

President's Letter

What is environmental engineering, and why do we need to ask that question?

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AEESP / AEE 2002 Education and Research Conference

Toronto, Ontario
August 11-13

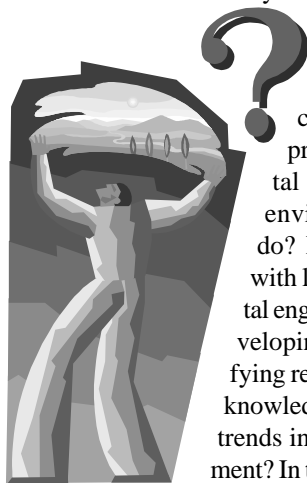
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The AEESP Newsletter online:

[www.uidaho.edu/
aeesp](http://www.uidaho.edu/aeesp)

Over the past decade I have read editorials in journals and had conversations with colleagues focused on what environmental engineering is, what it should be, or what it no longer is. The Oxford English Dictionary defines engineering as “the work done by, or the profession of, an engineer.” This definition is easily extrapolated to environmental engineering, but it seems at first to be unhelpful and recursive. In fact, it forces us to understand what environmental engineering *is* by understanding what environmental engineers *do*. Yet there has been little effort in the debate to identify—comprehensively—what environmental engineers do as the basic premise from which a definition of environmental engineering follows. More importantly, there has been little discussion of what environmental engineers are likely to be doing in the foreseeable future.

Why do we need to define environmental engineering? Because environmental engineering must first be learned, at least in part, before it is practiced—and it is learned first, as are other engineering disciplines, in colleges and universities. It is therefore our role collectively to define environmental



engineering education. But how well is our approach to education informed by the practice of environmental engineering, by what environmental engineers do? How in touch are we with leaders in environmental engineering practice in developing curricula, in identifying relevant tools, skills and knowledge, and in anticipating trends in practice and employment? In turn, how well does environmental engineering practice assimilate emerging knowledge? How often do fundamentals learned in school atrophy because they

are not ingrained in the culture of engineering practice?

Why do we need to define environmental engineering? Because the forces that shape the higher education infrastructure and the demographics of the engineering workforce are otherwise defining it for us. As a relatively small discipline, environmental engineering is susceptible to the whims of federal support for basic and applied research. Entire generations of faculty at colleges and universities are influenced by the imbalanced availability of funding in specific topical areas. With the limited availability of funding for applied research in most areas, and with reward systems at research institutions that increasingly favor fundamental over applied research, the project-based master's degree is increasingly driven to the point of extinction. Limited pools of students interested in engineering as a career, combined with relatively low starting salaries for civil and environmental engineers, have led to drastically decreased undergraduate enrollments and an exodus of the best and brightest from our graduate programs. As a discipline we need to perceive these trends and develop mechanisms to work around them if the discipline is to advance.

So what is environmental engineering? There is no simple answer to this question. In AEESP's 25-year history (written by David Hendricks and Robert Baumann, and published in 1990), Dick Luthy made a convincing case that environmental engineering education must be based on fundamentals and interdisciplinarity; I think few of us would argue with that approach. I would argue as well, however, that fundamentals must be integrated with applications at the undergraduate and master's levels, and as a foundation for doctoral study in environmental engineering programs. I would argue that concepts in biology must be added to the list of fundamentals with which an environmental engineer should be equipped. I would argue that the use of almost-derogatory terms such as “end-of-pipe treatment” will not change the fact that air and water will always need to be treated in engineered systems—that

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Format for submissions

Submissions should be sent electronically to: Amy E. Childress, amyec@unr.edu; phone (775) 784-6942; fax (775) 784-1390.

Letters to the president may be sent to:

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corrective approaches will always be at least as important as preventive approaches to protecting human health and the environment. I would argue that the environmental engineer's reach has extended into modeling and its increasingly important role in understanding complex environmental systems at all scales. I would add that a model is only as good, however, as its developer's comprehension of the physical system on which it is based.

Environmental engineering will evolve for the better by integrating education, practice and research. We need to recognize that most individual academic programs cannot and should not cover in depth the entire scope of what environmental engineers do. Realities force us to identify boundaries around our own programs (finite credit hours, faculty

resources, and financial resources) and around the discipline (what constitutes an adequate education for a practicing environmental engineer?). It is more helpful for those boundaries to be flexible, both on a case-by-case basis and over time. It is more beneficial to remove boundaries in an individual's pursuit of research, but the collective balance of funding for applied and basic research must be such that new knowledge can be put into practice. The entire community of environmental engineers—practitioners, educators, and researchers—needs to work together to define environmental engineering, particularly in tomorrow's world. By what means can we accomplish this?

— Mike Aitken

Government affairs Congressional Visits Days

On March 5 and 6, Mike Aitken and Mort Barlaz participated in Congressional Visits Days, which is organized annually by the Science-Engineering-Technology Workgroup to emphasize the importance of federally funded research in science and engineering. The trip began with a half-day session that featured talks by several officials from the Bush administration, including Rita Colwell, the Director of NSF. We also heard from several Congressional staff employees involved in science issues and the appropriations process. In addition, Kathi Ream, who assists AEESP on governmental interactions, presented information on how to conduct a meeting with elected representatives and their staff (if anyone is interested in seeing the presentation, contact Mort Barlaz). A major theme for the visits was that while federal research funding was increasing, most of this increase was going to NIH and to activities in DOD that were developmental rather than basic and applied research. As such, the federal research budget requires more balance among other agencies. As a member organization of the Coalition for National Science Funding, AEESP

joined many others in emphasizing the importance of NSF's support for non-biomedical research, as well as its integrity and efficiency in managing its research budget.

On March 6, we met with elected representatives from North Carolina, our home state, including a staff person from Senator Edwards' office, as well as with Congressmen Price and Etheridge. Everyone with whom we met was supportive of increased funding for research but also stressed that this would be a particularly difficult year in which to increase funding for anything that was not directly related to national security. As described in an earlier email, we were able to raise the issue of the EPA STAR Fellowship program, which as of this writing is scheduled to be eliminated. Here too, all three North Carolina representatives we met with were supportive of restoring this program. If you are interested in following deliberations on the proposed FY 2003 budget, the American Association for the Advancement of Science maintains a web site that includes a good analysis of issues related to the federal research budget (<http://www.aaas.org/spp/dspp/rd/rdwwwpg.htm>).

