



***In this issue...***

AEESP News and  
Announcements..... 2

Organizations of  
Interest.....6

Employment  
Opportunities..... 8

Book Reviews.....11

Conferences/Call  
for Papers.....13

***President's Letter***

A former colleague of mine was very fond of saying, "May you live in interesting times." Upon hearing this, another friend quipped, "May you live *through* interesting times." Both sentiments seem apropos to me as I watch an exceptionally active year for AEESP come to a close and ponder ways to maintain the momentum of innovation gathered over the last year.

In its 35 years of existence, our organization has changed its name twice and each time this change reflected shifting perceptions of who we are and what we do. Our latest change to formally recognize the scientists in our ranks received a rather surprising mixture of responses. While most favored the name change, there were more than a few who were strongly opposed.

Although there are some who wish to maintain a clear distinction between science and engineering, all of us would agree that a strong science base is necessary to be a good engineer. The participants of the Research Frontiers in Environmental Engineering Workshop that met last January may have taken this notion a few steps further in recognizing that "quantum leaps" in our ability to protect ecological integrity and human health will be made only by greater integration with fundamental science and other engineering disciplines.

Recently, I encountered a vivid example of this type of partnership. A few weeks ago a friend of mine in mechanical engineering called to tell me about receiving a NASA grant to test a filtering device he had invented. NASA is interested in water recycling applications for space travel and he realized that he needed to learn about drinking water treatment and to hire a post-doc in that area. After giving him a few names (and a quick lecture on organic fouling), I told him about AEESP and our job-list web page. He responded with great interest and noted that he is going to have to join. I couldn't help wondering, though, why NASA persists with the modular approach to research? My friend and I are thinking of taking it upon ourselves to couple his filtration and my oxidation process, also of interest to NASA—think of what will be accomplished jointly in comparison to individually.

I have been extremely surprised and heartened by the collaborative spirit of my colleagues in Chemistry. In the last year we have written a number of joint proposals and we are currently developing a new curriculum in Environmental Catalysis. The Chemistry Department at Northwestern has decided to reorganize itself into institutes, one of which is Environmental Chemistry, and to do away with conventional groups such as inorganic, physical, and organic. It is amazing to me how many former physical and inorganic chemists, who now consider themselves environmental scientists, I suddenly know. The cynical among us might think these conversions are dictated more by funding opportunities than sincere interest, but I like to think it is because they are truly intrigued by the many intellectual challenges in the environmental area. Regardless of the motives, I think this integration of fundamental chemistry and environmental engineering provides exciting opportunities for our students and I think it has something unique to offer in the field of environmental chemistry.

This summer the AEESP will sponsor its research conference at the Pennsylvania State University on 1-3 August 1999. The theme of the conference is "Research Frontiers" and it is organized around the four research categories identified at the Frontiers Workshop: (1) A Sustainable Environment, (2) Complex Environmental Systems, (3) Analytical Tools in Molecular Sciences, and (4) Process Technologies. We are particularly hopeful that with this focus and with our new name, we will see greater participation from our collaborators outside the traditional environmental engineering discipline.

There will also be pre- and post-conference activities that will be of interest to many of you. On July 31st, the Saturday before the Research Conference officially gets underway, there will be three

**March 1, 1999  
is the  
submissions  
deadline for  
the  
April 1999  
AEESP News**

## 1998 AEEP Award Winners

The following awards were presented by AEEP President Bruce Logan, except as noted:

### 1998 Founders' Award

*For Sustained and Outstanding Contributions to Environmental Engineering Education*

Richard I. Dick

### 1998 Outstanding Publication Award

*Removal of Trace Chlorinated Organic Compounds by Activated Carbon and Fixed-Film Bacteria*

Edward J. Bouwer and Perry L. McCarty

### 1997-1998 Distinguished Lecturer

Jerald L. Schnoor

### Distinguished Service Awards

*In appreciation for distinguished service as AEEP President*

Bruce E. Logan

*In appreciation for distinguished service as AEEP Secretary*

Jerald L. Schnoor

*In appreciation for distinguished service as AEEP Newsletter*

*Editor*

Chet A. Rock

### AEEP/CH2M Hill Outstanding Doctoral Dissertation Award

*Sorption and Desorption by Soils and Sediments: Effects of Sorbent Heterogeneity*

Weilin Huang

Walter J. Weber, Advisor

### AEEP/Parsons Engineering Science Outstanding Doctoral Dissertation Award

*RP4 Plasmid Transfer Among Strains of Pseudomonas in a Biofilm*

Laura J. Ehlers

Edward J. Bouwer, Advisor

### AEEP/Montgomery-Watson Master's Thesis Award

First Place:

*Phytoremediation of 1,4-Dioxane by Hybrid Poplar Trees*

Eric W. Aitchison

Jerald L. Schnoor, Advisor

Second Place:

*Particle Counting in the Water Industry: Count Standards and Sample Stabilization*

Annika Van Gelder

Desmond F. Lawler, Advisor

## 1998 AEEP Founder's Award

Richard I. Dick, Professor at Cornell University, was awarded the 1998 AEEP Founders' Award at the Annual Meeting in October. This award is given annually to recognize an AEEP member who has made "sustained and outstanding contributions to environmental engineering education and the profession."

To make a nomination for the 1999 AEESP Founders' Award, contact the chair of the awards committee: Marc Edwards, Department of Civil and Environmental Engineering, 407 NEB, Virginia Tech, Blacksburg, VA 24061-0246, before March 15, 1999. After careful consideration of all nominees by an AEESP subcommittee, the 1999 award will be presented at the annual October meeting.

Previous recipients of the AEEP Founders' Award are:

- |      |  |
|------|--|
| 1991 | E. Robert Baumann, Iowa State University                 |
| 1992 | Perry L. McCarty, Stanford University                    |
| 1993 | Richard Engelbrecht, University of Illinois              |
| 1994 | Daniel A. Okun, University of North Carolina-Chapel Hill |
| 1995 | Charles R. O'Melia, Johns Hopkins University             |
| 1996 | Earnest F. Gloyna, University of Texas at Austin         |
| 1997 | Linvil G. Rich, Clemson University                       |

## 1998 AEEP Outstanding Master's Theses Awards

Eric W. Aitchison and Jerald L. Schnoor, Advisor, were awarded First Place for the 1998 AEEP Outstanding Master's Thesis Award for "Phytoremediation of 1,4-Dioxane by Hybrid Poplar Trees." Second Place was awarded to Annika Van Gelder and Desmond F. Lawler, Advisor, for "Particle Counting in the Water Industry: Count Standards and Sample Stabilization." These two theses were selected from a field of 23 excellent nominations by an AEEP sub-committee, Susan Powers (chair), Nancy Love, and Elizabeth Carraway of the AEEP Awards committee.

## AEESP Diversity Committee recruiting members

The AEESP Diversity Committee is recruiting members. If you would like to serve on this committee, please send an e-mail message containing your name, title, address, e-mail address, phone and fax numbers to Dr. Udeme J. Ndon, AEESP Diversity Committee Chair, Department of Civil and Environmental Engineering, San Jose State University, San Jose, CA 95192-0083; phone (408) 924-3863; fax (408) 924-4004; e-mail [ujndon@email.sjsu.edu](mailto:ujndon@email.sjsu.edu).

## Montgomery-Watson Consulting Engineers Master's Thesis Awards

Entries are sought for the 1999 Montgomery-Watson Master's Thesis Awards. First and second place awards will be made, each consisting of a plaque and a cash prize for both the student and the faculty advisor. The cash prize for the first place award is \$600 for the student and \$300 for the faculty advisor, while the cash prize for second place is \$400 and \$200, respectively. Faculty advisors wishing to nominate a student for this competition should send three copies of the thesis to Dr. Nancy Love, Department of Civil and Environmental Engineering, 403 NEB, Virginia Tech, Blacksburg, VA 24061-0246.

The submission should be accompanied by a simple letter of transmittal stating 1) the address, e-mail and phone number for the student and advisor, 2) an indication as to when the thesis was completed, and 3) a concise statement defining the student's intellectual contribution to the work. The latter statement is especially important if multiple authors contributed to the work under consideration. The copies will not be returned, so inexpensively bound xerographic copies are recommended. The deadline for submission is March 15, 1999 for theses completed during the 1998 calendar year. Faculty advisors are urged to limit themselves to a single entry. Self-nominations by students will not be accepted.

