Association of Environmental Engineering and Science Professors

Newsletter

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In this issue...

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President's Letter

Engineers are the silent professionals! So it is said, but this silence is not good for the profession. At the August meeting of the American Association of Engineering Societies (AAES), which AEESP was accepted into last December, the activities of their Public Affairs committee were reported. AAES' long range plan emphasizes Public Policy, Public Awareness, the Engineering Workforce Commission, and International Activities with the former three receiving the majority of their efforts. AAES is launching a major campaign to raise the profile of engineering and science. You can visit their web site for more information (http://www.aaes.org). AEESP appears to be generating more recognition and our web site is among those listed in the July edition of *Environmental Protection* to contact for more information on the environment. *You* can make a difference by contacting your government representatives. The form letters that you have been receiving via email are meant to aid in that process. I urge you to speak out for your profession as a scientist/engineer and educator.

Somebody said that activities in Washington, D.C. would be slow in this election year, but it does not seem that way to me. Maybe it is my neophyte status that makes it seem like a beehive of activity, especially as it impacts academics, research, and the environment. Our Legislative Consultant, Kathi Ream, set up meetings for Kimberly Gray and me to speak in support of the NSF budget with Congressman Kevin Brady (R-TX) and Congresswoman Janice Schakowsky (D-IL). These are the representatives for our respective districts, and it was fortunate that Congressman Brady sits on the influential Congressional Science Committee and the subcommittees for Space and Aeronautics and for Technology. Congressional representatives are very good about seeing their constituents! By the way, look for a brief biography on Kathi in this Newsletter and a description of her activities with AEESP. Kathi is the person who has crafted those easy to send letters to your representatives which I hope everyone is filling out and mailing!

In addition to walking the halls of Congress last April, we also went over to speak with Dr. Bordogna, NSF's Deputy Director, and his staff about environmental science and engineering concerns within NSF. Dr. Bordogna spent quite some time with us and was very candid in his remarks. In short, it appears that the new restructuring of NSF may be quite favorable to the inherently multi-disciplinary field of environmental engineering and science. We offered AEESP's assistance in supporting NSF's efforts and relayed our efforts to date with legislators and the many letters Kim and I have been sending out to support the NSF budget. Dr. Bordogna invited AEESP to recommend one of our members of national standing to serve on a first ever External Advisory Board for NSF. The choice was difficult with so many potential candidates. The Board recommended Dick Luthy. Also, from other sources, it appears that NSF is moving away from the single investigator grants and toward large programs, emphasizing multi-disciplinary collaborations. Education is a large component of these programs, as is outreach to K through 12. Dr. Colwell went into office with this as part of her agenda and the changes are already apparent.

The results from the recent membership survey have been processed and reported. Thanks to all of you who responded and to Craig Adams and his committee for the many hours of effort in composing, processing, and reporting the results of the survey. The major findings of the survey are provided later in this newsletter. It was reassuring that 80% of the respondents felt that AEESP should increase its influence in formulation of environmental policy and spending because we have been putting much effort in that endeavor. Our recruiting efforts were less than hoped, but we are still growing slightly and it was recommended that we pursue new members from engineering or mixed engineering and science programs.

(continued on page 2)

(continued from page 1)

There are several coming attractions to be watching! The offering of the new and improved Process Lab Manual is a project that has been underway for some time. You will recall that we sent you a survey in1998 to determine if any manuals should be revised and found that the membership enthusiastically supported efforts to revise the Process Lab Manual. Sue Powers is to be congratulated for bringing this endeavor together to the point of testing this fall semester. It is projects like this one that help our members do their jobs better and enhance education. The contributing authors will impact many students in the future and AEESP 'gives back' to its members! We are investigating the most cost effective way to make it available to the membership.

Another major development is AEESP's *face*. Very soon you will find a new and improved web page on which Kurt Paterson has been working diligently trying to revise, incorporate, and finesse the many suggestions he has received. Our web site is quite popular judging by the accessing counts and has the potential to provide information to students, faculty, prospective employers, environmentalists, among many others. Kurt has gone well beyond what anyone could ask in his time and creativity and energy to give AEESP a face it can be proud to display!

The 2002 AEESP conference could be in one of four places on the North American continent! Four proposals have been received and will be reviewed. The Board will vote on the proposals at the October meeting. This will be the first combined education and research conference. It was not clear if we should cycle every two or three years based on the membership survey results. Survey opinions indicated some support for organizing an annual or biennial national conference, but the many competing conferences already being offered is a concern. Mike Aitken and his task force will be examining the question of conferences in this next year.

In case you missed it, Paul Bishop recently published an article titled "Environmental engineering education in North America" (*Water Science and Technology*, **41**(2):9-16). And in the September issue of *Environmental Protection* will appear a feature article written by Domenico Grasso, Mike Switzenbaum and myself on the "Future of environmental engineering and science education." This article is an outgrowth of the NSF sponsored workshop organized by Bruce Logan that spawned the 1999 AEESP conference focused on the four identified emerging areas in environmental engineering and science. If you write education articles and want them brought to the attention of the membership, please contact me about getting the information posted on the web site!

Hopefully I have conveyed the high level of activity within AEESP. We've become very dependent on Ms. Joanne Fetzner who manages the AEESP Business Office. She has been instrumental in facilitating communication, responding to member inquiries and other requests, as well as providing consistency in accounting, taken over the archives, and many more activities. Slowly her time commitment has been increasing. We also took a big risk hiring Ms. Ream, but felt it worth the opportunity to become more involved in the decision making processes on environmental issues. We joined AAES which assesses dues based on membership. The cost of travel has increased and there is more travel for the Board members attending various meetings even though we try to economize and have capped spending limits. Bluntly, I am justifying a membership dues increase approved by the Board last May. Assistant, Associate, and Full Professor memberships will increase by $10 to $40, $60, and $75, respectively. Student membership will remain the same at $15. Affiliate memberships will go up to $50 and Sustaining memberships increase from $250 to $500. These rate changes will not be effective until 2001. Compared to other organizations, AEESP fees are still quite modest. More important is that AEESP is meeting your needs. If that is not the case, do let me know how we can improve.

I can scarcely believe that this is my third and last newsletter as president. At the October 2000 Board meeting held at WEFTEC, a new president will be elected who will take over in January 2001. Until then, I encourage you to contact me with your ideas for issues that AEESP should address. Taking on this organization was a daunting task, but I found that there are many enthusiastic members willing to help. Just volunteer–we'll find something for you to do!

Warm regards,
Robin Autenrieth
Texas A&M University
r-autenrieth@tamu.edu

Format for Newsletter submissions

Please note that the preferred file format for newsletter submissions is Microsoft Word. Photos may be sent as prints or on a disk scanned at 300 dpi resolution and saved in .tif format. Please identify subjects in all photographs, providing names, date, event and location. Submissions should be sent to Roger Ely, AEESP Newsletter Editor, roger.ely@yale.edu, Department of Chemical Engineering, P.O. Box 208286, Yale University, New Haven, CT 06520-8286; phone (203) 432-4386; fax (203) 432-2881.