2002 AEESP Lecture Tour

C. P. Leslie Grady, the R. A. Bowen Professor in Environmental Engineering and Science at Clemson University, will present the AEESP Lecture Tour. Professor Grady will speak on the following dates:

March 12	Tennessee Tech
March 15	Georgia Tech
March 18	Washington University at St. Louis
March 20	University of Pittsburgh
March 22	Texas A&M University
April 1	Washington State University
April 3	University of Nevada, Las Vegas
April 5	Arizona State University
April 8	University of Nevada, Reno
April 10	University of British Columbia
April 16	SUNY-ESF
April 17	Clarkson University
April 24	Howard University
April 30	University of Illinois at Urbana-Champaign
May 2	Princeton University
May 3	Rutgers University
May 6	University of Cincinnati
May 7	University of Wisconsin
May 15	University of Michigan
May 16	McMaster University

AEESP Lab Manual CD policy

The AEESP Environmental Engineering Processes Lab Manual is available on CD at the following costs: The cost for members is \$50 (student members, \$25) and for non-members is \$75. Copies for departmental use are \$100. Departmental copies allow any instructor within a department to make use of the CD. For programs in which a faculty or departmental copy of the CD has been purchased, bulk purchases for 12 or more students will be available for \$10 apiece. For delivery to U.S. addresses, please add postage and handling charges of \$5 for individual CDs and \$15 for bulk orders. For delivery to non-U.S. addresses, please add postage and handling charges of \$10 for individual CDs and \$30 for bulk orders. MasterCard and Visa credit cards are accepted, and credit card orders (please include expiration date) may be sent by email to jfetzner@uiuc.edu or by Fax to 217-355-9232.

New 2002 AEESP members

The Association is pleased to welcome the following new members for 2002. We encourage them to participate in AEESP activities and to let us know how the Association can be of service to them during their membership:

- Angela R. Bielefeldt, Assistant Professor, University of Colorado

- Mark T. Brown, Assistant Professor, University of Florida
- Edward H. Bryan, Diplomat, AAEE, Chevy Chase, Maryland
- Joseph T. Bushey, Graduate Student, Carnegie Mellon University
- Clayton J. Clark II, Assistant Professor, University of Florida
- Jed Costanza, Ph.D. Candidate, Georgia Institute of Technology
- Jorg E. Drewes, Assistant Professor, Colorado School of Mines
- Ege Egemen, Assistant Professor, University of Toledo
- Carlos D.M. Filipe, McMaster University
- Daniel E. Giammar, Postdoctoral Research Associate, Princeton University
- Kelvin B. Gregory, Research Assistant, University of Iowa
- Andrew J. Guswa, Assistant Professor, Smith College
- Eric M.V. Hoek, Assistant Professor, University of California, Riverside
- Jose L. Jimenez, Postdoctoral Scholar, California Institute of Technology
- Sudarshan Tanaji Kurwadkar, University of Missouri, Rolla
- Deborah A. Lange, Executive Director, The Brownfields Center, Carnegie Mellon University
- Christian Lastoskie, Associate Professor, University of Michigan
- Baikun Li, Research Assistant, University of Cincinnati
- Gregory V. Lowry, Assistant Professor, Carnegie Mellon University
- Michael L. McCormick, Postdoctoral Fellow and Adjunct Professor, University of Michigan
- Kathleen M. McDonough, Carnegie Mellon University
- Barbara Minsker, Assistant Professor, University of Illinois
- Priya Narasingarao, Rutgers State University
- Kara Nelson, Assistant Professor, University of California, Berkeley
- Robert Nerenberg, Research Assistant, Doctoral Candidate, Northwestern University
- Naraine Persaud, Associate Professor, Virginia Tech
- Bruce G. Wilson, Assistant Professor, University of New Brunswick
- Stefan Wuertz, Associate Professor, University of California
- Dongye Zhao, Assistant Professor, Auburn University

Organizations of Interest

AWWA

A. P. Black Research Award

The A. P. Black Research Award was established in 1967 in honor of Dr. A. P. Black to recognize outstanding research contributions to water science and water supply rendered over an appreciable period of time. Individual members of the American Water Works Association are eligible for the award, which is presented once a year during the AWWA Annual Conference and Exposition.

AEESP member, **Mel Suffet**, of UCLA, is the 2001 recipient of the award. Suffet received the award "in recognition of his research in the field of organic contaminants and taste and odor problems in water, and his over a quarter of a century of contributions to the water supply community."

Previous A. P. Black Research Award recipients, many of whom are AEESP members, are:

- 1967 Alvin P. Black, Florida Section
(1968-1969, no award given)
- 1970 Gordon G. Robeck, California-Nevada Section
(1971-1974, no award given)
- 1975 Kenneth E. Shull, Pennsylvania Section
- 1976 Herbert E. Hudson, Jr., Florida Section
- 1977 Richard L. Woodward, New England Section
- 1978 E. Robert Baumann, Iowa Section
- 1979 Aaron A. Rosen, Ohio Section
- 1980 Francis M. Middleton, Florida Section
- 1981 James M. Symons, Ohio Section
- 1982 John L. Cleasby, Iowa Section
- 1983 J. Edward Singley, Florida Section
- 1984 Edwin E. Geldreich, Ohio Section
- 1985 Robert A. Baker, Alabama-Mississippi Section
(1986, no award given)
- 1987 Russell F. Christman, North Carolina Section
- 1988 Vernon L. Snoeyink, Illinois Section
- 1989 Perry L. McCarty, California-Nevada Section
- 1990 Charles R. O'Melia, NEWWA, A Section of AWWA
- 1991 Walter J. Weber, Jr., Michigan Section
(1992, no award given)
- 1993 Robert M. Clark, Ohio Section
- 1994 Appiah Amirtharajah, Georgia Section
- 1995 Philip C. Singer, North Carolina Section
- 1996 Robert Hoehn, Virginia Section
- 1997 Charles Gerba, Arizona Section
- 1998 Benjamin W. Lykins, Jr., Ohio Section
- 1999 Desmond F. Lawler, Texas Section
- 2000 Gary Logsdon, Ohio Section
- 2001 Irwin "Mel" Suffet, California/Nevada Section

WEFTEC

U.C. Berkeley Reunion Dinner

There will be a UC Berkeley Environmental/Sanitary Engineering Reunion Dinner at WEFTEC 2002 in Chicago on Monday, September 30, 2002. All current and former students, faculty and post-docs are invited to attend. Further information on place, time and cost will be available soon. Please contact Krishna Pagilla at 312-567-5717 or pagilla@iit.edu if you or someone you know might be interested in attending.