A selection committee of three AEESP members will read and judge each thesis. This year, a new thesis grading system has been implemented through the efforts of former sub-committee chair Susan Powers and current chair Nancy Love. Each thesis will now be evaluated based on 100 points allocated to the following major categories: Scientific and Technical Merit (46 pts.), Originality of Research (15 pts.), Contribution to the Advancement of Environmental Engineering (15 pts.) and Clarity of Presentation (24 pts.). This change, approved by the AEESP awards committee and pilot tested in 1998, represents a slight increase in the weight of presentation and technical merit criteria when compared to previous years. It is thought that this change better reflects the goals of an MS thesis.

Selections will be made by September so that the recipients and their advisor can be invited to the AEESP meeting at the WEF annual meeting. Our thanks to Montgomery-Watson for their generosity in sponsoring these awards and to the members of the 1998 MS Thesis Review Panel: Susan Powers (Chair), Nancy Love and Elizabeth Carraway.

## AEESP Outstanding Paper Award

The 1998 Outstanding Publication Award was presented to Edward J. Bouwer and Perry McCarty for the paper "Removal of trace chlorinated organic compounds by activated carbon and fixed-film bacteria," *Environmental Science & Technology*, 16 (836-843) 1982.

Nominations are sought for the 1999 AEESP Outstanding Paper Award for a "landmark paper that has withstood the test of time." Nominators should send a copy of the paper and a letter (two pages maximum) to the chair of the awards committee: Marc Edwards, Department of Civil and Environmental Engineering, 407 NEB, Virginia Tech, Blacksburg, VA 24061-0246. The letter

should give the citation, the reasons why the paper has been considered a "landmark," and a description of the influence the paper has had on the practice of environmental engineering. Nominations must be made before July 1, 1999 by members of AEESP who are not an author or co-author of the paper. According to the current rules of the competition, any author of a winning paper is ineligible in the competition for a period of three years, and at least one of the authors must be living.

- Previous recipients of the AEESP Outstanding Paper Award are:
- 1990 O'Conner, Donald J., "Oxygen Balance of an Estuary," *J. San. Engrg. Div.*, ASCE, 86, SA3, 35-55, May 1960.
  - 1991 Yao, K.M., M.T. Habibian, and C.R. O'Melia, "Water and Waste Water Filtration: Concepts and Applications," *Envir. Sci. & Tech.*, 5(11), 1105, May 1971.
  - 1992 Argaman, Y., and W.J. Kaufman, "Turbulence and Flocculation," *J. San. Engrg. Div.*, ASCE, 96, SA2, 223-241, April 1970.
  - 1993 Stevens, A.A., and J.M. Symons, "Measurement of Trihalomethane and Precursor Concentration Changes," *Jour. Amer. Water Works Assn.*, 69:10:546, 1977.
  - 1994 Morel, F.M.M., and J.J. Morgan, "A Numerical Method for Computing Equilibria in Aqueous Chemical Systems," *Envir. Sci. & Tech.*, 6:58-67, 1972.
  - 1995 Sezgin, M., D. Jenkins, and D.S. Parker, "A Unified Theory of Filamentous Activated Sludge Bulking," *Jour. Water Poll. Con. Fed.*, 50, 2, 362-382, 1978.
  - 1996 Rajagopalan, R., and C. Tien, "Trajectory Analysis of Deep-Bed Filtration with the Sphere-in-cell Porous Media Model," *AIChE Journal*, 22, 523-533, 1976.
  - 1997 Amirtharajah, A., and K.M. Mills, "Rapid-Mix Design for Mechanisms of Alum Coagulation," *Journal Amer. Water Works Assn.*, 74 (4) 210-216, 1982.

Please take a few moments to reflect on the papers that you think have had the greatest impact on environmental engineering and consider nominating one for this award. Note that papers in all areas of environmental engineering, including air pollution, water quality, solid waste, hazardous waste, etc. are eligible.

## CH2M Hill and Parsons Engineering Science Doctoral Dissertation Awards

Weilin Huang was awarded the CH2M Hill Outstanding Doctoral Dissertation Award for "Sorption and Desorption by Soils and Sediments: Effects of Sorbent Heterogeneity," under the supervision of Walter J. Weber, University of Michigan. The Parsons Engineering Science Outstanding Doctoral Dissertation Award was awarded to Laura J. Ehlers for "RP4 Plasmid Transfer Among Strains of *Pseudomonas* in a Biofilm," under the supervision of Edward J. Bouwer, Johns Hopkins University.

Entries are sought for the 1999 Outstanding Doctoral Dissertation Awards. Two awards will be given, each consisting of a plaque and a cash prize of \$1000 for the student, and a plaque and a cash prize of \$500 for the faculty advisor. Faculty advisors wishing to compete should send three copies of the dissertation to Daniel Cha, Department of Civil and Environmen-

tal Engineering, University of Delaware, 137 Dupont Hall, Newark, DE 19716.

They should be accompanied by a simple letter of transmittal stating 1) the current address, e-mail and phone number for the student and advisor, 2) an indication as to when the thesis was completed, and 3) a concise statement defining the student's intellectual contribution to the work. The latter statement is especially important if multiple authors contributed to the work under consideration. The copies will not be returned, so inexpensive xerographic copies are recommended. The deadline for submission is March 15, 1999 for dissertations completed during the 1998 calendar year. Faculty advisors are urged to limit themselves to a single entry (which will be considered for each of

two awards). Self-nominations by students will not be accepted.

A selection committee of three AEESP members will read and judge each dissertation on the basis of 100 points allocated as follows: scientific and technical merit of the research—30 points; originality of research—30 points; contribution to advancement of environmental engineering—30 points; and, clarity of presentation—10 points. The selections will be made by September so that the recipients and their advisor can be invited to the AEESP meeting at the WEF meeting. Our thanks to Engineering Science and CH2M-Hill for their generosity in sponsoring these awards and to members of the 1997 Doctoral Dissertation Review Panel, Pratim Biswas (Chair), Daniel Cha, and Thomas Holsen.

## ***Cassano to serve as Distinguished Lecturer***

**D**r. Alberto E. Cassano, Director of the Institute of Technological Development for the Chemical Industry, and Professor of Chemical Engineering, National University of Litoral, Santa Fe, Argentina, has accepted the invitation to serve as the AEESP Distinguished Lecturer for 1999. Dr. Cassano has agreed to prepare three seminars. Following are titles and a brief abstract for each of the seminars.

**Seminar No. 1:** Evaluation of light absorption rates in suspended solid photocatalytic reactors. Light absorption rates for kinetic studies or reactor design are difficult to evaluate due to the concomitant presence of absorption and scattering in the reaction space. The problem can be solved by performing a series of specially designed experiments (to measure the absorption and scattering coefficients and to choose the best phase function for scattering) compounded with the complete solution of the radiative transfer equation. Results are illustrated with quantum efficiencies calculations for a photocatalytic system.

**Seminar No. 2:** Kinetics of a photocatalytic reaction in suspended solid reactors including true radiation absorption effects. The reaction kinetics of the photocatalytic decomposition of trichloroethylene in the presence of excess oxygen and employing titanium dioxide has been developed. The reaction scheme is based on the OH radical attack on the hydrocarbon and it includes a model for the rate of electron-hole generation. The obtained intrinsic kinetics can be safely used for reactor design and scale-up purposes. Parameters for the model were obtained with experiments in a specially designed reactor.

**Seminar No. 3:** A mathematical model and experimental verification of a flat plate solar reactor simulator for photocatalytic reactions. A flat plate, bench-scale reactor was designed to simulate a solar photocatalytic system. The objective was to obtain a constant radiation flux at the reactor surface. The radiation field inside the reactor was modeled and experimentally verified. The model permits to know the optimal reactor thickness for reaching 99% absorption of the incoming radiation (excluding back-scattering that is very important). It also allows to compare photon collection efficiencies for different types of photocatalysts.