Board Happenings

- On May 7, 2000 the AEESP Executive Board was hosted by Kimberly Gray on the campus of Northwestern University for a day long meeting. Present were Kimberly Gray (Past President), Robin Autenrieth (President), Domenico Grasso (Vice President), Gerald Speitel (Treasurer), Kurt Paterson (Secretary), Debra Reinhart (Communications), Mike Aitken, Lisa Alvarez-Cohen, John Novak, Sue Powers, and Joanne Fetzner (Business Secretary).

- New member applications increased slightly this year compared to 1999 (37 vs. 21). Current membership is up 5.2% from 1999; the renewal rate is a healthy 93%!

- Results of the membership survey were discussed to determine what actions the Board should take in response to the survey. The Task Force on Conference Needs will be the first application of the results.

- The Board voted to increase dues for Assistant, Associate, and Full Professors by $10; Sustaining member dues will increase to $500. All increases will be effective in 2001.

- The proposed reorganization of AAEE was discussed. The Board recommended eight names for nomination to the AAEE committee evaluating the formation of the "Society of Environmental Engineers & Scientists."

- The WEF/AEESP Scientists Luncheon will be Monday at noon on October 16. The speaker is William R. Mills, Jr. discussing "Orange County Water District Projects to Meet Future Water Needs Through Water Research and Technology." Mills is the General Manager of the Orange County Water District.

- The AEESP Meet-and-Greet at WEFTEC will be Monday, October 16, from 5-7 p.m. in the Palos Verdes Room.

- Phil Singer presented an AEESP lecture on "Drinking Water Disinfection: Recent Developments and Progress" at the AWWA conference in Denver. An AEESP Meet-and-Greet was also sponsored.

- An AEESP/A&WMA meet-and-greet healthy breakfast was held in June at the A&WMA conference.

- AEESP will contribute to the recognition of Jim Morgan's retirement from Cal Tech by sponsoring a student presentation award ($500) and providing travel funds ($1,000) for an invited speaker for the special symposium to be held at the August ACS conference.

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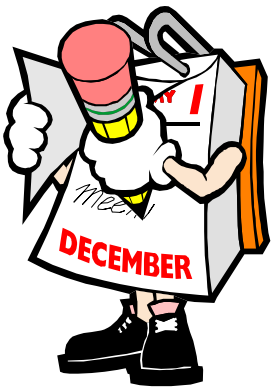
December 1, 2000
is the submissions deadline for the January 2001 AEESP News



AEESP expands public policy activities

Earlier this year, the AEESP Board of Directors approved plans to conduct a broader public policy program in 2000. The objectives of the plan are: (1) to raise AEESP's visibility in Washington, D.C.; (2) to achieve AEESP's stated goals; and (3) to influence government policy. To help achieve these objectives, a series of activities is underway in 2000.

To oversee these efforts, AEESP secured the services of Kathleen A. Ream, who has more than 25 years of experience in public policy formation in Washington, D.C. Most of this time was with the American Chemical Society (ACS). As the Director of Government Relations and Science Policy at ACS, she developed strategies, created new ventures, and directed efforts to achieve government relations goals at the federal, state, and local level. Ms. Ream currently is Principal and founder of KAR Associates, Inc., a public policy consulting firm.

AEESP's first foray in Washington was in April 2000. President Robin Autenrieth and Past-President Kimberly Gray visited their Representatives (Brady [R-TX] and Schakowsky [D-IL]) to advocate increases in NSF funding for FY 2001. They then met with Dr. Joe Bordogna, NSF Deputy Director, to discuss the Foundation's 5-year "Environmental Initiative" and to open an ongoing dialogue between NSF and AEESP. These discussions continued in July when Kimberly Gray met Dr. Margaret Leinen, Assistant Director of the Geosciences Directorate, who is coordinating NSF's "Environmental Initiative."

To leverage its resources in Washington, AEESP joined the Coalition for National Science Funding (CNSF). CNSF has been in operation for about 12 years and has a membership base of 90-plus organizations—from major research institutions to professional societies to educational organizations—that actively pursue increased funding for the National Science Foundation (NSF). AEESP is a signatory on CNSF's position statement on NSF's FY 2001 funding. To promote the benefits of NSF funding to congressional officials, CNSF holds a reception on Capitol Hill that highlights research funded by the Foundation. More than 200 people, including Members of Congress, various administration officials, and senior congressional staff, attended this year's reception on May 17.

Kathleen Ream

At crucial points during this year's federal budget process, AEESP has sent letters to the House and Senate appropriators, as well as to the full Senate, supporting NSF funding. The Association also reached out to its members through e-mail notices urging them to exercise their political rights and contact their congressional delegation to support increased funding for the Foundation.

Thus far, AEESP's public policy activities have focused on NSF, but that too is expanding as we determine how to work with NGOs on environmental issues. Future articles will highlight these and other public policy activities currently in the planning stage and additional coalition activities. If you would like further information on AEESP's government affairs activities, contact Robin Autenrieth at Rautenrieth@envcs00.tamu.edu or Kathleen Ream at kathiream@aol.com.

AEESP Members,

Does AEESP have your correct address? Send address changes to:
Joanne Fetzner, AEESP Business Office, 2208 Harrington Court, Champaign, IL 61821
or
e-mail: fetzner@uiuc.edu
phone: 217-398-6969
fax: 217-355-9232

AEESP sponsors student award at Morgan Symposium

A symposium in honor of Prof. Jim Morgan of Caltech was held at the 220th National Meeting of the American Chemical Society (ACS) in Washington, D.C., August 20-24. Among his many accomplishments, Prof. Morgan was the founding editor of Environmental Science & Technology, an ACS journal. AEESP sponsored a $500 award for the best student presentation (oral or poster) in the Morgan symposium. On behalf of all the symposium participants, the symposium organizers, Profs. Janet Hering (Caltech) and Jerry Schnoor (U. of Iowa), thank AEESP for its recognition of our most talented students.

Membership Survey Results

by Craig Adams, Membership Committee Chair

The Membership Committee would like to thank all of you who participated in the survey last spring. The results of the survey were analyzed and submitted to our Board in April. The results from the membership survey did not contain too many big surprises for the most part, but do provide important insight to setting priorities for AEESP actions in the future.

Respondents. A total of 122 responses were received which is a bit less than we had hoped but is still significant enough to provide information. The distribution of respondent's age and rank is broad, as is representation between medium and large programs. Overall, there are 5.9 and 2.9 environmental engineers and environmental scientists in the programs of respondents. Within the average program, the ratio of "Environmental Engineers" versus "Environmental Scientists" is approximately 2.4:1. The top four areas of specialization for members were: wastewater treatment (34%), potable water treatment (16%), environmental chemistry (15%), and hazardous waste (13%). Air pollution , microbiology, and water resources tied for importance at 7% each.