New ASCE EWRI awards

The Environmental Multi-Media Council (EMMC) of the ASCE Environmental and Water Resources Institute has developed three new awards for professional achievement:

Award for Achievement in Environmental Engineering Education—to honor an individual who has made outstanding contributions to environmental engineering education, both at the individual's home institution and more broadly.

Award for Achievement in Environmental Engineering Government Service—to honor an individual who has made outstanding contributions to environmental engineering as practiced in government and service to the public, both at the individual's organization and more broadly.

Award for Achievement in Private Practice of Environmental Engineering—to honor an individual who has made outstanding contributions to the private practice of environmental engineering, both at the individual's organization and more broadly.

These awards will be given to ASCE members for cumulative achievement or for a specific project, based on nominations from ASCE members. A nomination package will include a resume for the nominee and six supporting letters. The requirements for the sources of the supporting letters vary among the three awards. For each award, service to the profession will be used as a criterion to help distinguish among highly qualified nominees. Details about nomination procedures are available at the EMMC web site: www.asce.org/inst_found/ewri_comm_multimedia.cfm. Nominations are due by August 1.

These new awards provide a great opportunity to honor colleagues who have contributed to the civil and environmental engineering profession in diverse ways. Please consider nominating a deserving ASCE colleague for one of the new awards.

—David A. Dzombak, Carnegie Mellon University, Past Chair, ASCE EWRI Environmental Multi-Media Council Awards Committee

—John Van Benschoten, State University of New York at Buffalo, Chair, ASCE EWRI Environmental Multi-Media Council Awards Committee

AEESP members, please share items of professional achievement with other AEESP members. Send a brief note via e-mail to: Amy E. Childress, AEESP Newsletter Editor, amyec@unr.edu.

Auburn University

Dr. Dongye Zhao has joined the faculty of the Civil Engineering Department, Auburn University as an Assistant Professor since July 2001. His research interests include physical-chemical processes for separation of trace contaminants from water and wastewater, sorption and bioavailability of contaminants in soil and sediment, remediation of contaminated soil and groundwater, and interfacial mass transfer modeling.

Dr. Zhao received a B.S. (1984) and a M.S. (1987) in Environmental Engineering from Taiyuan University of Technology, China and a Ph.D. (1998) in Environmental Engineering from Lehigh University. Prior to joining Auburn, he was a postdoctoral scientist at the Connecticut Agricultural Experiment Station and a research associate at Virginia Tech, respectively.

University of California, Riverside

The Department of Chemical and Environmental Engineering at the University of California, Riverside is pleased to announce the appointment of **Dr. Eric M.V. Hoek** to the position of Assistant Professor. Dr. Hoek's research is motivated by a general interest in water quality, but he is particularly interested in the role of colloidal and interfacial phenomena on physical and chemical environmental processes in both engineered and natural systems. His current research focuses on elucidating fundamental mechanisms of colloidal fouling of membranes, and on optimizing the performance of low-pressure reverse osmosis membranes for reclamation and direct-reuse of agricultural drainage waters.

Dr. Hoek received his B.S. degree in civil engineering from Penn State University in 1995 and M.S. degree in environmental engineering from the University of California, Los Angeles in 1996. He worked for two years in industry and consulting prior to obtaining a Ph.D. in environmental engineering at Yale University in 2001.

University of New Mexico

Jack Matson, professor of environmental engineering, has been awarded the Garrey Carruthers Chair in Honors at the University of New Mexico for the 2006-2007 academic year.

As a chaired professor in the University Honors Program, Matson will teach one seminar in honors and one class in the Department of Civil Engineering each semester at the University of New Mexico.

Scholars for this chair are chosen by a committee of faculty from various departments, including the honors program, and two student representatives, based on their experience and interest in academic interdisciplinary activities and outstanding credentials in teaching and scholarship.

Rosalie Otero, director of the University of New Mexico Honors Program, explained, "The committee chose Dr. Matson

because of his outstanding credentials, including the fact that he was the Founding Director of the Leonhard Center for the Enhancement of Engineering Education. He is an award-winning educator and has developed some very interesting interdisciplinary courses that we think would be valuable to our students."

University of North Carolina

Dr. Philip C. Singer has been selected the first Daniel A. Okun Distinguished Professor of Environmental Engineering in the Department of Environmental Sciences and Engineering in the School of Public Health at the University of North Carolina at Chapel Hill. This professorship was established to honor the work of Kenan Professor Emeritus, Dr. Daniel A. Okun, who is recognized internationally for his contributions to the fields of environmental engineering and sanitary engineering.

Dr. Singer, Professor and Director of the Drinking Water Research Center, is recognized and respected internationally in his specialty area of drinking water quality, and is a prolific scholar, a dedicated teacher and highly-regarded mentor to his many students.

Washington University, St. Louis

Washington University in St. Louis is pleased to announce the hiring of **Drs. Daniel Giammar** and **Largus Angenent** as Assistant Professors in the Environmental Engineering Science Program (www.env.wustl.edu).

Dr. Giammar received his Ph.D. in environmental engineering from the California Institute of Technology in June 2001. He received his B.S. degree from Carnegie Mellon University. His expertise is in aquatic chemistry, with interests in studying chemical processes at the solid-water interface. He is currently a postdoctoral research associate at Princeton University.

Dr. Angenent received his Ph.D. from Iowa State University in 1998. He received his B.S. degree from Wageningen University, Netherlands. He completed a postdoctoral fellowship at the University of Illinois in 2000 and is currently a postdoctoral fellow at University of Colorado, Boulder. His research interests are in the application of molecular biology tools in the study of environmental engineering problems. He has applied this to the study of wastewater treatment processes and recently, bio-aerosol systems.

Yale University

Professor Thomas E. Graedel of the Environmental Engineering Program and the School of Forestry and Environmental Studies at Yale University has been elected to the National Academy of Engineering "for outstanding contributions to the engineering theory and practice of industrial ecology, particularly for improved methods of life-cycle analysis."

Employment / Student Opportunities

Arizona State University

Ph.D. POSITION, ENVIRONMENTAL ENGINEERING. Arizona State University, Department of Civil and Environmental Engineering, Tempe, AZ. Students having already received an M.S. degree are encouraged to apply for a Ph.D. position(s) in the area of water quality and treatment. Prof. Paul Westerhoff is looking for motivated students to work on projects related to physical, oxidative, and biological processes related to removal of micropollutants (taste and odor, endocrine disruptors) associated with recently awarded AWWARF projects. Research opportunities also exist related to arsenic treatment. Motivated students with personal research ideas are also encouraged to inquire about financial support for novel research concepts. Contact Prof. Paul Westerhoff by email (p.westerhoff@asu.edu) or visit his website (<http://ceaspub.eas.asu.edu/pwest/>).