Institutions interested in hosting Dr. Cassano should send a letter of request with appropriate documentation as soon as possible to Makram T. Suidan, Chair, AEESP Distinguished Lecturer Committee, Department of Civil and Environmental Engineering, University of Cincinnati, Cincinnati, OH 45221-0071; Email msuidan@boss.cee.uc.edu; Telephone (513) 556-3695; Fax (513) 556-2599.

This request should include the following information:

1. Name and address of host institution and contact person.
2. Identity of possible co-sponsors.
3. Arrangements for publicity, accommodations and possible videotaping of lecture.
4. A brief statement describing how a visit by Dr. Cassano would benefit and complement current academic activities.

Expenses associated with the lecture tour are shared by the host institution on a total lump sum, fixed cost basis. It is estimated that each institution would contribute approximately \$850 to cover travel and living expenses, as well as provide a modest honorarium. Responsibility for final choice of the lecture tour will rest with the AEESP Distinguished Lecturer Committee who will make that selection on the basis of information received. Special consideration will be given to institutions who have not been visited by the Distinguished Lecturer within the past year or two, the research and teaching focus at the candidate institutions, and the possibility of having more than one institution co-host the event. The members of the AEESP Distinguished Lecturer Committee are pleased with the prospect for another successful tour and look forward to a timely receipt of invitations to participate as hosts.

(continued from page 1)

workshops. In the early part of the afternoon, there will be two separate workshops. One will focus on Teaching Methods and the use and effectiveness of computer-based learning tools. Kurt Paterson and the Electronic Communication and Education Committee are organizing a hands-on session to demonstrate how to construct web homepages and they will be soliciting participants for an electronic poster session.

The second workshop will be a panel discussion on Family, Gender, and Diversity Issues and will explore how these issues influence career options and development. This is not meant to be a women-only forum and I was very encouraged by the number of men who indicated their support and shared concern after I announced the idea for this workshop at the AEESP Reception at WEFTEC in October. One colleague was particularly interested in the question of why there is a high rate of attrition among women and minorities as these students move to the next level of education or promotion—is this a real phenomenon or merely an anecdotal perception? I just hope they will remember their enthusiasm when they get a call from Robin Autenrieth or me to serve on the panel or to attend our discussions.

The afternoon will close with a combined session on Mentoring that is being organized jointly by Aarne Vesilind and myself. We both strongly believe that mentoring is a critical issue in teaching at both the undergraduate and graduate level and is crucial in the success and retention of faculty of both genders and all races. Yet, are there unique features to mentoring, depending on who is doing the mentoring or who is being mentored? While we have some thoughts on these topics, we certainly don't have all the answers and we hope that there will be lots of you who will share your own thoughts and experiences with us.

On the day following the close of the conference, the AEESP board will meet with a group of its past-Presidents to develop a strategic plan for the organization. When I joined the board I was surprised to find that it lacked a mission statement or a 5-year plan. We have had spirited debates about the value of strategic plans, but I think we need to examine our mission in light of all that is changing. For instance, is AEESP primarily an educational organization? Is our audience primarily professors in environmental engineering departments or do we want to see our membership include the many environmental scientists and engineers outside of Civil and Environmental Engineering Departments. At every board meeting we debate the nature of our relationship with the American Academy of Environmental Engineering - what is our relationship to the profession of environmental engineering as it is practiced? What about industry and seeking their greater involvement in our sustaining membership? If you read the report of the Frontiers Workshop, which was published in *ES&T* on November 1, 1998, what changes in education are needed to support this research agenda? Related to this, how do we effectively influence the research agenda of federal funding agencies? I think the value of a strategic plan is more the planning process and I would hope that it is modified as necessary by future boards.

This will be the last AEESP conference that is focused primarily on research and hereafter our every three year conference will be an Education **and** Research Conference. This change was brought about by two factors. First, in our business as university researchers, how do we separate research from education? Second, there seems to be a slightly greater, general interest in the education conferences and once every 6 years seems too long a time interval to hold the education-focused conference. Thus, in the spirit of greater integration, our next conference, in the year 2002, will be a combined conference. Watch for the call for proposals to organize this event.

I wish everyone a Happy New Year and since this is the last year of the century, I hope that we will work collectively to make it a noteworthy one for AEESP. Maybe someone can start by designing a new logo? May you all live in and through these interesting times.

Kimberly A. Gray  
Northwestern University  
k-gray@nwu.edu

## ACS Annual Meeting

### “E-Chem”: An Essential Component for Understanding Environmental Systems

by Janet Hering

From the classical sanitary engineering problem of turbidity removal in potable water treatment to the prediction of exceedances of the recent  $PM_{2.5}$  air quality standard, chemical insight is crucial to understanding the functioning of natural and engineered environmental systems. Environmental chemistry or “E-Chem”, as Sarah Green (Michigan Tech) designated it, was the subject of a one-day symposium at the 216<sup>th</sup> American Chemical Society Annual Meeting in Boston (August 23-27). Twelve speakers, of which eight were AEESP members, presented papers on both pedagogical aspects and applications of E-Chem in the symposium “Research and Education Challenges in Environmental Chemistry” organized by AEESP members Janet Hering (Caltech) and Alan Stone (Johns Hopkins).<sup>†</sup>

Alan Elzerman (Clemson) presented a brief overview of the history, current status, and future prospects of E-Chem. He noted that E-Chem grew out of engineering practice, was stimulated by environmental regulations, and now has an established, even if not uniquely defined, identity. For largely historical reasons, much of the instruction in E-Chem occurs outside Chemistry Departments, in Departments of Environmental Engineering, Forestry, Soil Science, etc. Sarah Green (Michigan Tech) highlighted the opportunities for Chemistry Departments to develop stronger teaching programs in E-Chem and pointed out potential benefits, such as meeting employer demand for trained environmental, analytical chemists and attracting students with an interest in environmental problems and their solutions. Green also noted the importance of increasing the environmental literacy of students in the physical sciences and engineering, who will, throughout their careers, be making decisions with significant environmental consequences.

Other speakers in the morning session on Pedagogical Aspects discussed the opportunities in E-Chem instruction for incorporation of hands-on, laboratory and field experience, computer-assisted learning, and discussion of policy issues. Jean-François Gaillard (Northwestern) stressed the importance of having students obtain and analyze real samples and of avoiding the “cookbook” procedures common in laboratory courses. Paul Tratnyek (OGI) and Harry Bungay (RPI) provided complementary examples of the use of computers in E-Chem instruction. Tratnyek and Balko are developing a CD-ROM in which basic concepts in chemistry and engineering are illustrated using the example of zero-valent iron in groundwater remediation. Bungay described a series of interactive teaching tools (with many applications including E-Chem), which are available on the web (see box). Jeff Steinfeld (MIT) stressed the importance of including discussion of policy issues, such as the Montreal Protocol on CFCs and the Kyoto Protocol on greenhouse gases, in technical courses (e.g., Atmospheric Chemistry).

#### E-Chem Instructional Materials

[course materials for environmental, analytical laboratories]

<http://www.civil.nwu.edu/ehe/Courses/EAC/eac.htm>

[CD-ROM on groundwater remediation]

<http://cgr.ese.ogi.edu/MERL/>

[general teaching tools]

<http://www.rpi.edu/dept/chem-eng/hypertext.html>

[general information on environmental programs and E-Chem]

<http://www.eng.clemson.edu/~ees/echem>

<http://environment.mit.edu>

Speakers in the afternoon session on Applications presented several case studies illustrating the importance of E-Chem in addressing real world problems. Drew McAvoy (Proctor & Gamble) described the efforts made by industry to track the fate and transport in the environment of chemicals, such as surfactants, present in consumer products; this work involved both laboratory studies of fundamental processes governing surfactant persistence and mobility and field monitoring. McAvoy stressed the need for environmental chemists in industry to be flexible and multi-faceted in their thinking and to be able to work collaboratively in teams. Nikos Nikolaidis (U. Conn.) described the usefulness of laboratory studies of metal mobility in soils for setting regulatory criteria and evaluating the need for soil remediation. Lynn Roberts (Johns Hopkins) discussed how understanding the fundamental chemical basis of remediation (e.g., zero-valent metal permeable barriers) allows identification of potential limits on application and design optimization. Janet Hering (Caltech) described the need for E-Chem in anticipating and mitigating environmental problems in developing countries. Hering focused on the problem of arsenic contaminated groundwater in West Bengal, India and Bangladesh, where a massive shift in water resource utilization, from surface to groundwater, was effected without adequate assessment of groundwater quality.