Recruitment. The most important question on which this survey sought guidance was on whom should be actively recruited. Approximately two-thirds of our members felt it was "important" or "somewhat important" to significantly increase the size of our membership. There is clear, strong support for actively pursuing both *environmental engineering* professors and *environmental science* professors who are in *environmental engineering* or *mixed environmental engineering and science* programs (with 98 and 86%, respectively). There is weaker support for recruiting engineering and science professors in non-environmental engineering (or mixed) programs, though a majority of respondents still feel that it is "important" or "somewhat important." Approximately half of the respondents felt non-academics should be recruited to our ranks with suggestions evenly distributed between government labs, regulatory agencies, consulting firms, and industry.

Conferences. Our members were evenly split on whether to hold the AEESP conference every two versus every three years (45 versus 44%, respectively). A majority of members (52 versus 40%, respectively) felt AEESP should not organize an annual or biennial national conference with several comments on the number of environmental conferences already being held.

Professional Society/Representation/Focus. A slight majority of our members responded that AEESP should seek to form a professional society, though clearly much discussion as to what this means would be required. Most respondents (78%) felt that the AEESP adequately represented their interests. The top five other organizations members belong to are: ASCE (39%), WEF (31%), AWWA (27%), IWA (25%), AND ACS (19%). A large majority of respondents (80%) felt that AEESP should increase its influence in formulation of environmental policy and spending. Respondents generally supported AEESP focusing on both education and research. Respondents felt it was only "somewhat" important to focus on web-based teaching tools, to disseminate information, or to develop curricula. Respondents found the most important service provided by AEESP was the directory. The web page, conferences, and the newsletter tied for the second most important service. The lab manuals, workshops, and seminars were deemed less important.

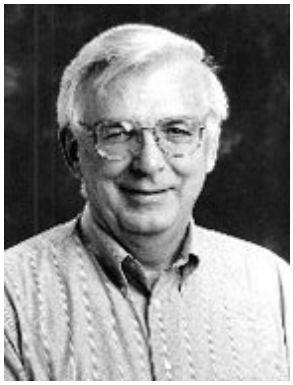
Journals. The vast majority of respondents do not think AEESP should have a journal. The top five journals read by our members are ES&T, Water Research, J. Environ. Eng., Water Environ. Research, and J. AWWA; 28 different professional journals are read by 5% or more of our members.

Recommendations. Based on review of the survey results, the committee recommends the following actions.

- To actively recruit engineering and science professors from environmental engineering and environmental engineering and science
- Regarding the AEESP Conference frequency, AEESP members are split between holding the conference every 2 or 3 years. The Membership Committee is recommending that AEESP hold the conference biennially so that each member has the option to attend more or less frequently depending on individual needs.
- The Membership Committee does not recommend we form a "professional" society beyond the format that we currently have.
- The Membership Committee recommends the increased involvement of AEESP in influencing national environmental policy and spending decisions.
- The Committee recommends that AEESP continue its strong focus on both education and research, and continue its current services (directory, web site, etc.).
- The Committee does not recommend that AEESP implement a journal.

While the results of this survey provide us with insight on the directions our members feel AEESP should move, we hope that it also stimulates additional discussions that will help us continually improve our organization. Please send any comments, suggestions or questions to the Membership Committee Chair (adams@umr.edu), to Robin Autenrieth (R-AUTENRIETH@TAMU.EDU), or to any Board member.

2000 Clarke Prize awarded to Charlie O'Melia



Dr. Charles R. O'Melia is the recipient of this year's Athalie Richardson Irvine Clarke Prize. The award, established in 1993 by the National Water Research Institute, honors outstanding achievement by research scientists who through their devotion and perseverance have implemented better water science research and technology. Dr. O'Melia has authored over 100 technical publications and his groundbreaking research on filtration and coagulation is a cornerstone of our present knowledge in these areas of water quality engineering.

Dr. O'Melia is the Abel Wolman Professor of Environmental Engineering at Johns Hopkins University, where he has taught since 1980. He was elected to the National Academy of Engineering in 1989, and has received numerous awards, including the 1990 A. P. Black Research Award from the American Water Works Association, the 1969 Award of the American Society of Civil Engineers for the Application of Research to Practice, the 1972 Distinguished Faculty Award, the 1975 Environmental Science Award, and the 1995 Founders Award. He was selected as the 1982 Distinguished Lecturer of the Association of Environmental Engineering Professors, and in 1985 he was selected to present the ASCE Simon W. Freese Lecture. He received the IAWPRC-Pergammon Publications Medal in 1988 and the Gordon Maskew Fair Medal for environmental education from the Water Environment Federation in 1993. He has served previously as Director, Vice President, and President of the Association of Environmental Engineering Professors. In addition, he is a member of the EPA Science Advisory Board's Drinking Water Committee and the Water Science and Technology Board of the National Research Council. He also chaired the NRC Committee on Watershed Management for New York City.

"The 21st century will pose wonderful challenges to environmental sciences, engineering, and technology in sustaining water resources from mountain springs to coastal ecosystems."

--Charles R. O'Melia

Athalie Richardson Irvine Clarke, along with her daughter, Joan Irvine Smith, provided the encouragement that inspired and the financial support that enabled the formation of the National Water Research Institute. The Clarke Prize, consisting of a medallion and $50,000, is awarded annually to an outstanding research scientist who best exemplifies Mrs. Clarke's dedication to excellence. As part of the award celebration, each recipient is invited to present The Clarke Lecture. Dr. O'Melia dedicated his lecture, entitled, "a long the riverrun," to Anna Dobbin O'Melia, "who introduced me to the wonders of water and its environs and to Werner Stumm who showed me my responsibility to sustain them."

In Memoriam...Edward Edgerley, Jr.

Dr. Edward Edgerley, Jr., former assistant dean of the Washington University School of Engineering, AEESP affiliate member, and more recently chairman and CEO of SITEX Environmental, Inc., a St. Louis-based environmental consulting firm that he founded, died February 1 at Creve Coeur, Missouri, near St. Louis. A native of Lancaster, Penn., Dr. Edgerley graduated from Penn State University with a B.S. degree in sanitary engineering in 1959. He received his M.S. degree in sanitary engineering from MIT in 1962, and a Ph.D. from UC Berkeley in 1968. In 1977, Dr. Edgerley became senior vice president of Envirodyne Engineers, Inc., then president of Environmental & Energy Consultants in 1979. At the time of his death, Dr. Edgerley was serving as senior consultant and vice chairman of SITEX and as a consultant for a waste management company in New Jersey, where he was working on wastewater problems in China. In addition to his professional achievements, he was a former officer of many organizations, including the Greater St. Louis chapter of the Air Pollution Control Association, the Consulting Engineers Council of Missouri, the Group Health Foundation of St. Louis and Group Health Plan of Greater St. Louis.