Auburn University

Ph.D. POSITIONS, ENVIRONMENTAL ENGINEERING. The Environmental Engineering Program at Auburn University is looking for qualified Ph.D. students and research scholars to carry out research projects in the broad areas of environmental engineering including water and wastewater treatment, soil and groundwater remediation, and modeling of fate and transport of contaminants. Our interdisciplinary environmental engineering team currently consists of six faculty members (two more members will be joining in Fall 2002). Collaborative relationships also exist with faculty in hydraulics and hydrology, agricultural, chemical, and textile engineering, agronomy and soils, chemistry, and microbiology on the Auburn campus.

Applications are accepted year round, but students wishing to enter in the Fall and receive full consideration for financial support should send a resume and letter of application to the address shown below by March 15 of the year in which they want to enter. Students may apply and be considered for financial aid before applying for formal admission to the graduate school.

Candidates with excellent academic records and a strong desire to pursue an advanced degree in environmental engineering are encouraged to visit our webpage at <http://www.eng.auburn.edu/department/ce/environmentalengineering.html> or contact the graduate coordinator or individual faculty members for more information.

Clarkson University

FACULTY POSITION, ENVIRONMENTAL ENGINEERING. The Department of Civil and Environmental Engineering at Clarkson University invites applications to fill a full-time, tenure-track position in Environmental Engineering. The position rank is open and preference will be given to candidates who possess an outstanding record of accomplishment. Junior candidates

with truly superior potential also are strongly encouraged to apply. All candidates will be expected to pursue a vigorous, nationally visible, externally funded research program and maintain a strong commitment to teaching at all levels. A Ph.D. in environmental engineering or a closely related field is required of all applicants, and those with appropriate qualifications may be considered for the Director of the Center for Environmental Management.

The successful candidate will have an interest in collaborative research that complements existing expertise among the environmental engineering faculty and aligns with one or more of Clarkson's interdisciplinary research centers. A wide range of collaborative research opportunities exist within the Center for Environmental Management (CEM), the Center for Advanced Material Processes (CAMP), the Center for Atmospheric Research on Environmental Systems (CARES) and the Great Rivers Center (GRC).

Interested individuals should submit curriculum vitae, statements of research and teaching interests, and a list of at least three references to: Dr. Stefan Grimberg, Chair of the Faculty Search Committee, Department of Civil and Environmental Engineering, Box 5710, Clarkson University, Potsdam, NY 13699-5710. Applications received by March 31, 2002 will receive highest consideration. Applicants should refer to Position Number 64-01. For more information about the CEE Department, see www.clarkson.edu/cee. For more information about the interdisciplinary research centers, see www.clarkson.edu/research/irc.html. *Clarkson University is an Equal Opportunity Affirmative Action Employer.*

Duke University

TENURE-TRACK/TENURED FACULTY POSITIONS, DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING. As part of the current expansion of the Pratt School of Engineering, the Department of Civil and Environmental Engineering (DCEE) is projecting the addition of 6-10 tenure-track or tenured faculty members in the next 3-4 years. The new hires will support our new strategic initiative, Extreme Environments, and/or one of the two new thrusts, Instrument and Sensor Technology and Experimental/Mathematical Simulators, all broadly related to the natural and engineered environments. Additional information on the School and the Department is available at: <http://www.egr.duke.edu> and <http://www-cee.egr.duke.edu>.

The search is open at all ranks, but only candidates with demonstrated excellence will be considered for tenured appointments. Successful candidates are expected to develop outstanding, externally-funded research programs. They should hold a Ph.D. or equivalent in engineering or physical sciences at the time of appointment. Applications should include:

- 1) a cover letter with a summary of qualifications
- 2) a curriculum vitae including funding history, if applicable

- 3) a statement of research experience and interest discussing how the candidate complements the existing expertise in DCEE and how she/he fits our new strategic initiative and/or thrusts
- 4) a statement of teaching philosophy, interest, and experience
- 5) names, mailing addresses, e-mails, fax and telephone numbers of 3-5 references.

Applications should be submitted electronically in pdf format to: CEEsearch@duke.edu. Applications will be reviewed until all positions are filled. Duke University is an Equal Opportunity/Affirmative Action Employer.

Georgia Institute of Technology

FACULTY POSITION. The School of Civil and Environmental Engineering invites applications for tenure-track faculty positions, with a starting date of July 1, 2002. We are seeking candidates with interests in the areas of (1) simulation of complex civil and environmental systems, and (2) innovative sensing technologies. In the simulation area, examples include: flow, transport and contaminant transformation in heterogeneous porous media; assessment of natural hazards and their impact on the built environment; hydro-meteorology; logistics; and economic valuation of infrastructure and environmental resources. In the area of innovative sensing technologies, examples include: integrative monitoring of distributed civil and environmental engineering systems using remote and on-site sensors; and remote sensing of hydro-meteorological variables, water quality or atmospheric pollution. All candidates must have strong backgrounds in information technology, and individuals having interests that bridge traditional areas of civil and environmental engineering or address nontraditional areas will receive special consideration.

Candidates must hold a Doctoral degree at the time of appointment in Civil and Environmental Engineering or a related field. They must be capable of teaching undergraduate and graduate courses and show a clear potential for creative independent research leading to a strong extramurally funded research program and national recognition. Applicants should submit a curriculum vitae, a one-page statement of teaching and teaching interests and objectives, and the names of four references to: Dr. Bruce R. Ellingwood, Chair, School of Civil and Environmental Engineering, Georgia Institute of Technology, 790 Atlantic Drive, Atlanta, GA 30332-0355. The Georgia Institute of Technology is an Equal Opportunity/Affirmative Action Employer, and applications from women and under-represented minorities are encouraged.

For more complete information, please visit: <http://www.ce.gatech.edu/>.

University of Oklahoma

POSTDOCTORAL POSITION, ENVIRONMENTAL CHEMISTRY. Position available immediately. Research projects include photocatalytic degradation chemistry of recycled wastewater and the environmental chemistry of anaerobically-produced hydrocarbon metabolites. Research team includes chemists, microbiologists, and engineers. LC/MS experience necessary; GC/MS experience preferred. For further information: <http://coecs.ou.edu/nanny/www/OUPostDoc.htm>. Send CV and three letters of recommendation to: Dr. Mark A. Nanny, School of Civil Engineering and Environmental Science, 202 West Boyd Street, Rm. 334, The University of Oklahoma, Norman, OK 73019.