The final two speakers addressed future challenges in E-Chem. Joel Baker (Chesapeake Biological Laboratory) discussed the issues of scale, not only of time and space but also of complexity, in applications of E-Chem. Baker also stressed the importance of intermedia transport in the fate and effects of environmental contaminants. Susan Larson (U. Illinois) described the need for better chemical understanding of aerosol formation processes driven by new air quality standards. As Larson pointed out, much of the fine particulate material ( $PM_{2.5}$ ) regulated under the new standards is formed in the atmosphere by condensation processes which are poorly understood.

The symposium raised many questions and issues deserving of further discussion. The organizers, Janet Hering and Alan Stone, hope that the symposium will stimulate such discussion within the E-Chem community and the larger community of environmental scientists and engineers.

<sup>†</sup> The symposium was sponsored by the ACS Division of Environmental Chemistry, the ACS Committee on Science, and the ACS Corporation Associates. A reception following the symposium was jointly sponsored by the Environmental Chemistry Division and AEESP.

## **New Env Eng Program at University of Colorado**

Beginning in fall 1998, the University of Colorado at Boulder will begin a new Bachelors of Science degree program in environmental engineering. To cover the broad base of knowledge required of environmental engineers, the college-wide degree program at CU draws on the expertise of more than 20 faculty from four departments: Aerospace, Civil/Environmental/Architectural, Chemical and Mechanical Engineering. Courses in three tracks are organized according to water and wastewater engineering, air quality engineering, and chemical processing. For more information contact: Jana Milford, Director, (303) 492-5542, milford@colorado.edu or Karen Hebbel, Admin. Assistant, (303) 735-0253, karen.hebbel@colorado.edu or visit the web page at <http://www.colorado.edu/engineering/EnvEng/index.htm>.

## **New Doctoral Program in Env Manufacturing Management at Clarkson University**

Society's motivation for environmental protection has progressed over the years from one based on practical needs and aesthetic perceptions, to the heavily regulated "command-and-control" nature of the cradle-to-grave approach to waste management. Although both of these motivations are still active factors, there is now a new, emergent paradigm based on the concept of waste and

### **Summer REU opportunities at Clarkson**

SUMMER OPPORTUNITY FOR YOUR STUDENTS. Research experience for undergraduates in Environmental Science and Engineering at Clarkson University, sponsored by the National Science Foundation. Conduct environmental research with faculty and graduate student mentors. Research projects are available in the following areas: aquatic and atmospheric chemistry; hazardous waste and drinking water treatment technologies; molecular biology; bioremediation and subsurface contaminant transport; river ecology and biodiversity; and waste minimization.

The benefits of the program include: a stipend of \$2,500; free housing; food and travel allowances; a stimulating research environment; and great summer outdoors activities.

The program runs for ten weeks, June 1-August 6, 1999. Engineering or science students who are U.S. citizens or permanent residents and are expecting to graduate between December 1999 and December 2000 may apply by the March 1, 1999 deadline. For complete information on this summer research program and for detailed description of application requirements, visit our web site (<http://www.clarkson.edu/reu/>) or contact the co-directors, Susan E. Powers ([sep@clarkson.edu](mailto:sep@clarkson.edu)) or Stefan J. Grimberg ([grimberg@clarkson.edu](mailto:grimberg@clarkson.edu)).

resource management for sustainability. In this view, expenditures that impact environmental quality in a positive manner are perceived as investments with the potential to generate tangible returns. Such changes are already evident in the market place where it has been found that the costs of "end-of-pipe" controls on wastes have often been underestimated and that more environmentally sophisticated consumers are demanding products resultant from cleaner manufacturing methods. Due to these driving forces, many corporations have begun to view investments in waste management as an integral part of overall operations instead of exterior costs resulting in "negative profits."

Such trends underlie the philosophy of a new doctoral program in Environmental Manufacturing Management (EvMM) at Clarkson University, which was established through NSF's Integrated Graduate Education and Research Training (IGERT) program. EvMM takes as its point of departure the concept that changes currently underway in the marketplace have created new and fertile areas for in-depth research which will yield important advances in the knowledge base in this field, and will facilitate implementation of new ideas consistent with the concept of sustainability. The EvMM program possesses several distinguishing features:

- it is highly interdisciplinary, involving faculty from all four of Clarkson's educational units (engineering, science, business, liberal arts) and students from diverse backgrounds;
- it contains a core set of courses complemented by coursework reflective of students' backgrounds and strengths;
- it utilizes a systems engineering approach in which individual components are analyzed and modeled, and then assembled into a system the boundaries of which include the potential for environmental impacts;
- it includes an internship with a participating industry as part of the learning experience and as a means of focusing research areas; and
- it involves the formation of research cohorts—interdisciplinary groups of students and faculty who define and carry out specific research topics in concert.

Further information on this program can be obtained from the EvMM website (<http://www.clarkson.edu/evmm>), or by contacting Professor Thomas L. Theis, Box 5710, Clarkson University, Potsdam, NY 13699-5710 (315-268-6529; [theist@clarkson.edu](mailto:theist@clarkson.edu)).

## **American Academy installs new officers**

John A. DeFilippi, P.E., DEE was installed as President and William C. Boyle, Ph.D., P.E., DEE was installed as President-Elect for 1998-99 at the Annual Meeting of the Board of Trustees of the American Academy of Environmental Engineers. Mr. DeFilippi is the Chairman of ERM-Northwest in Woodbury, New York. Dr. Boyle is Professor of Civil Engineering at the University of Wisconsin at Madison. Also elected for a one-year term as Vice President was Davis L. Ford, Ph.D., P.E., DEE, and as Treasurer, R. Michael Salmon, P.E., DEE. Dr. Ford is President of Davis L. Ford & Associates in Austin, Texas. Mr. Salmon is Coordinator, Department of Environmental Services and Public Works Projects for the City of Tampa, Florida.

For more information on the Academy, access their website at <http://www.enviro-engrs.org>.

# Employment Opportunities

## Worcester Polytechnic Institute

ASSISTANT PROFESSOR, ENVIRONMENTAL ENGINEERING, CIVIL AND ENVIRONMENTAL ENGINEERING. The Civil & Environmental Engineering Department of Worcester Polytechnic Institute (WPI) invites immediate applications for assistant professor position in the environmental engineering area. The position is available July 1, 1999.

WPI is an innovative technological university of engineering, science, management, humanities, arts and social science with an enrollment of 2600 undergraduates and approximately 1000 graduate students. Situated in Worcester, Massachusetts, the WPI campus is located in close proximity to many of the city's major cultural attractions. Worcester, forty miles west of Boston, offers access to the diverse cultural and recreational resources of New England, and provides opportunities for urban, suburban, or rural lifestyles. Worcester is also the seat of nine colleges and universities in addition to WPI.

The Civil & Environmental Engineering Department, with 14 full-time faculty members and approximately 320 undergraduate and 100 graduate students, is the third largest engineering department at WPI. The department's reputation is built on outstanding instruction through project-based learning experiences and active interactions with industry and government.

Responsibilities of the position include undergraduate and graduate instruction and advising, and development of a sponsored research program resulting in publications in scholarly journals. The focus of the undergraduate teaching duties is environmental engineering. The candidate should successfully integrate within the department's current emphasis areas of protection and development of water supplies, treatment and remediation technologies, pollution prevention and resource recovery, and environmental management. The applicant is required to have an earned Ph.D. Degree in Environmental Engineering with a preferred background in civil engineering and be on track for professional registration.

Qualified applicants are invited to access the Civil & Environmental Engineering Department Homepage at <http://www.WPI.EDU/Academics/Depts/CEE/> for more information and to submit a detailed curriculum vitae and supplementary information to Faculty Position, Department of Civil and Environmental Engineering, Human Resources, Dept., WPI, 100 Institute Road, Worcester, MA 01609-2280, USA. E-mail: [human-resources@wpi.edu](mailto:human-resources@wpi.edu).