[Article prepared from information provided by Dr. D. W. Ryckman of Ballwin, Missouri.]

Publication of New AEESP Lab Manual Underway

AEESP has undertaken a project to write a new Environmental Engineering Processes Laboratory Manual. The manual is being written by AEESP members as a document that provides a tool for students and a time saver for faculty. It will also serve as a means of publishing our efforts to develop relevant and meaningful laboratory experiences for our students. The manual contains four major sections: Environmental Transport and Partitioning Processes, Chemical Processes, Environmental Biological Processes, and Particle Dynamics and Separations in Environmental Systems. Editors for this project include James Bisogni, Jr. (Cornell), Joel Burken (U. Missouri, Rolla), Krishna Pagilla (IIT), and Susan Powers (Clarkson). Jon Iza (U. Basque Country, Spain) will be translating several of the labs for a Spanish version of the lab manual.

Descriptions of laboratory exercises were submitted this past year and are undergoing a full peer review process. They look excellent. Many of the labs from the first two sections of the manual (see Table 1) are now ready for testing by students in a classroom setting prior to finalizing them for publication. Each laboratory description is written for the student with an additional guide for instructors that provides greater detail on the experimental set up, trouble shooting, and expected results.

Please contact Susan Powers (sep@clarkson.edu) if you wish to consider any of these labs for your classes this fall. There will be an additional announcement later in the Fall semester for labs that will be ready for testing in the Spring.

Table 1: Laboratory descriptions ready for testing by students

Laboratory Study of Plug Flow Reactors	Alex Mayer, Michigan Technological University
Laboratory Study of Completely Mixed Flow Reactors Using UV/Visible Spectrophotometry	William P. Ball, Alan T. Stone, A. Lynn Roberts, Johns Hopkins University
Residence Time Distribution in a Chlorine Contact Chamber Part A: Design a bench-scale model of a chlorine contact chamber Part B: Assessment of compliance of a chlorine contact chamber with SWTR and state standards Part C: Mathematical analysis of a chlorine contact chamber as a non-ideal reactor	Susan E. Powers, Clarkson University
Measurement of Henry's Law Constant	Thomas D. DiStefano, Bucknell University
An Introduction to Phase Partitioning and Environmental Transport Part A: An Introduction to Phase Partitioning Part B: Effects of Sorption on Contaminant Subsurface Transport	Stefan J. Grimberg and Susan E. Powers, Clarkson University
Gas Transfer: Measurement of Overall Oxygen Mass Transfer Coefficient in Simulated Engineered and Natural Systems Part A: Measurement of $K_L a$ in a completely mixed batch reactor and examination of system specific conditions on $K_L a$ Part B: Measurement of $K_L a$ for oxygen in sealed, completely mixed batch reactors Part C: Measurement of $K_L a$ in a simulated stream and examination of system specific conditions on $K_L a$	Tanju Karanfil, Clemson University, and Bruce Logan, The Pennsylvania State University
Single Component Activated Carbon Adsorption Isotherm	Gerald E. Speitel Jr., University of Texas at Austin
Multi-Component Activated Carbon Adsorption Isotherm	Gerald E. Speitel Jr., University of Texas at Austin
Continuous Flow Ion Exchange Contactor	James J. Bisogni, Jr., Cornell University
Ultrafiltration/Microfiltration (UF/MF) Membrane Treatment of Industrial Wastewaters	Brian E. Reed, West Virginia University, and Ronald Vaughan, University of Missouri-Columbia
Air Stripping	Thomas D. DiStefano, Bucknell University
Chemical Precipitation: Removal of Complexed Metals from an Industrial Wastewater	Mark O. Barnett and Timothy E. Kramer, Auburn University, and William P. Hamilton and Alan R. Bowers, Vanderbilt University
Iron Metal as a Reducing Agent: Kinetics of Nitrate Reduction	Lenly J. Weathers and K. Larry Roberts, Tennessee Technological University
Advanced Chemical Oxidation: Fenton's Reagent Degradation of Organic Compounds	Christopher M. Miller and Kevin C. Bower, University of Akron

The EPA Science Advisory Board: A Resource for Members

The SAB was established by Congress in 1978 to provide independent scientific and engineering advice to the EPA Administrator on the technical basis for EPA regulations. Members of and Consultants to the Board constitute a distinguished body of scientists, engineers, and economists who are recognized, non-governmental experts in their respective fields–many of whom are AEESP members. These individuals are drawn from academia, industry, and environmental communities throughout the United States and, in some limited cases, other countries. The SAB serves as a council of peers to evaluate the soundness of the technical basis of science policy positions adopted by the Agency. As a result of the Federal Advisory Committee Act (FACA) (5 U.S.C. App. C), essentially all of the meetings (telephonically or in person) are open to the public. The 100 members of the Board are distributed among ten standing committees:

Advisory Council on Clean Air Compliance Analysis (COUNCIL)
Clean Air Scientific Advisory Committee (CASAC)
Drinking Water Committee (DWC)
Ecological Processes and Effects Committee (EPEC)
Environmental Economics Advisory Committee (EEAC)
Environmental Engineering Committee (EEC)
Environmental Health Committee (EHC)
Integrated Human Exposure Committee (IHEC)
Radiation Advisory Committee (RAC)
Research Strategies Advisory Committee (RSAC)

Finally, the activities of the Board are coordinated through an Executive Committee (EC) that serves as a "Board of Directors" for the SAB. The EC is composed of the chairs of the ten committees noted above and several members at-large. The EC meets three to four times annually to discuss relevant issues, SAB policies and procedures, and to provide final review and approval of all SAB reports (except those from the two separately chartered committees, COUNCIL and CASAC, which report their findings directly to the Administrator). Increasingly, the EC is undertaking reviews that transcend its standing committee structure by establishing *ad hoc* subcommittees.

The EEC has been a leader in innovative approaches to providing advice to the Agency. Although the majority of requests for reviews originate with the Agency, the EEC pioneered a self-initiated Commentary format. The EEC has also begun initiatives that involved the uses of the social sciences in better understanding and developing solutions to environmental problems. Some recent EEC Commentaries and reports include:

- *Review of Agency Wide Quality Management System*
- *The Need for Risk Reduction Options Research for PM 2.5*
- *Waste Leachability: The Need for Review of Current Agency Procedures*
- *Wet Weather Flow Research Program Review*

Many other recent Board Reports, Advisories and Commentaries may prove of interest to AEESP members as information for both classroom instruction and research direction. More information and a listing of various SAB opinions and reports may be found at http://www.epa.gov/sab/.

Domenico Grasso

Website of Interest

The web site, **www.projekte.org/eeen/**, may be of interest to AEESP members. This site is about environmental education in Europe. Check it out! [Thanks to Charlie O'Melia for passing this along.]

AAAR

The annual meeting of the American Association for Aerosol Research will be held November 6-10, 2000 in St. Louis. Information is available on the AAAR web site at www.aaar.org.