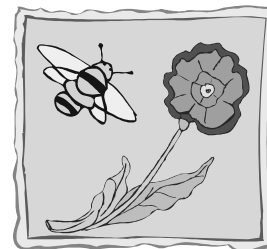
Yale University

ENVIRONMENTAL MOLECULAR SCIENCE FACULTY OPENING. The Environmental Engineering Program at Yale University (www.eng.yale.edu/environmental) invites applications for an Assistant Professor position in Environmental Molecular Science. This position is part of the ongoing initiative at Yale University to strengthen the interdisciplinary Environmental Engineering Program, which involves engineering and science departments as well as the School of Forestry and Environmental Studies. Candidates are expected to have expertise in environmental molecular science involving **microbial** or **chemical** processes in engineered and/or natural aquatic systems. The successful candidate will be expected to teach undergraduate and graduate courses in Environmental Engineering and related engineering science, advise graduate students, and develop a creative and dynamic externally-funded research program.

Nominations and applications with a detailed resume, a description of research and teaching interests, and names and addresses of at least four references should be sent to: Chair, Environmental Engineering Search Committee, Department of Chemical Engineering, Environmental Engineering Program, Yale University, P. O. Box 208286, New Haven, CT 06520-8286

Review of applications will begin June 2002 and will continue until the position is filled. The intended starting date is January 2003.

Yale University is an Affirmative Action/Equal Opportunity Employer and welcomes applications from women and members of minorities.



The Elements of Academic Research

Edited by Richard H. McCuen, ASCE Press, 1996

During my first engineering research experience, I sometimes felt like I was traveling in a fog. Fortunately, my advisor was sympathetic and helped me steer a clear and ultimately successful course. Still, my “foggy” experience is all too common among graduate students pursuing research for the first time. Many of us have known a bright student who finished the required graduate coursework but left school ABD—“all but dissertation”—never completing the required research project. Such students in particular, but in fact all graduate students, would benefit from reading *The Elements of Academic Research*. The book provides the motivation, inspiration, and guidance to help steer a graduate student through the research process.

The book gives a comprehensive, reader-friendly overview of key aspects of conducting and presenting research. Targeted at the graduate student conducting research for the first time, the book addresses many practical questions that students might have, such as:

- How do I find an advisor?
- How do I select a topic? and
- What if my research fails?

Chapters address the scientific method in research, attitudes for success in research, topic selection, conducting a literature search, and publishing in professional journals, along with a

variety of others. The book’s discussion of the benefits of participating in research should be especially motivating to students. The chapters on time management, ethical dilemmas, and analyzing data are particularly adept at applying general tenets or advice to the particular problems associated with research work. Editor Richard H. McCuen does an artful job of integrating chapters written by various researchers into an integrated whole, which culminates in the last chapter, “A Strategy for Successful Research,” that summarizes highlights from preceding chapters.

The Elements of Academic Research is written in understandable language without technical jargon; it would thus be suitable for students in any academic field. Cartoons related to the research process enliven the text. The book is available from ASCE (American Society of Civil Engineers, www.asce.org) Press for \$30 for non-members, \$22.50 for members.

In my opinion, *The Elements of Academic Research* should be required reading for all graduate students beginning to conduct research. It is also suggested reading for faculty working with graduate student researchers. My primary criticism of the book is that it should have been written a few years earlier, during my graduate student days.

— *Melanie L. Sattler, University of Texas at Arlington*

Water Chemistry

Mark M. Benjamin, McGraw-Hill, 2002

My mother-in-law (Elizabeth McTaggart is her name (Wilson was her maiden (interesting how we call unmarried girls (to her friends she was called Libby) maidens) name, of course) because she was married to Jim McTaggart) was a great story teller. Her technique (if you can call it a technique (well, a way of telling (and she would always tell these stories to anyone (almost anyone would, at least in the McTaggart household) who would listen) for storytelling) was to use an amazing number of parentheses. She would start innocently enough (we always wondered if she (come to think of it, she always had a smile on her face) thought these through well ahead) but then the listener (grandchildren were the best (other than the son-in-law of course) for listening to her stories) would begin to suspect she (and these stories became intricate (how she kept all the characters (and these were mostly all her relatives (brother Sam (the baby of the family) was a major player) who she grew up with) in order was amazing) that it was impossible to tell where she was) had it all figured out in advance. Somehow it all came out right in the end!

The trick of course is to keep all the parentheses in order.

Remember writing FORTRAN code? You lose one bracket and you are a dead duck. You have to be perfect, and Libby McTaggart was always right on the mark.

Being right on the mark (sorry about this) is what I thought about when I read Mark Benjamin’s new book. It is as perfect as a book can get (although Mark has no doubt found typos (the worst ones (this is some rule of nature) are found first), in the text). It is a beautiful job of organization and presentation, and the book will proudly take its place alongside the other classic texts in the McGraw-Hill series in Water Resources and Environmental Engineering (the venerable George Tchobanoglous, editor).

The book begins with a chapter on basic concepts in aquatic chemistry, and Mark’s gentle but firm style of writing makes difficult ideas easy to grasp. (I found out, perhaps for the first time in my life, what hydrogen bonding really is.) The second chapter is on potentials, energy, and forces, or ways to interpret changes in physical/chemical systems (Gibbs and all that). Acids and bases is the subject of the next two chapters, followed by titration and buffers. The sixth chapter is a discussion

of software for solving chemical equilibrium problems—always a risky topic because it dates the book so fast—but certainly well done. Subsequent chapters are on gas/liquid equilibrium, the chemistry of metals in aqueous systems, redox chemistry, and adsorption reactions. I particularly like the thought-provoking and well tuned problems at the ends of the chapters. For example, one problem begins: “Having become thoroughly frustrated with the concept of moles, a reformer decides to defy convention and carry out all calculations using a new set of definitions for the standard state.” Cool! And perhaps most importantly, the book is not for the eggheads who never have to dirty their boots. There are lots of good examples of how all this

stuff can be put to use. The discussion on crown erosion (in sewers, not on eggs) in the chapter on acids and bases is excellent.

In short, Mark has not dropped a single parenthesis. He has written a complete book, and it all comes out right at the end. :)

Mark Benjamin is the Alan and Ingrid Osberg Professor of Civil and Environmental Engineering at the University of Washington.