*To enrich education through diversity, WPI is an affirmative action, equal opportunity employer and especially encourages minorities and women to apply.*



## Illinois Institute of Technology

The Illinois Institute of Technology, Department of Chemical and Environmental Engineering invites applications for multiple tenure-track positions available starting Fall 1999. All ranks will be considered; rank offered will be commensurate with qualifications and experience. The department seeks individuals with an outstanding academic record who are dedicated to excellence in education and research. Applicants must demonstrate the ability to lead and attract funds for a high caliber research program. Candidates must possess a Ph.D. in chemical engineering, environmental engineering, or related areas. One position is in process design and systems engineering, requiring experience with process design software, and a commitment to project-based learning and teamwork. Candidates sought for the other positions should have a background in one of the areas currently at the forefront of chemical and environmental engineering research. Examples of preferred areas include, but are not limited to, biotechnology, biomedical engineering, nano particles, microelectronics, microreaction technology, and molecular dynamics.

To apply, please send a resume, statement of research and teaching interests and plans, copies of pertinent publications, and the names of three references to: Chairman, Faculty Search Committee, Department of Chemical and Environmental Engineering, Illinois Institute of Technology, 10 W. 33rd Street, Chicago, Illinois 60616. Review of applications will continue until all positions are filled. For further information, contact Professor Fouad Teymour, (312) 567-8947, [teymour@sphinx.iit.edu](mailto:teymour@sphinx.iit.edu).

*IIT is an EO/AA employer. (<http://www.chee.iit.edu>)*

## Virginia Polytechnic Institute & State University

ASSOCIATE OR FULL PROFESSOR, ENVIRONMENTAL SCIENCE & ENGINEERING PROGRAM. The Department of Civil and Environmental Engineering at Virginia Tech invites applications for a tenure-track faculty position in the Environmental Science & Engineering Program. A Ph.D. degree is required. The position will be filled at the Associate or Full Professor level.

Preference will be given to applicants whose research and teaching interests combine theoretical and experimental activities in engineered natural water aquatic systems or applied limnology. However, applicants from other areas will be considered. The successful candidate should be willing to work with other Civil and Environmental Engineering faculty with expertise in aquatic chemistry, microbial processes, water and air quality, surface and subsurface hydrology, systems analysis and water resources. The successful candidate will also have the opportunity to work with faculty from across the campus. The individual selected will be expected to contribute to teaching at the graduate and undergraduate levels, to develop a strong research program, and to supervise both Masters and Doctoral students.

To apply, please send a resume, a description of teaching and research interests, and the names and addresses of at least three

references to Dr. John T. Novak, Chair, Search Committee, Room 419 New Engineering Building, Mail Code 0246, Virginia Polytechnic Institute & State University, Blacksburg, VA 24061. The review of applications will begin immediately and continue until the position is filled.

*Virginia Tech is an equal opportunity/affirmative action employer and encourages women and minorities to apply. Information about the Environmental Engineering program is available on the web at <http://www.cee.vt.edu/enviro/enveng.html>.*

## Arizona State University

ASSISTANT OR ASSOCIATE PROFESSOR, ENVIRONMENTAL MICROBIOLOGY AND ENGINEERING. The Department of Civil and Environmental Engineering at Arizona State University (ASU) invites applications for a tenure track faculty at the rank of Assistant or Associate Professor in the area of Environmental Microbiology and Engineering. The candidate will be expected to participate in multidisciplinary efforts of the university and to work with other faculty in microbiological related research to include microbial analytical techniques, desired duties include development of externally funded research activity including graduate student supervision, graduate and undergraduate teaching, and service. At the time of appointment the candidate must have an earned doctorate in Environmental Engineering, Microbiology or a related field. The candidate must demonstrate experience or potential to teach courses related to environmental microbiology and environmental engineering appropriate to rank and potential or excellence (appropriate to rank) in conducting research in related area. Salary and rank will be commensurate with experience and qualifications. Arizona State University has a strong commitment to multi-disciplinary research activities with many opportunities for environmental microbiologists. More information may be obtained at [www.asu.edu](http://www.asu.edu) or contact Peter.Fox@asu.edu. Applicants must submit a statement of teaching and research interests, resume, and names, addresses and phone/fax numbers of three references. Send application materials to: Dr. Peter Fox, Chair, Faculty Search Committee, Department of Civil and Environmental Engineering, Box 5306, Arizona State University, Tempe, AZ 85287-5306. The application deadline is January 15, 1999 or the end of each month thereafter until the position is filled.

*ASU is an equal opportunity, affirmative action employer.*

## University of Iowa

POSTDOCTORAL RESEARCH ASSOCIATE POSITION. The Program in Environmental Engineering and Science in the Department of Civil and Environmental Engineering at the University of Iowa is seeking a Postdoctoral Research Associate. This person will conduct research investigating the chemistry and kinetics of chloramine reactions relevant to drinking water treatment that account for chloramine loss and DBP formation in distribution systems. Applicants with a Ph.D. from a variety of fields will be considered (e.g. Environmental Engineering and/or Science, Environmental Chemistry, Chemical Engineering). Research experience that combines experimental work in environmental chemistry or physical-chemical processes with numerical

methods appropriate for analyzing kinetic data and developing reaction models would be ideal. Position available Spring of 1999 or sooner (possibly January 1999). Employment will be for a 2-3 year period. Applicants should make inquiries and send a CV, a list of 3 references, and a letter describing qualifications to Dr. Richard L. Valentine, Department of Civil and Environmental Engineering, College of Engineering, University of Iowa; Iowa City, Iowa 52242; Office Phone: (319) 335-5653 or (906) 487-1623; Fax: (319) 335-5660; E-mail: richard-valentine@uiowa.edu.

*The University of Iowa is an equal opportunity/affirmative action employer.*

## University of Wisconsin-Milwaukee

The Department of Civil Engineering and Mechanics of the University of Wisconsin-Milwaukee invites applications for a tenure track or tenured faculty position in environmental or structural engineering. We seek candidates in the following areas, although other areas of environmental or structural engineering will also be considered: (a) environmental engineering with emphasis on physical and chemical processes or environmental molecular microbiology with applications to waste treatment technology, and (b) structural engineering with emphasis on experimental or analytical research in the area of innovative structural systems, applications of engineering materials, or steel structures. The position will be filled at the rank of Assistant Professor, Associate Professor, or Professor beginning in the fall 1999. Applicants must hold a bachelor's degree in civil engineering and an earned doctoral degree. Candidates will be evaluated based on their demonstrated potential for excellence in research, teaching, and professional service. The successful candidate will teach undergraduate and graduate courses in the subject area, and will be expected to develop and sustain significant extramurally sponsored research.

In accordance with University of Wisconsin System policy, candidates who have not requested confidentiality, and finalists, may have their identity disclosed on request. Applications must be postmarked by February 15, 1999. Applicants should send their curriculum vitae with names and addresses of at least three references to Dr. Kwang K. Lee, Chair, Department of Civil Engineering and Mechanics, P.O. Box 784, University of Wisconsin-Milwaukee, Milwaukee, WI 53201.

*UWM is an equal opportunity, affirmative action employer.*

## Tulane University

FACULTY POSITION IN ENVIRONMENTAL ENGINEERING. The Department of Civil and Environmental Engineering at Tulane University invites applicants for a tenure-track assistant professor position in environmental engineering, beginning August 15, 1999. The position will be filled by a candidate having strong teaching and research potential in one of the two following areas of interest: (a) air pollution/global climate change, or (b) physical/chemical treatment processes with application to water, wastewater, or hazardous waste treatment. As Tulane University is committed to both a national reputation in research and having a superb teaching faculty, the successful candidate will be required to excel in both undergraduate and

graduate teaching, to develop a strong, sponsored research program, to supervise M.S. and Ph.D. students, to mentor students at all levels, and to participate in the governance of Tulane University. Candidates must have an earned doctorate in environmental engineering or a related engineering discipline by the time of appointment. For future promotion, Professional Engineer Registration will be required. As part of its commitment to the future of the environmental engineering program, Tulane University hosts two federally funded environmental research centers: the Center for Bioenvironmental Research and the National Institute for Global Environmental Changes. When not engaged in academic endeavors, the new faculty member will be able to enjoy the ambiance of one of the most remarkable, diverse, and friendly cities in the world—New Orleans, Louisiana.