AWRA

The annual conference of the American Water Resources Association will be held November 6-9, 2000 in Miami. Information is available on the AWRA web site at www.awra.org.

University of Cincinnati

Paul L. Bishop, Ph.D., P.E., DEE, has been appointed Associate Dean for Research in the College of Engineering at the University of Cincinnati. He is also the Herman Schneider Professor of Environmental Engineering.

Duke University

Robert J. Griffin has joined the environmental engineering faculty at Duke University. Professor Griffin received his M.S. and Ph.D. in Chemical Engineering, with an associated minor in Environmental Engineering Science, from the California Institute of Technology in 2000. His thesis with Professor John H. Seinfeld focused on experimental and computational studies of secondary organic aerosol formation. Professor Griffin's awards include an invitation to the Atmospheric Chemistry Colloquium for Emerging Senior Scientists and the Early Career Scientist Award from the Biogenic Hydrocarbons Gordon Research Conference. Prior to his arrival at Caltech, Professor Griffin was a Research Associate at Arthur D. Little, Inc., where his work included modeling chemical costs of production, studying the feasibility of new catalyst technology, and investigating the use of ozone depleting substances in chemical processes. He received a B.S. in Chemical Engineering from Tufts University, where he was elected to Tau Beta Pi and chosen as the American Institute of Chemists' Outstanding Student.

Professor Griffin plans to continue studying the fate and transport of atmospheric species. His interests include new atmospheric particle formation, gas-phase organic chemistry, and three-dimensional atmospheric modeling to address air quality issues on a regional scale. He is a member of the American Association of Aerosol Research, the American Chemical Society, and the American Geophysical Union.

Manhattan College

Dominic DiToro at Manhattan College will be the chair of the next Gordon Research Conference on "Environmental Sciences: Water" to be held in 2002.

University of Missouri, Columbia

Brian E. Reed, Associate Professor at West Virginia University, will be joining the University of Missouri at Columbia, Department of Civil and Environmental Engineering as an associate professor as of September 1, 2000.

Northwestern University

Northwestern University is pleased to announce that **Dr. Aaron Packman** joined the faculty as an Assistant Professor of Environmental Engineering in September 2000. Dr. Packman received the Ph.D. degree in Environmental Engineering Science from the California Institute of Technology in 1997, where he worked with Professor Norman Brooks. He has been an Assistant Professor in the Department of Civil Engineering at Drexel University since the fall of 1997. Dr. Packman holds a CAREER Award from the National Science Foundation. Dr. Packman's research addresses transport processes, particularly those that occur at the interface between surface water and ground water. Unique about his research is that Dr. Packman integrates field, laboratory, and modeling studies. Dr. Packman's research and teaching will focus on transport processes, and he is especially eager to link those processes to chemical and biological phenomena, which are the strengths of the Environmental Engineering Program at Northwestern University.

Princeton University

The Civil Engineering and Operations Research Department at Princeton University was reorganized into a Civil and Environmental Engineering department and an Operations Research and Financial Engineering department as of July 1, 1999. **Dr. Peter Jaffe** is chair of the Civil and Environmental Engineering Department.

We are pleased to announce that **Dr. Catherine Peters** has been granted tenure and was promoted to Associate Professor. Dr. Peters came to Princeton in 1994 as an Assistant Professor, after having completed a postdoctoral position at the University of Michigan. She received her Ph.D. in civil engineering and engineering & public policy at Carnegie Mellon University in 1992. Dr. Peters teaches courses in environmental chemistry, engineering statistics, and environmental risk assessment. Her research combines experimental investigation and mathematical modeling to understand the physical, chemical, and microbiological processes governing the behavior of organic contaminants that are complex chemical mixtures.

AEESP members, please share items of professional achievement with other AEESP members...

Send a brief note via e-mail to:

Roger Ely, AEESP Newsletter Editor, roger.ely@yale.edu

Programs & Places

Purdue University

We are pleased to announce that 19 students from the School of Civil Engineering and one student from the School of Interdisciplinary Engineering at Purdue University are the Overall Winners of the Tenth Annual Design Contest held in Las Cruces, New Mexico, April 2-6, 2000. Twenty-two universities were present at this year's competition. The Purdue students were divided into three teams. The teams competed in the following tasks: 1) Jewelry Devestment Re-Use and Recycle: Purdue won first place ($3500 prize). Six teams were entered in this task; 2) Pipeline Waste Removal: Purdue won first place ($3500 prize). Five teams were entered in this task; and 3) Metal Recovery from an open pit mine: Purdue won second place ($1500 prize). Remarkably, seventeen teams were entered in this task.

The Purdue team was also named "Overall Winner" of the contest by a panel of approximately 50 technical judges from various national laboratories, federal and international agencies, and private corporations. This award merits an additional $2500. The total cash prize this year is $11,000. Purdue will once again be in possession of the travelling trophy. This year's team recaptured the overall first place finish won by the 1999 Civil Engineering team.

Employment Opportunities

University of California, Berkeley

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING. The Department of Civil and Environmental Engineering of the University of California at Berkeley invites applications for a tenure-track assistant professor position in Water Quality. The appointment will be effective on July 1, 2001. The successful candidate must hold a doctorate degree and must show potential for high-quality teaching and research. The new faculty member will be responsible for teaching undergraduate and graduate courses and for developing a first-rate research program that broadly addresses water quality improvement within natural or engineered systems. The faculty member is expected to interact productively with faculty in related disciplines and with appropriate academic and professional communities.

Applicants must send by November 15, 2000, a detailed resume, a statement of teaching and research interests, a copy of one publication or manuscript and the names and addresses of five references to: Departmental Faculty Search Committee, Water Quality, c/o Department Chairperson, Department of Civil and Environmental Engineering, 760 Davis Hall, University of California, Berkeley, CA 94720-1710.

Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

University of California, Davis

Environmental Engineering Faculty Position. The Department of Civil and Environmental Engineering at UC Davis invites applications and nominations for a tenure-track position in environmental engineering with specialization in biological systems and treatment. The position is open at Assistant and Associate Professor levels. Requirements include a doctorate in engineering and a demonstrated record of success in, or evidence of outstanding potential for, both teaching and building a vigorous independent research program. The successful candidate will have a strong background and interest in water and wastewater quality and applying advances in the biological sciences to process design.

Areas of special interest include, but are not limited to, microbial ecology, application of molecular tools, public health, and non-point source pollution. Experience with municipal wastewater or water treatment plants and formal training in computational methods is desirable. She/he will join departmental colleagues in teaching undergraduate courses in environmental engineering and graduate courses related to water and wastewater treatment as well as biological systems.

To be assured of consideration, applications must be submitted by October 2, 2000. Applicants should submit a complete resumé, including a statement of teaching and research interests, transcripts, a list of relevant professional experience and publications, and the name, mailing address, telephone number, and e-mail address of three references to: Jeannie L. Darby, Professor, Department of Civil and Environmental Engineering, University of California, One Shields Avenue, Davis, CA 95616-5294.