— *P. Aarne Vesilind, Bucknell University*

Physicochemical Groundwater Remediation

James A. Smith and Susan E. Burns, editors, Kluwer Academic/Plenum Publishers, 2001

The hunchback of Notre Dame was getting old, and it became necessary for him to take on an apprentice who would learn his trade. The young man did fine, until one day he was taken ill and sent his brother to help out the hunchback. So the hunchback explained how the bell is rung: You get the bell swinging and then you step in front of it, letting it hit your forehead. The hunchback demonstrated how this is to be done, and then let the young man try it. But no matter how hard he tried, every time he stepped in front of the swinging bell and it struck his forehead, there was just a muffled sound. He tried several times. Finally, the frustrated apprentice got the bell swinging almost out of the steeple, stepped in front of it, and the force of the bell pushed him out the window. He fell to the sidewalk below—dead. The hunchback climbed down the steeple stairs and went to where the man was lying on the sidewalk. A crowd had gathered around, and someone asked the hunchback if he knew him, to which the hunchback said, “No, his face does not ring a bell.” But then he added, “But he is a dead ringer for his brother.”

The art of pealing church bells was actually invented in England where bells of different tones were first installed in church steeples. Someone figured out that the sound coming from a bell reverberates and has a long die-away. During that time one can ring another bell in harmony with the first one, and maybe even a third to create a chord. Imagine the fun of trying out in which sequence to ring bells so as to create different chords that make harmonic sense. “Maybe if you add this G[#] here we can make a D^b chord!”

The pealing of bells became the central compositional technique of a fairly well known contemporary composer, Arvo Pärt. Pärt was born in Estonia during the darkest days of the Russian occupation and studied composition under the best musicians of the day. He was a brilliant composer but often had to write schlock in order to keep his job. During the 1970s when there was every indication that the small countries of Estonia, Latvia

and Lithuania would soon disappear culturally, he wrote a short piece entitled “Cantus in Memory of Benjamin Britten,” the pacifist English composer. This was a safe title to use, although there were many who believed the title he actually wanted to give the piece is “Cantus in Memory of the Estonian People.”

The cantus is written in the style of pealing bells, and is scored for strings and bells. Instruments enter as a bell would, strong tones with diminuendos, one stacked on top of another. It is a very moving piece, worth taking the trouble to find a good sound system, and sitting in front of the speakers with eyes closed. The cantus has been recorded by a number of orchestras and several versions are available through amazon.com. I recommend the one by the Gothenburg Symphony, directed by Neeme Järvi.

The pealing of bells—the stacking of tones with the previous ones reverberating while the new ones are introduced—is the tone of this fine book by James Smith and Susan Burns. The book is an edited collection of articles by some of the best researchers in groundwater remediation. What is so excellent about this book is that the editors have (apparently deliberately) encouraged the authors to write not only about their individual research (ring their own bell, so to speak), but rather to write reviews on the general topics of their work. The large project directed from the group at Stanford, for example, is summarized. The placement of the articles by the editors is with some thought, so that the previous one is still reverberating as the next one is introduced.

One of the best efforts is by Alan Rabideau (New York University at Buffalo) and his friends on sorbing vertical barriers. There is a lot to be learned from these 15 articles, which include (in addition to the Rabideau article) design of groundwater remediation using genetic algorithms, optimal plume capture in unconfined aquifers, palladium catalysis, electrochemical interactions under DC electric fields, transport of trichlorethylene, reductive dechlorination, zeolite permeable barriers, surfactant

Book Reviews

sorption, surfactant-enhanced deposition and removal, density modification using surfactant/alcohol solutions, recovery of tetrachloroethylene, unsaturated zone airflow, and high-vacuum soil vapor extraction.

This book is not one you would want to use as a text, but it would be very useful for an advanced course in groundwater

remediation. Researchers certainly would want to buy it for their libraries. It has a nice ring to it.

James A. Smith and Susan E. Burns are with the Department of Civil Engineering at University of Virginia.

— *P. Aarne Vesilind, Bucknell University*

Water Technology

N. F. Gray, Arnold Publishers, London (available through John Wiley in the USA), 1999

Speech is limited as a means of communication because we cannot say in words or expressions how important what we are saying is. In written speech, we can use bold letters, but this would just indicate louder speech. Italics means it is a different language. *N'est pas?* But how important is what we are saying? Is this the most important thing we have said, or is this just a throwaway bit of verbiage, listening to ourselves talking?

Students try to figure out from both their books and their professors what is important. They know that both say a lot of stuff that is not on the test, and in their books they highlight with a yellow marker what they believe is really important. Perhaps there should be a "lecture highlighter" as well. How about a yellow light that we can turn on during the lecture when something important is being said? It could work.

The worst thing about not knowing how important something is is that it can lead to misunderstandings between people, and between institutions/nations. "Honey, I have been thinking of chucking it all and becoming a hog farmer" is probably an innocent musing, but if it is interpreted as being important it could lead to certain difficulties. "We have atomic warheads aimed at China" is just a fun thing to say around the Pentagon, but it is not fun to the Chinese.

I propose that we create a new scale for indicating the importance of what we say. Maybe it can be something like from 1 to 5, with one being not at all important—of no consequence—don't pay any attention, but 5 would be very important. It would indicate that I really do mean this, now pay attention.

I can imagine this is the problem Nick Gray had in writing this book. His home is in Ireland (oops, sorry, Eire) and he has to somehow appease and incorporate the water technology (and most importantly the water law and regulations) of much of the English-speaking world. He solves this problem by first making sure we remember where he lives, and then talking about the standards, regulations, and technology in the UK, the EC and the USA. His problem is trying to figure what is important.

The book begins with a discussion of water quality and regulation (which would be a deadly way to start a course, but this is not a textbook) followed by some basic consideration in hydrobiology (the strongest part of the book), water resources, factors determining the distribution of animals and plants in

freshwaters, basics of aquatic ecosystems, microorganisms and pollution control, water pollution, water quality assessment, water quality management, drinking water contamination, pathogens and the microbial quality of drinking water (very well done, especially useful for its discussion of the EC regulations), the nature of wastewater, wastewater treatment, biological aspects of secondary sewage treatment, fixed-film systems, activated sludge, other biological systems, anaerobic treatment, physico-chemical processes, sludge treatment and disposal, and finally household and small-scale treatment systems.