Applicants should send their resume, statement of teaching and research interests, graduate school transcripts, and names, addresses, and phone numbers of at least three references to Jack Grubbs, Department of Civil and Environmental Engineering, Tulane University, New Orleans, LA 70118. Consideration of applications will continue until the position is filled.

*Tulane University is an equal opportunity/affirmative action employer. Qualified women and minorities are encouraged to apply.*

## **Humboldt State University**

FULL-TIME, TENURE TRACK POSITION STARTING AUGUST 1999. Area of Instruction: Environmental Resources Engineering. The Environmental Resources Engineering Department at Humboldt State University invites applications for a full-time, tenure track faculty position. This appointment could be at the assistant or associate professor level depending on experience. With 260 majors, the department has one of the nation's largest ABET accredited undergraduate programs in environmental engineering. Professional Qualifications: A Ph.D. in Environmental Engineering or Civil Engineering, or in a related engineering field is required. Candidates are expected to have a background in environmental engineering and some combination of expertise in hydraulics, environmental fluid mechanics or coastal/estuarine hydrodynamics. Experience and desire to work within an interdisciplinary team environment is highly desirable. A professional license or attainment of professional registration is expected. Professional Duties: Responsibilities include 12 units per semester of teaching plus advising, committee service, and/or collateral duties. Teaching effectiveness is the primary criteria for tenure and promotion. Candidates are also expected to undertake scholarship and creative activities. Teaching duties will include some combination of Fluid Mechanics, Applied Hydraulics, River Morphology, and other program core courses. Opportunities exist for participation in the Environmental System graduate program. General Information: Additional information about Humboldt State University can be found on our World Wide Web home page at <http://www.humboldt.edu>. Humboldt State University is committed to achieving the goals of equal opportunity and Affirmative Action and endeavors to employ faculty and staff of the highest quality reflecting the ethnic and cultural diversity of the State. Application: Applicants should forward a current CV and the names of three references to Robert A. Gearheart, Search Committee Chair, Department of Environmental Resources

Engineering, Humboldt State University, Arcata, California 95521-8299; Phone (707) 826-3618, FAX (707) 826-3616.

## **University of Alberta**

POST DOCTORAL RESEARCH ASSOCIATE, ENVIRONMENTAL HEALTH SCIENCES. The Environmental Health Sciences Program of the Department of Public Health Sciences is seeking a Post Doctoral Research Associate to work on a recently funded project for developing biomarkers for disinfection by-products in drinking water. The research will involve analytical methods development for chlorination disinfection by-products including trihalomethanes, haloacetic acids, haloacetonitriles, halo ketones and various other DBPs in human biological fluids. Expertise is required in trace analytical methods, methods development, analytical instrumentation (GC, GC-MS). Familiarity with SPME and purge and trap techniques would be beneficial, as would experience with volatile organics analysis at the trace level. The applicant must have a Ph.D. with relevant analytical chemistry training and experience, particularly in trace organic analyses. The position is available immediately for a term of up to 3 years. Applicants should make inquiries or send a CV, a list of 3 references and a letter describing research qualifications to Dr. Ken Froese, Department of Public Health Sciences, Faculty of Medicine, University of Alberta, Edmonton, Alberta, Canada T6G 2G3; Phone (403) 492-1190; Fax (403) 492-0364; email: [kenneth.froese@ualberta.ca](mailto:kenneth.froese@ualberta.ca).

## **University of Michigan**

FACULTY POSITION IN ENVIRONMENTAL ENGINEERING. The Department of Civil and Environmental Engineering (CEE) at The University of Michigan invites applications for a tenure-track faculty position in Environmental Engineering. A Ph.D. degree in Environmental or Chemical Engineering or a related field is required. It is desired to fill the position at the Assistant Professor rank, but truly outstanding individuals at the Associate or Full Professor rank level will also be considered. Preference will be given to applicants with research and teaching expertise in physical-chemical processes. Those with a research focus on waste avoidance and minimization or advanced technologies for treatment of gaseous, liquid, or solid wastes are particularly encouraged to apply. A commitment to excellence in teaching and research is expected. Responsibilities will include teaching at the undergraduate and graduate levels, and maintaining a creative and vigorous research program. To apply, please send a resume, a description of teaching and research interests, and the names and addresses of at least three references to Professor Kim F. Hayes, Chairman Search Committee, Environmental and Water Resources Engineering Building, Room 181, The University of Michigan, Ann Arbor, MI 48109-2125. The review of applications will begin immediately and continue until the position is filled.

*The University of Michigan is an equal opportunity/affirmative action employer, and especially encourages women and minorities to apply. CEE department information and faculty profiles are available on the web at <http://www.engin.umich.edu/dept/cee>.*

## University of Idaho

The University of Idaho is seeking applications and nominations for the position of Dean of The College of Engineering. We are seeking an outstanding individual to lead the College of Engineering into the 21<sup>st</sup> century. The University of Idaho is a Carnegie Research II land-grant university. The dean is the academic leader and chief executive officer of the college. The new dean will be a person of vision and leadership who can forge strong working relationships with faculty, administrators, and industrial leaders to facilitate the growth and development of the college.

Required qualifications include professional accomplishments to qualify for a tenured, full professorship in one of the college's disciplines, including a distinguished record of scholarly achievement. Proven excellent leadership and administrative capabilities and skills demonstrated by success in significant administrative positions at a research/teaching university or in an equivalent executive position. Vision, capability and experience to address the changes and challenges facing engineering education.

Desirable qualifications include professional experience at a land-grant institution; college- or university-level administrative

experience; understanding of unique issues and concerns of the western United States. Additional information can be obtained at the college's web site [www.uidaho.edu/engr](http://www.uidaho.edu/engr).

The preferred starting date for the position is July 1, 1999. Search and selection procedures will be closed when a sufficient number of qualified applicants are identified, but not earlier than January 29, 1999. Salary and benefits are competitive. Send nominations and applications, including a letter of application, curriculum vitae, and names, addresses, phone numbers and e-mail addresses of five references to:

Dean Byron Dangerfield  
Chair, Dean of Engineering Search Committee  
College of Business and Economics  
University of Idaho  
Moscow, ID 84344-3161  
e-mail: [edsearch@uidaho.edu](mailto:edsearch@uidaho.edu)

*To enrich education through diversity, the University of Idaho is an equal opportunity/affirmative action employer.*

## Book Reviews by P. Aarne Vesilind

### ***Ecological Engineering for Wastewater Treatment*, Second Edition, Carl Etnier and Björn Guterstam, CRC Lewis Publishers, 1997**

I remember Howard Odum well. He would come to our Saturday morning seminars at UNC (imagine that—Saturday morning seminars—and we were all there because Dan Okun took attendance with his eyes) and sit in back of the room listening to some environmental engineer drone on. Suddenly he would jump up, rush to the front of the room, grab a piece of chalk and start to draw flow diagrams on the board.

“THIS is what you are talking about!” he would shout exuberantly. “You are talking about an ecosystem and you have never even mentioned the word. Don't you understand that good environmental engineering is ecological engineering?” (I am quoting from 30-year memory).

Indeed, the dramatics of Odum were memorable, and they left an impression. Much of what we design can be understood on the basis of ecological principles. Like the activated sludge system, for example. We used to design aeration basins on the basis of cubic feet per 1000 population, completely oblivious to the fact that there were microorganisms involved.

The dedication of the book by Etnier and Guterstam is to “The necessary alliance between ecologists and engineers.” That almost sounds like a put down. And perhaps it is, in a gentle way. For the authors are indeed gentle people. Perhaps they should have said, “Wake up, you dolts!”

This book is a compilation of papers presented at an earlier conference on ecological engineering, with significant updating and the addition of several new chapters. It is not a textbook, but

it is an interesting compilation of articles that can be highly useful as supplemental reading in wastewater treatment courses. Particularly exciting is the addition of a number of articles from former Soviet states and eastern European countries only now waking up to 20th century environmental engineering. Their newly-found freedom allowed the public to see for the first time the environmental devastation in these countries. With the help of their neighbors, low-cost, effective and rapidly applied treatment systems are being developed, often using ecological principles.

