the IPCS country and research needs. A major point was that research needs are determined more from a top-down rather than bottom-up approach. The IPCS routinely commissions work to establish state of scientific knowledge in priority areas for international community. It rarely commissions basic research, but acts as a promoter/facilitator in cases of need. The IPCS works with >100 national institutions of excellence in >70 countries. It aims to meet the research needs of governments.

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AACT Administrative Office
777 East Park Drive
PO Box 8820
Harrisburg, PA 17105-8820
(717) 558-7847 (phone)
(717) 558-7841 (fax)
aact@pamedsoc.org
www.clintox.org

Executive Director
Jan Reisinger
jreisinger@pamedsoc.org

Administrative Secretary
Martha Souders
msouders@pamedsoc.org

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Research needs are identified through governance structures and scientific steering committees. There are two major focus areas including 1) Science/Evidence Based Normative Functions & Policy Support, and 2) Public Health Response & Country Support. Case examples were presented for each focus area. For risk assessment methodologies within the first focus area, the IPCS has been working to harmonize global risk assessment approaches through pursuit of common principles (www.who.int/ipcs/methods/harmonization/en/). In addition, Dr. Meredith described the IPCS Inter-Regional Research Unit hosted on the NIEHS campus since 1984. The question was raised as to how much input the clinical toxicology community had given to the NIEHS research strategy on environmental determinants of human health. A case example from the second focus area was described, that of EC-funded research projects on Poison Centre associated alert and surveillance to health threats. New political drivers such as the Stockholm Convention on persistent organic pollutants and the Strategic Approach to International Chemicals Management (SAICM) were also described (www.chem.unep.ch/saicm/). Dr. Meredith recommended that our membership should follow SAICM and government priorities in order to find funding opportunities.

Dr. Whyte presented on the SACTRC research (www.sactrc.org) program which is funded by the Wellcome Trust and Australian NHMRC until 2010. This is an international collaborative research program based in Sri Lanka but involving groups from Asia, Europe, North America and Australia. The work is based upon an ongoing cohort of poisoned patients (currently 14,000) with agrochemicals being the predominant acute exposure. The extent of the acute exposure is quantified clinically and analytically on all patients. The major current research themes include acute clinical treatment, education, basic mechanisms and public health interventions. The patient cohort includes a large number of patients who come from high risk groups for occupational and environmental exposure. SACTRC has established a network of clinical units within Sri Lanka which provides an infrastructure that provides cost-efficient research opportunities for other clinical toxicologists and researchers. This network is expanding into other areas in south Asia. The extent of exposure and the burden from clinical, occupational and environmental toxicology in developing countries exceeds that in developed countries but so does the opportunity for research, which will have both local and global benefit to poisoned patients.