E-mail inquiries may be addressed to: darby@ucdavis.edu. Information about the department can be found at: http://cee.engr.ucdavis.edu/.

UC Davis and the Department of Civil and Environmental Engineering are committed to building a more diverse fac-

ulty, staff, and student body in response to the changing population and educational needs of California and the nation. The University of California is an affirmative action/equal opportunity employer.

Cornell University

The School of Civil and Environmental Engineering invites applications for a tenure-track position in bioenvironmental engineering. A Spring or Fall 2001 appointment at the Assistant Professor level is anticipated, but an appointment at the Associate Professor level will be considered under special circumstances. The successful candidate should have both an undergraduate and an earned Ph.D. in civil/environmental engineering (or a closely related *engineering* discipline, such as chemical engineering), and possess demonstrated achievements in the application of molecular biological and biochemical techniques to environmental engineering. Examples include: application of molecular techniques to studies of community structures and community dynamics in engineered and natural systems; investigation of novel techniques for the biodegradation of contaminants; modeling of environmental processes at a fundamental, biochemical/molecular/cellular level; use of information obtained through molecular techniques to modify the design or operation of engineered processes for treatment of water, wastewater, hazardous wastes, or environmental contaminants.

The successful candidate is expected to teach and advise undergraduate (B.S.) and graduate (M.Eng., M.S., Ph.D.) students. Our M.S. and Ph.D. students complete a thesis/dissertation in an area of independent research. The successful candidate for this faculty position is expected to develop and sustain a high-quality, sponsored research program in bioenvironmental engineering that would involve M.S. and Ph.D. student researchers, and might logically involve interactions with faculty in other academic units at Cornell such as: Agricultural & Biological Engineering, Microbiology, Molecular Biology and Genetics, Environmental Toxicology, and Chemical Engineering. Our M.Eng. students complete an engineering design project (often accomplished as a group effort); hence, the successful candidate for this faculty position should have the experience and training appropriate to advise M.Eng. students with their engineering design projects. He/she would be expected to integrate biotechnology topics into existing undergraduate and graduate courses within our program, and to develop new, specialty courses in the biotechnology area.

Please send a detailed resume, a statement of professional goals, a graduate transcript, and names, addresses, e-mail addresses, and phone and fax numbers of at least three references to: Bioenvironmental Engineering Search Committee Chair, School of Civil and Environmental Engineering, 220 Hollister Hall, Cornell University, Ithaca, NY 14853-3501.

Inquiries by e-mail may be addressed to CEE_search@cornell.edu, but formal applications must be submitted by regular mail. Review of applications will continue until November 30, 2000, or until the position is filled.

The College of Engineering is an equal-opportunity, affirmative-action employer committed to employing a highly qualified, diverse faculty. Women and minorities are encouraged to apply.

Lehigh University

Environmental Engineering: The Department of Civil and Environmental Engineering at Lehigh University seeks applicants for a tenure-track faculty position in environmental engineering. The position will be filled preferentially at the rank of Assistant Professor. However, outstanding candidates will be considered for appointment as an associate professor. Particular areas of interest are environmental microbiology/biotechnology, remediation of hazardous waste sites, contaminants transport and environmental processes. The successful candidate should possess (1) an earned doctorate in Civil and/or Environmental Engineering or a closely related field, (2) proven excellence in research and publication, and (3) ability and commitment to teaching at both undergraduate and graduate levels. The successful candidate will be expected to develop an externally-funded research program and supervise M.S. and Ph.D. students. Applicants should provide a detailed resume of experience and qualification, a short statement of research and teaching interests, and the names and addresses of at least three references to Arup SenGupta, Chairman, Department of Civil and Environmental Engineering, Lehigh University, 13 East Packer Avenue, Bethlehem, Pennsylvania 18015. Phone (610) 758-3530, FAX (610) 758-6405, http://www.lehigh.edu/~incee. Consideration of applications will begin on December 1, 2000, but applications will be received until the position has been filled.

Lehigh University is an equal opportunity employer committed to recruiting, retaining and tenuring women and minorities.

Penn State University

Environmental Engineer, Department of Civil and Environmental Engineering at Penn State University. A new, campus wide environmental initiative provides funding for several new environmentally-related faculty positions. We invite nominations and applications to fill a new tenure track Assistant Professor level in environmental engineering. We are especially interested in engineers with expertise in molecular biological techniques and applied microbiology for engineering-oriented applications such as bioremediation and the analysis of microbial community structure in bioreactors. The candidate must develop a nationally recognized, externally-funded research program and must have a strong com-

mitment to teaching excellence at the undergraduate and graduate level.

Penn State ranks ninth in annual research expenditures among universities. Environmental research at Penn State is coordinated through the Environmental Consortium by the Environmental Resources and Research Institute (ERRI) and a series of environmentally-related centers and institutes. To assist researchers working in interdisciplinary fields, the College of Engineering has developed an Environmental Institute to foster multi-disciplinary projects with faculty in other departments and colleges. Applications will be reviewed starting August 15. Interested applicants should submit a resume, a statement of research and teaching interests, and names of three references to: Dr. Bruce Logan, Box A, 212, Sackett Building, The Pennsylvania State University, University Park, PA 16802. The Penn State web site is http://www.engr.psu.edu/.

Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce. AA/EOE.

San Diego University

RESEARCH TECHNICIAN IN ENVIRONMENTAL ENGINEERING, DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING. Full-time, permanent appointment.

RESPONSIBILITIES: The incumbent will serve under the supervision of the Blasker Professor of Environmental Engineering to: 1) Operate and maintain all analytical instruments including AA, GC, GC-MS, HPLC, IC, TOC, UV, etc; 2) Manage several environmental engineering laboratories, including chemical ordering/storage; instrument calibration/trouble shooting, laboratory safety, record keeping, and hazardous waste management; 3) Train students in the environmental engineering laboratories; 4) Design and perform experiments for the Water Quality Lab and Unit Operations Lab; 5) Under supervision, conduct research, co-author peer-reviewed papers and participate in writing research proposals. The person is also expected to interact with other faculty members in the Environmental Engineering Program.

QUALIFICATIONS: A Ph.D. in analytical chemistry, environmental chemistry, or environmental engineering with minor in environmental chemistry. At least two years of work experience in an environmental laboratory is desired. The successful candidate is expected to demonstrate the capability of handling and maintaining the analytical instruments listed above, and should have extensive knowledge of wet chemistry. Computer literacy and strong communication skills are required.

SALARY: $45,552 - $54,936. Commensurate with experience, knowledge, and skills. The salary can be supplemented by up to 25% through research contracts.