This book compiles lots of great ideas of how others have developed wastewater treatment systems that use the principles of ecosystems. Take for example a gray-water recycling system in an apartment house in Berlin. They have developed a “vertical swamp” of plants hanging on the side of the building. Or a starch manufacturing plant that uses the wastewater from potato processing in Estonia. Slick.

Reading this book gives you a sense that we have not even begun to understand the best means of wastewater treatment. There are such great ideas out there, waiting to be used. For anyone with an ounce of creativity or initiative, I highly recommend this book. It's great reading. And Howard Odum would have been proud.

Carl Etnier is with the Agricultural University of Norway in Ås, and Björn Guterstam is with the Stensund Ecological Center of the Stensund Folk College in Trosa, Sweden.

***Introduction to Environmental Engineering Science***, Second Edition, Gilbert M. Masters, Prentice-Hall, 1998

I have had some heated arguments with some of my colleagues in the Department of Religion at Duke. I hold, and they do not, that one should be an agnostic to teach in the religion department. Only in the School of Divinity may a professor be outwardly and openly religious. Teaching about religions will, I argue, be necessarily tainted by anyone who has a faith in some form of religion. How can any professor be totally impartial when a student writes a paper arguing against his or her deep religious beliefs?

I thought of this when I started reading Gil Masters' second edition of his textbook. How could I be totally impartial if I also write books in a similar vein for a similar audience? Maybe I should ask someone else to do the review.

But I soon changed my mind, for what I found is a book that is absolutely excellent, and I am not in the least bit embarrassed to say so.

The book begins as it should (in my humble opinion) with mass and energy transfer, using excellent examples of flow and energy balances. The second chapter is on environmental chemistry and includes a review of stoichiometry, enthalpy, chemical equilibria, a smattering of organic chemistry and a nice discussion of nuclear chemistry. Chapter three is on the math-

ematics of growth including human populations. Chapter four covers risk assessment. Chapter five is the heart of the book on water pollution, including groundwater contamination. Water quality control follows and covers both drinking water as well as wastewater and hazardous wastes. Chapter seven is on air pollution, and the best part of this chapter is a really neat treatment of indoor air pollution, a topic seldom covered in introductory courses but acknowledged by many experts to be the worst source of adverse effects from the air route. The best part of the book, and what I believe will be the most interesting to students, is the chapter on global atmospheric change. Gil spends nearly 100 pages on this topic and it is very well done. The last chapter is on solid waste management—neatly placed at the end of the book to allow the course to “come down” at the end of the semester.

I'm afraid that this situation is not unlike having the religious views of a professor in the Department of Religion permanently altered by reading a paper by one of his students. I am converted. A masterful book by Gil Masters. I wish I had written it.

Gil Masters is with the Department of Civil and Environmental Engineering at Stanford University.

***Bioremediation Principles***, Juana B. Eweis, Sarina J. Ergas, Daniel P. Y. Chang, and Edward D. Schroeder, WEB McGraw-Hill, 1998

This book covers the basic principles of biological transformation of contaminants in soil and groundwater. While there are many books appearing on this topic, few of them are directed mainly as textbooks, with student-oriented examples and homework problems. This book would make a fine text for a senior-level or introductory graduate-level course in bioremediation.

The first three chapters are on general aspects of groundwater and soils, including introduction to present technology, emission of VOCs, the soil environment, and rate and transport. The next three chapters are on microbial ecology, metabolism and energy production, and biodegradation of selected compounds. The last four chapters are more application oriented, with in-situ treatment, solid-phase bioremediation, slurry-phase bioremediation, and vapor-phase biological treatment.

This is a solid textbook, with well-drawn illustrations and

good problems. Anyone interested in teaching such a course should review the book as a possible text.

My only concern is with the packaging of the material. If a graduate environmental engineering program already has a course in microbial ecology, and one on hazardous waste, and another on contaminant transport, that pretty much does it for the subject material in the book. And yet the book makes great sense in its flow and content. Perhaps this is one of those books that will make us rethink about how to package environmental engineering.

Juana Eweis, Daniel Chang and Ed Schoeder are all with the Department of Civil and Environmental Engineering at the University of California Davis, and Sarina Ergas is with the Department of Civil and Environmental Engineering at the University of Massachusetts.

***Risk-Based Contaminated Land Investigation and Assessment***, Judith Petts, Tom Cairney, and Mike Smith, John Wiley & Sons, 1997, \$65.00

In the U.S., we are spending billions of dollars on site cleanup, but are we systematically selecting those sites that present the greatest risk? The EPA's Hazard Ranking Scheme gives some assistance on this, but, according to the authors of this book, it is an inadequate instrument. They propose instead a fully integrated risk-based land investigation process that will identify the greatest potential hazards.

This book is the product of a series of workshops and incorporates much international experience, although the flavor is still markedly British (it's vapour, not vapor). The first five

chapters deal with site investigations to gather data for the risk assessment. The next two chapters are on the water environment and gas and vapour (sic) investigations. Chapter eight is on qualitative risk assessment moving to increasingly more quantitative techniques in chapters nine and ten. There are no problems and the book appears not to be designed as a text, but it would still be useful as background.

Judith Petts is with Loughborough University; Tom Cairney is with W. A. Fairhurst Partners; and Mike Smith is with M. A. Smith Environmental Consultancy.

**Water Wells: Implementation, Maintenance and Restoration**, Michel Detay, translated by M. S. S. Carpenter, John Wiley & Sons, 1997, \$64.95

If I had to ever design a well field or supervise the construction of monitoring wells, this is the book I would want to read first. The author deliberately orients the book toward data acquisition methods as well as the processing and synthesis of hydraulic data, and does not dwell on theoretical concepts. There is no apology for writing a book that is designed to solve real problems encountered in the operation of water wells. But this is not a handbook for drillers. It assumes knowledge of hydraulics and calculus.

The chapters include: basic concepts of hydrogeology, well

design and construction, well hydraulics, supervision and final acceptance tests, water well protection, water well management, and restoration of water wells.

The book has a lot of examples but no problems, and would not be suitable as a single text. As a supplemental text, however, or a source for anyone doing research in hydrogeology, it is an excellent piece of work.

Michel Detay is the director of applied research programs on water resource engineering at Lyonnaise des Eaux in France.

**Site Remediation: Planning and Management**, J. Andy Soesilo and Stephanie R. Wilson, CRC Lewis Publishers, 1997

This book is for people who are responsible for the management of remediation programs for hazardous waste, Superfund, and underground storage sites. The main thrust of the book is the management of remediation sites from the planning perspective.

Topics include: the Superfund program, site remediation under RCRA, leaking UST and PCS remediation, SAP and RAP

(so help me, that's how they talk!), environmental sampling, site characterization, risk assessment and management, remediation standards, remediation technology, and public participation.

Andy Soesilo is manager of the hazardous waste section of the Arizona Department of Environmental Quality and Stephanie Wilson is working in the Office of Customer Service and External Affairs at the Arizona Department of Environmental Quality.

**Biological Treatment of Hazardous Wastes**, Gordon A. Lewandowski and Louis J. DeFilippi (Editors), John Wiley & Sons, 1997, \$79.95

This is an edited book with contributions from various people (including some luminaries like Ed Bouwer). Unfortunately, the contributions are uneven and there is no governing theme. It thus is not appropriate as a textbook.

Topics include: suspended-biomass and fixed-film reactors, microbial degradation in fixed-film reactors, bioslurry reactors, membrane biofilm reactors, biofiltration of VOC vapors, impact of biokinetics and population dynamics on biodegradation, hydrogeologic factors affecting biodegradation processes,

assessment of the potential for clogging during in situ bioremediation, design considerations for in situ bioremediation, pentachlorophenol biodegradation, natural restoration of PCB-contaminated Hudson River sediments, and anaerobic microbes in the muck.

Gordon Lewandowski is with the Department of Chemical Engineering, Chemistry and Environmental Science at the New Jersey Institute of Technology and Louis DeFilippe is an independent consultant.