The book is a basic reference (not textbook) in the style of the Hammer text, but multi-national and more complete in the environmental sciences. It's strongest attribute is its discussions on biological systems, both natural and synthetic. There is stuff in this book that rarely can be found elsewhere, such as the sampling of benthic deposits. A good discussion on diversity indices is useful, and seldom found in other such texts on water technology.

As long as the author stays in the biological/ecological/aquatic area, the book is complete and useful. But the book begins to slip when it gets to technology. Some of the pictures, discussion, and descriptions are old, and sometimes just wrong. A disc centrifuge was found to be useless for sludge dewatering decades ago, for example, but there it is again, presented as if it still represents an alternative in sludge dewatering. And then to top it off it is called a decanter centrifuge, which of course is a very different animal.

Maybe Gray did not mean the end of the book to be as important as the beginning discussion of aquatic biology. Maybe he meant to give the front of the book an importance value of 5, and the end a value of 2 (he didn't really take this seriously). If so, then the technology stuff is diluted and on average this becomes a fine book, useful for someone with a technical mind who wants a first exposure to environmental (water) engineering, especially if their work is international.

Nick Gray is a professor in the Department of Civil, Structural, and Environmental Engineering at Trinity College, the University of Dublin, Eire.

— *P. Aarne Vesilind, Bucknell University*

Re/Views in Environmental Science and Bio/Technology

Dear Colleagues:

It is with great pleasure that I inform you that an exciting new journal has been established entitled "Re/Views in Environmental Science and Bio/Technology." The journal will be published by Kluwer Academic Publishers. The journal will have two distinct sections: a section containing short reviews (Views) expressing scientific opinions on topics and trends as well as a section containing comprehensive critical evaluations and technical achievements in particular areas.

Submission of papers is encouraged from researchers in all areas of environmental engineering and science. For further information on the journal, submission of papers, and subscriptions, please see the following web site: <http://www.kluweronline.com/issn/1569-1705>.

Best regards,

Michael S. Switzenbaum

General Member of the Editorial Board

Department of Civil and Environmental Engineering

University of Massachusetts

Vadose Zone Journal

Submissions are now being accepted for the inaugural 2002 volume of Vadose Zone Journal (VZJ), SSSA's new peer-reviewed electronic journal covering physical, chemical and biological aspects of the vadose zone in the environmental, agricultural and earth sciences. VZJ will disseminate information that facilitates science-based decision-making and sustainable management of the vadose zone. Examples of topic areas suitable for VZJ are variably saturated fluid flow, heat and solute transport in granular and fractured media, flow processes in the capillary fringe at or near the water table, shallow water table management, regional and global climate change impacts on the vadose zone, carbon sequestration, design and performance of waste disposal facilities, biogeochemical transformation processes, microbial processes in shallow and deep formations, bioremediation, and the fate and transport of radionuclides, inorganic and organic chemicals, colloids, viruses and microorganisms. VZJ will also address yet-to-be-resolved issues, such as how to quantify heterogeneity of subsurface processes and properties, and how to couple physical, chemical and biological processes across a range of spatial scales from the molecular to the global. Hard copy submissions of manuscripts should be sent to: Dr. Rien van Genuchten, Editor, Vadose Zone Journal, U.S. Salinity Laboratory, 450 West Big Springs Road, Riverside, CA 92507-4617. For additional information regarding VZJ, please visit <http://www.soils.org/journals/vzj.html>.

History of environmental engineering article available

Before his death on July 10, 2001 at 98, Dr. George E. Symons, former president of AWWA, honorary member of WEF and fellow of ASCE was working on a historical review of the environmental field. His manuscript was posthumously completed by James Symons and Nancy Zeilig and was published in the *Journal of the New England Water Works Association* [Symons, G.E., "The Origins of Environmental Engineering: Prologue to the 20th Century," *JNEWWA*, **115**, 4, 253-287 (December, 2001)].

The abstract of the paper reads: "George E. Symons, almost literally a lifelong environmental engineer, began writing his memoirs after he retired. Because he had been born near the start of the 20th century (in 1903), he intended to start his book with a summary of environmental developments through the ages, leading to his arrival on the scene. This article is an edited version of the introduction to his uncompleted book, *Water Boy*. It traces the history of the field of water supply and pollution control from about 10,000 B.C. to 1900, mostly in northern Africa, Europe, and the United States."

Reprints can be obtained through the Internet:

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- Click on DocServ.
- Scroll down to the bottom of the Document Services screen, and click on the "Online Request Form" link.
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This paper would make a good overview of the field for students. Copies for student use must be cleared with the copyright owner, the New England Water Works Association, 125 Hopping Brook Road, Holliston, MA 01746-1471.

Conferences / Calls for Papers

The 3rd Annual CEA-CREST Environmental Science Conference

May 3-4, 2002

Pasadena, California

The Center for Environmental Analysis (CEA-CREST), California State University at Los Angeles, is pleased to invite you to the Third Annual CEA-CREST Conference. The Conference seeks to inspire new ideas and encourage collaborations regarding issues of interest to the environmental science community of the southwest. The conference will include two workshops that are described below.

Processes at Environmental Interfaces considers fundamental processes affecting the flux of materials at environmental interfaces and the response of the biosphere to these fluxes. Contributions are requested on such topics as:

- Air-water exchange of contaminants
- Agricultural/urban runoff
- Bioavailability of contaminants
- Groundwater transport of pollutants

Hydrology of the Southwest examines problems of water availability and sustainability in the southwestern U.S.

Contributions are requested on such topics as:

- Surfacewater/groundwater salinization
- Geophysical and remote-sensing applications
- Surface water, groundwater, and meteorological modeling
- Climate change analysis

A day-long field trip to the Salton Sea and other pertinent hydrological stops in southern California is included as part of this session. This workshop is a joint effort of CEA-CREST and Semi-Arid Hydrology and Riparian Areas (SAHRA) of the University of Arizona at Tucson.

Please send abstracts (post or email) for presentations or posters by April 15, 2002 to:

Dr. Crist Khachikian
Department of Civil Engineering
California State University Los Angeles
5151 State University Drive
Los Angeles, CA 90032
Phone: (323) 343-6002
Email: ckhachi@calstatela.edu

In your submission, include names of author(s) (clearly indicate primary or presenting author), authors' address, brief title, and text not exceeding 200 words. Maximum poster size is 32 by 40 inches. Conference registration is free, however, seating is limited so reservations are required.