APPLICATION PROCEDURES: Applicants must complete the SDSU employment application for Research Technician III. Applications are available at San Diego State University, Human Resources Department, 3rd floor Administration Building, San Diego, CA 92182. The procedures can be accessed at http://bfa.sdsu.edu/ps/bulletin.html. Applicants also need to submit a cover letter and resume describing skills, knowledge, abilities, and experience. Three reference letters are needed. Review of applications will begin on August 20, 2000 and will continue until a suitable candidate is found. The position will be available on September 20, 2000.

San Diego State University is an Equal Opportunity Employer and does not discriminate against persons on the basis of race, religion, national origin, sexual orientation, gender, marital status, age, or disability.

University of Vermont

Postdoctoral Researcher/Environmental Fluid Mechanics. A postdoctoral fellow position is available in the general area of environmental fluid mechanics with application to natural streams and rivers. The scientist will be responsible for conducting research to develop a quantitative understanding of in-stream hydraulics, sediment transport, bank erosion, and velocity profiles as they relate to riparian (streamside) vegetation and aquatic habitat. The goal of the research is to understand the impacts of riparian vegetation on aquatic habitat and to provide a scientific basis for implementing measures of flow complexity into stream restoration projects.

The position includes a one course per semester teaching assignment in upper-level courses relevant to the research (e.g. hydraulics, fluvial forms and processes, open channel flows, etc.). An extensive mentoring and training program will be implemented to provide a valuable learning experience for the successful candidate. The overall teaching component is to be 25% with the remaining 75% devoted to research.

The successful candidate must have a Ph.D. in a related area (engineering, fluvial morphology, aquatic biology, etc.), expertise in quantitative fluid mechanics, experience with instrumentation for measuring in-stream velocity profiles, have good programming skills, and be willing to conduct extensive field work.

The position is available immediately. The initial appointment is from the date of hire through 12/31/01, with a salary in the range of $28,000 to $32,000 depending on experience.

Applicants should send a complete curriculum vitae and a list of three references to Dr. Cully Hession, Department of Civil and Environmental Engineering, University of Vermont, 213 Votey Building, Burlington, VT 05405-0156 USA; E-mail: hession@emba.uvm.edu. Review of applications will begin immediately and continue until the position is filled.

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

Water! Evolution of Water Supply and Sanitation in Finland from the mid-1800s to 2000, Tapio S. Katko, published by the Finnish Water and Waste Water Association, Hämeen Kirjapaino Ltd., Tampere, 1997, 102 pages, ISBN 952-5000-12-5

Scanning this book, one is impressed first that it is attractive in layout and highly readable. The subheadings and well designed graphics make it amenable to grasping easily the key themes of the book. In addition to the attractive color photographs, the many original graphs and tables use color to enhance readability. Also, as the latter are used amply throughout, they help one to assimilate a great deal of material, mostly trends, with little effort. For example, the number of wastewater treatment plants is shown year by year from 1910, which helps in discerning the periods of greatest activity. Once the book is skimmed and some of the main themes are assimilated, it is even more inviting to read sections that evoke interest; the format design makes it easy to identify an interesting section and then read in greater depth. At the same time, there is no discontinuity in reading at random.

Once into the book the story of the Finnish water industry unfolds as it has evolved from ad hoc efforts of individuals and communities during the 19th century. The story chronicles the evolution of what might be called the "modern" period of the Finnish water industry. The book is by no means a litany of dry facts, but rather a comprehensive weaving of Finland's socio-economic development with the parallel development of its water and sanitation services. The early "pre-modern" period from about the 1850's to perhaps 1880 is described in terms of the status that probably prevailed since the Middle Ages. The transition took place from the latter part of the 19th century as the industrial revolution began to influence Finnish life. The Helsinki water works developed, for example, from about 1876, based upon visits of Finnish engineers to Sweden, Denmark, and Germany, which provided the models. Because Finland did not gain her independence until 1917, the foreign influence was quite strong.

The book includes descriptions of early technologies, the development of administration and legislation, especially in water pollution control, financing and administration of utilities, education and research, consulting contractors, suppliers, etc. In short the development of Finnish water institutions is summarized so that one can glean an understanding of how the industry works and its vitality.

This book will be of interest to any person in the industry who has some inkling of curiosity as to how we got to where we are today. In describing the development of the Finnish water industry, we see that while it has its own characteristics, it is not dissimilar from the water industry in many other countries, including the United States. At the same time, while we may have some understanding of our respective countries, how other countries have evolved is another question.

As a final note, this book may start to fill a void in communication as to how the water industries in various countries have arrived at their present status. The book will help to fill that void in Finland. Perhaps it can be the start of an international dialog to understand our common threads of development as well as some of the differences between the water industries in our respective countries.

Dr. Katko spent a portion of the summer here in Fort Collins in 1997 and added the final touches to the English version of the book, after just having completed the Finnish version. For the English version of the book, Dr. Katko received the 1998 Abel Wolman Award of the American Public Works Association. After completing the book on Finnish water history, he joined Petri Juuti in completing another book, the history of the Tampere (Finland) water works. He has published other articles on history, e.g., the use of wooden pipes in Finland.

Tapio S. Katko is a senior research officer at the Institute of Water and Environmental Engineering, Tampere University of Technology, Tampere, Finland (e-mail: katko@cc.tut.fi). In developing the book, Dr. Katko had the support of several industry organizations in Finland and the advice of a supervisory board. This book is an English version of the original in Finnish (416 pages); the latter was published in 1996.

Reviewed by David W. Hendricks
Department of Civil Engineering
Colorado State University, Fort Collins

Available from:
Finnish Water and Waste Water Works Association
Ratavartijankatu 2A
FIN-00520 Helsinki, Finland
Fax 358 9 1484750, e-mail: vvy@vvy.fi
Price: 150 FIM plus mailing charges.
As of this writing on 03/25/00, the exchange rate was 6.186 Finnish marks per dollar, i.e., 150 FIM ˜ $24.25 US.
Mailing charges: 70 FIM ($11.32) to Europe and 130 FIM (21.00) to USA and the rest of world.

Book Reviews by P. Aarne Vesilind

Environmental Transport Processes, Bruce E. Logan, John Wiley & Sons, New York, 1999

In 1884, an author with the improbable name of A. Square published a book entitled *Flatland: A Romance of Many Dimensions*. A. Square was actually Edwin A. Abbott, a well-respected scientist, and his book, originally intended for children, was embraced by people of all ages. It became a bestseller, taking its place along *Gulliver's Travels* and *Alice in Wonderland* as children's books with adult messages.

Abbot asks his readers to imagine the Flatlanders who live in a world with only two dimensions. They are simply unable to conceive of the possibility of a third dimension. One of the characters eventually escapes Flatland and discovers that indeed the third dimension exists. When he returns to Flatland he is labeled a crazy heretic because everyone *knows* that only two dimensions are possible.