## Conferences / Call for Papers

### 1999 WEF Student Paper Competition

Submissions for the annual Water Environment Federation student paper competition are due February 1, 1999. This competition is open to any current or recent graduate college student. Papers may deal with any aspect of water pollution control, water quality problems, water-related concerns, or hazardous wastes. The selection of winning papers is based on relevancy of the subject matter, originality of thoughts, concepts, and/or solutions. Students may enter any one of four categories: Operations, Bachelors, Masters, or Ph.D. students. Winners within each of these categories not only receive a cash prize (1st prize=\$1000, 2nd prize=\$500, 3rd prize=\$250), but also a one year membership to WEF and the opportunity to present a poster at WEFTEC'99 in New Orleans.

The 1998 first place winners included:

- Operations: "The Ecological and Industrial Impact of the Zebra Mussel and a Strategy to Control Them," by Carl Hjort, Case Western Reserve University, Cleveland, Ohio.

- Bachelors: "Factors Affecting Removal of Nitrogen, Phosphorous and Organic Carbon in Simulated Wetland Treatment Systems," by Rachael Grimsley, Louisiana State University, Baton Rouge, Louisiana.
- Masters: "Treatment of a High Strength Ammonium Chloride Wastestream Using Acclimated Activated Sludge in a Pilot-Scale Sequential Batch Reactor," by Mary Alford, University of Florida, Gainesville, Florida.
- Ph.D.: "Stratification and Redox Potential Change in Biofilms," by Tong Yu, University of Cincinnati, Cincinnati, Ohio.

To enter the 1999 competition, a 500-1000 word abstract must be prepared along with a completed application form. More information and application forms are available through the web (<http://www/wef/org/docs/studpapercom.html>) or by contacting Dianne Crilley ([dcrilley@wef.org](mailto:dcrilley@wef.org)).



# 1999 ASCE ENVIRONMENTAL ENGINEERING STUDENT PAPER COMPETITION

## COMPLETE COMPETITION GUIDELINES

**ELIGIBILITY:** Any member of an ASCE Student Chapter is eligible. Any student paper that has not won a prize in any previous competition may be entered. Papers must be completed with minimal faculty involvement. There are two categories: graduate or undergraduate student categories. Previous winners in the undergraduate category may enter only in the graduate category. Previous grand prize winners are not eligible for future competitions. A maximum of four papers from each ASCE Student Chapter will be allowed. Any subject matter related in technical aspect to environmental engineering will be accepted, including laboratory, field studies or summaries of thesis research.

**FORMAT:** Papers are expected to be 6-8 (8.5" by 11") pages, single sided, double spaced, 10-12 cpi font, word-processed, including all figures, tables, and a one-half page abstract. Do not place your name of affiliation anywhere on the paper itself.

**JUDGES:** Judging will be performed by members of the ASCE- EED Committee on Student Activities. They represent academia, government and industry. The following criteria will be followed.

- Material - technical or theoretical content correctness [35%]
- Demonstrated Knowledge and Understanding of Subject - depth of knowledge [20%]
- Originality - topic and discussion new and not a repeat of the old and familiar [25%]
- Presentation - neatness, style, organization [10%]
- Clarity and readability [10%]

**SUBMITTAL:** Ten copies must be received by close of business on 3/5/99 (electronic submission is acceptable). Each paper must be accompanied by a completed standard entry form signed by the entrant and Chapter Advisor (original paper copy please). **DO NOT INCLUDE AUTHOR'S NAME OR AFFILIATION ON ANY PAGE OF THE ESSAY.** Entries should be mailed to Robert Williams, ATSDR, E32, 1600 Clifton Rd NE, Atlanta, GA 30333. Each entry must be accompanied by a completed standard entry form, signed by the student as well as the ASCE Student Chapter/Faculty Advisor.

**AWARDS:** The Committee anticipates that the awards will be similar to last year's Competition. A grand prize of \$1,000 may be awarded to the best overall essay. Additional cash prizes in each category (Graduate/Undergraduate) could be awarded as follows (depending on funding) :

Two Prizes	\$500
Two Prizes	\$250
Two Prizes	\$125

Awards for winning papers and student presentations will be at the ASCE National Conference on Environmental Engineering in Norfolk, VA, in July 1999. Papers selected for presentation will be eligible for publication in the Conference Proceedings and will be considered for publication in Civil Engineering Magazine. Winners may receive a travel subsidy to attend the ASCE Conference; however, Student Chapter Advisors are encouraged to solicit local Chapters for travel subsidies. All participants will receive certificates

### ADDITIONAL INFORMATION:

Inquiries regarding this competition may be addressed to Bob William, (email [rcw1@cdc.gov](mailto:rcw1@cdc.gov) or ph: 404-639-0610) or Dr. Kate Leonard, (email [leonard@cee.uah.edu](mailto:leonard@cee.uah.edu) or ph: 256-890-6423). Conference information is at [www.asce.org/confconted/ee99.html](http://www.asce.org/confconted/ee99.html).

## **44th Annual Institute in Water Pollution Control**

Manhattan College, Riverdale, New York

June 7-11, 1999

Manhattan College's forty-fourth Annual Institute in Water Pollution Control will take place on June 7-11, 1999 in the Manhattan College Leo Engineering Building, Riverdale, New York. Two courses, which run concurrently, will be offered:

- Water Quality Modeling
- Treatment of Municipal, Hazardous and Toxic Wastewaters

These week-long courses have much to offer young engineers and seasoned professionals who have not been able to stay abreast

of the rapidly changing field. Set in a classroom atmosphere, the courses allow for dialog between lecturer and participants. The fee per course is \$1,200 and includes a set of notes for each attendee.

For a brochure or additional information, contact Ms. Florence Byrne, Program Coordinator, Manhattan College, Environmental Engineering Department, Riverdale, NY 10471; phone (718) 862-7277, FAX (718) 862-8018.

## **Workshop on Best Management Practices for Airport Deicing Stormwater**

College of Engineering and the Water Resources Research Center

University of Massachusetts, Amherst

July 28, 1999

With the advent of new regulations concerning aircraft deicing and management of spent aircraft deicing fluids, many airports now face the challenge of maintaining public safety along with environmental protection. Each year large quantities of propylene glycol, ethylene glycol, and diethylene glycol are used to deice aircraft. In addition, urea, which readily breaks down in the environment to ammonia, is in widespread use as a runway deicer. All of these compounds exert large oxygen demands when introduced into natural waterways. In addition, there are toxicity concerns with certain glycols, and with deicing and anti-icing fluid additives. As a result, the collection and treatment of these wastes is now being mandated by regulatory agencies for protection of both human health and the environment. While numerous alternatives have been proposed for deicing wastewater management, at the present time there is no firm consensus on the best means of managing this significant problem.

A workshop will be held at the University of Massachusetts at Amherst on July 28, 1999 to discuss the current situation

regarding the management of deicing and anti-icing wastewater. The course will provide an assessment of the impact of stormwater runoff, and offer detailed current information on waste minimization, collection, and treatment practices. The role of anaerobic treatment processes will also be highlighted.

The workshop will be of interest to regulators, airport operators, and environmental engineers, scientists and managers concerned with deicing fluids management. For course information, contact:

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## **International Conference on Environmental Engineering Education**

Zurich, Switzerland

August 22-24, 1999

The IAWQ specialist group for Environmental Engineering Education (E3) is organizing the First European Seminar on Environmental Engineering Education to be held from August 22 to August 24, 1999, in Zurich, Switzerland. This seminar addresses university teachers in the field of environmental engineering. Information on this seminar may be obtained from the WWW at <http://www.eawag.ch/courses/eee99.html>. We invite you to consult the home page for this seminar, forward this information to any colleague that might be interested in participating, and apply to participate and submit relevant information as specified on the home page.

Please take a look and feel free to make comments and suggestions regarding the recent redesign, improvements, and new features of the IAWQ homepage located at <http://www.iawq.org.uk>. If you have problems accessing the homepage, you may send an e-mail to <eee99@eawag.ch>, requesting seminar information.

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### *Association of Environmental Engineering and Science Professors Newsletter*

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