Call for Papers

Superior: State-of-the-Lake

May 22-24, 2002

Houghton, Michigan

You are invited to submit an abstract for presentation at "Superior: State-of-the-Lake," a conference to be held May 22-24, 2002, in Houghton, Michigan. Hosted by Michigan Technological University, the conference is co-sponsored by the Aquatic Ecosystem Health & Management Society, with support from the Large Lakes Observatory, USGS Great Lakes Science Center and the International Association for Great Lakes Research.

This conference seeks to review the body of science relating to Lake Superior, promote the dissemination of new research findings, and foster dialog on emerging issues relating to this precious ecosystem resource. Abstracts are therefore welcome on any scientific topic relating to the lake. Scholarly products planned to result from the conference include dedicated journal issues and a monograph reviewing the state of the lake. (See <http://www.iaglr.org/superior/products.php>.)

Abstracts must be submitted online by Friday, April 12, 2002 via the conference registration form. The conference organizing committee also asks that participants support program development efforts by submitting their name, affiliation, and contribution title via the online instant response by Friday, March 8, 2002. (See <http://www.iaglr.org/superior/registration.php>.)

For more information, please see the conference web site at <http://www.iaglr.org/superior/>, or contact Conference Co-Chair and Local Host Martin T. Auer, Ph.D., Professor, Department of Civil & Environmental Engineering, Michigan Technological University, 1400 Townsend Dr., Houghton, Michigan 49931; (906) 487-2799; Fax: (906) 487-2943.

The 47th Institute in Water Pollution Control

**Water Quality Modeling
Treatment of Contaminated Water
June 3-7, 2002
Manhattan College**

The 47th Institute in Water Pollution Control will be held at Manhattan College in June 2002. Two courses will be offered:

- Water Quality Modeling, June 3-7, 2002
- Treatment of Contaminated Waters, June 3-7, 2002

Pre-registration for enrollment is required.

Who should attend?

These continuing engineering programs are designed for practicing engineers and scientists in industry, consulting engineering, city, state and federal agencies, research organizations, and academic institutions.

Why should you attend?

These week-long courses will provide important information and updates in the rapidly changing field of water pollution control for young engineers, scientists and seasoned professionals. The courses are set in classrooms and computer laboratories and promote dialogue between participants and lecturers.

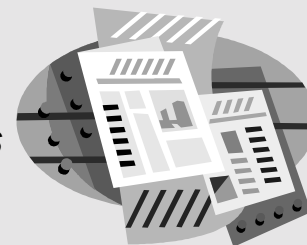
The \$1,200.00 fee for the five-day course includes a set of notes for each attendee. For a brochure and further information, contact: Nafeeza Altaf, Program Coordinator, Environmental Engineering Department, Manhattan College, Riverdale, NY 10471; Tel. (718) 862-7276, Fax (718) 862-8018; E-mail naltaf@manhattan.edu.

Drinking Water Treatment Institute

**University of Massachusetts
July 22-24, 2002**

The Drinking Water Treatment Institute is offering a 3-day course on water treatment, focusing on the fundamentals and the latest developments. Director: James K. Edzwald; contact Jodi Ozdarski for information at (413) 545-0686 or Ozdarski@ecs.umass.edu. Information is also available at www.ecs.umass.edu/cee/dwi.html.

AEESP Newsletter policies



Submissions deadline

The deadline for newsletter submissions is one month prior to the publication date.

Please keep in mind when submitting items with deadline dates that members receive issues four to six weeks after the submissions deadline.

Advertising policy

Any advertisement, including faculty, post-doc or student ads, or other types of announcements submitted by an AEESP member, will be free for the first 250 words (approximately 1/4 page) and then charged at \$1 per word for additional content, if formatted to fit in a column.

Non-members will be charged at the per word rate for any size column-formatted ad. Full page formatted advertisements will be charged at \$500 for members and \$1,000 for non-members. All formatted full page ads will be accompanied by a free web ad.

**The
submissions
deadline for the
September 2002
AEESP News is
August 1, 2002**



AEESP/AEE 2002 Education and Research Conference

Toronto, Ontario, Canada

August 11-13, 2002

AEESP, in conjunction with the American Academy of Environmental Engineers (AAEE) will be having its next education and research conference at the University of Toronto in Toronto, Canada on August 11-13, 2002.

These conferences, which have been held approximately every three years since 1960, have proven to be an important event for our community of both junior and world-renowned educators, researchers and practitioners to meet and present and discuss a range of environmental engineering and science issues.

In the past, each of the conferences has focused on either research or education. The 2002 conference will be the first meeting that addresses both research and education and the linkages between them, as well as professorial practice. The theme of the 2002 conference is **Integrated Environmental Teaching, Research and Practice: Linking Engineering and Science to Address Complex Problems.**

Sessions over two and a half days will include invited keynote speakers, accepted papers and posters, as well as significant opportunities, including social events, for formal and informal discussions. There will also be pre-conference workshops and post-conference tours on August 10 and 14.

Being held in the wonderfully vibrant and cosmopolitan city of Toronto (one of North America's largest cities), Toronto is a destination for millions of visitors from around the world each year.

Detailed information about the conference (program, registration, accommodation, etc.) is provided on the conference website at:

www.ecf.utoronto.ca/apsc/enveng/enviro.

The website will be continually updated as the program is finalized. Special effort has been made to ensure a modest registration fee. Reservations for on-campus accommodation are included on the registration form, and will be confirmed on a first-come, first-served basis, but should be made no

later than July 1st. A special group rate for off-campus (hotel) accommodation has also been arranged and must be booked directly with the hotel by July 10th to get the special rate. Check the website for further information about accommodations.

If you have any questions contact the Division of Environmental Engineering at the University of Toronto at aeesp02@ecf.utoronto.ca.



NOTE: The AEESP membership application is also available online at <http://www.aeesp.org/org/membership.html>.



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Membership in AEESP is on a calendar-year basis. When you join the Association, you will be sent the current AEESP Membership Directory and previous Newsletters and other materials which have been sent to members during the year, if your application is received prior to October 1. If you join after October 1, your membership will begin the following calendar year, but the current AEESP Membership Directory will be sent to you immediately upon approval of your membership by the Association's Secretary. Upon retirement, members may apply to the AEESP Board for Emeritus membership if they have been AEESP members for at least 20 years, or have been a member for fewer years but have contributed substantially to AEESP through service on committees or as an officer.

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Please send submissions and comments to the editor:

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To estimate the amount of lead time needed for your announcement, please note that members receive the newsletter 4-6 weeks after the submissions deadline.

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Association of Environmental Engineering and Science Professors Newsletter

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