In our own three-dimensional world we are unable to conceive the possibility of a fourth dimension. Abbott's point was that if the Flatlanders could not believe that there is no third dimension, how sure are we that there is no fourth dimension? I thought of this story when I was looking through Bruce Logan's excellent book on transport processes and stumbled on a discussion of tensors. Tensors, as you recall, ask you to believe that there are more than three dimensions. I could never swallow that. Intellectually, I understand that if there can be two-dimensional matrices and three-dimensional matrices, there should be no reason to not also have four-dimensional matrices, but my gut tells me this simply can't be so. I did the homework in Schlicting's classic *Boundary Layer Theory*, but I did not believe any of it.

Logan's book may not be a new *Flatland*, but it is one of the best books I have seen in a long time, perhaps being in direct lineage with Gene Rich's classics, *Unit Operations* and *Unit Processes*. The book is well organized and beautifully presented. It is clearly for the graduate student or upper undergraduate who has had a strong first course in environmental engineering. Much of it has a tone of chemical engineering, and I am sure undergraduate chemical engineers will find themselves comfortable taking this course as well. Their problem would be with their lack of understanding of the *reasons* why we do all these things, a background learned in the environmental engineering class.

The book begins with an introduction on equilibrium calculations, credited to a classic chemical engineering text. These introductory chapters are followed by diffusive transport; a discussion of the constitutive transport equation; concentration profiles and chemical fluxes; mass transport coefficients; chemical transport in shear reactors; suspended unattached and aggregated microorganisms; biofilms; dispersion; rivers, lakes, and oceans; chemical transport in porous media; particles and fractals; coagulation in natural and engineered systems; and particle transport in porous media. This book has a wealth of material in it, and I hesitate to think of using it for a single course. It is by far the best treatment of what many of us old fuds have called *unit operations*, and have been teaching out of old notes and course packs. Here is your opportunity to update that old course. Buy this book. It is a gem. Even if you don't believe in tensors. (Incidentally, even if you don't want to buy Logan's book, buy a copy of *Flatland*. The book is available from several publishers, most notably Dover Press. Princeton Press sells it also but at 10 times the Dover price.)

Bruce Logan is the Kappe Professor or Environmental Engineering at Penn State University.

Environmental Technology Handbook, James G. Speight and Sunggyu Lee, Taylor & Francis, New York, 2000

There are many ways to be deceitful. One can out-and-out lie, or withhold critical information. Or one can paint a misleading word picture, such as an airline advertisement for Seattle showing a picture of Mt. Rainier. Yes, occasionally the mountain is visible from Seattle, but those are rare days indeed. Another kind of deceit is to use words incorrectly so that their meaning is changed. One recent example has been the demise of the word *outrage*. Today everyone seems to be outraged about everything and the true meaning of the word, an "act of wanton violence; any gross violation of law or decency" (American College Dictionary, Random House) is lost. We now commonly read of people being outraged by the mildest affront. This wonderful, strong, and useful word has been destroyed by incorrect usage.

The same is true with the word *handbook*. The traditional definition of a handbook is a book "serving for guidance in an occupation" (ibid.). There have been some truly helpful handbooks, including in Seeley, Perry, Taggart, Urquhart, and others. My favorite is *Engineering Handbook* by Hudson, now long out of print. I found this gem in a flea market 40 years ago, and it was old even then. This book has by far the most complete set of conversion factors I have ever seen. Wanna convert fathoms per fortnight to meters per second? It's in Hudson.

This is why the title of the Speight and Lee book, *Environmental Technology Handbook*, is such an affront to me. It is not a handbook, boys and girls. What it is, is a short discussion of the basics of environmental engineering that would have little value as "guidance to an occupation." The chapters resemble other basic texts in environmental engineering and include history, definition, and terminology; resources and resource utilization; land (eco)systems; water (eco)systems; the atmosphere; chemical waste; chemical water management and biodegradation of waste; physical and thermal methods of waste management; waste recycling and disposal; source and effects of gaseous emissions; control of gaseous emissions; and environmental regulations. All this is covered in 330 pages.

Actually, I don't know if the authors of this book are Speight and Lee, or Lee and Speight. The cover has it one way and the title page another. The embarrassments of not being able to proof the prefatory pages before the book goes to press!

The book is intended to be a textbook and has homework problems, but the problems are of the "look-it-up-and-copy" kind. For example, three problems in the first chapter are:

32. Define ecological cycles.
33. Define oxygen cycles.
34. Define water cycles.

And some of the problems are downright funny. For example:

31. There are millions of chemicals that are toxic to humans, if taken internally. Why are these chemicals still being used for various end uses?

How would you answer that? If I had a question like that for a homework assignment, I would look for another course to take.

James G. Speight is the CEO of Western Research Institute. Sunggyu Lee is professor of chemical engineering at the University of Missouri-Columbia.

Canadian Professional Engineering Practice and Ethics, Gordon C. Andrews and John D. Kemper, Saunders College Canada, a division of Holt, Reinhart, and Winston of Canada, Toronto, 1996

We professors are fond of referring to the *teachable moment* or that instant when the student is ready to absorb some kernel of knowledge. Unhappily, such teachable moments do not come all that often, but the occasional ones provide a feeling of satisfaction comparable to a perfect chip shot to the green.

Often such teachable moments do not come in the classroom but during incidental contact with students. In one case, I was speaking to a particularly obnoxious undergraduate in my office concerning a minor ethical violation. He decided to challenge me and asked with a smirk, "Why *shouldn't* I cheat?"

I recognized the teachable moment but was not fully prepared to answer him. His is a difficult question. What I should have said is that there are really two questions: "Why should cheating not be condoned?" and "Why should I not cheat?" The first one is easy to answer. You only need to consider a university where cheating is uncontrolled. Would you even want to attend such a place? And what would a degree from such a university be worth?

But the second question has no knockdown arguments in response to the challenge. My smart-alecky student could have made a strong case for cheating. If grades are so important then all he is doing is increasing his grade point average. He would still learn as much as he would without cheating, but he gets higher grades. So why should he not cheat as long as he doesn't get caught? This is a competitive world and he is only doing what is best for him personally. And finally he could have fired his best shot: "Besides, the professors make it so easy to cheat. They don't seem to care if we do."

That would have really hurt because I would have known that he was right. Many professors make no attempt to remove the temptation to cheat in their courses and in essence invite unethical behavior on the part of their students. I would like to introduce a new word into the English language — *pedagogenic* (adj.) teacher induced unethical behavior, such as "pedagogenic cheating." Similar to "iatrogenic" as in doctor caused diseases. Instances where pedagogenic cheating is expected are when 1) engineering professors assign homework problems and tell the students not to work together, 2) history professors assign papers with open topics, or 3) professors give true/false tests in a crowded classroom. Students are generally ethical in their behavior, but they are not moral heroes, and we should not expect them to be.

During a student's few years with us, we expect to help them become more ethically astute about their personal and professional life. We should make acting ethically as natural as using correct grammar. But when we unwittingly present temptations for them to be unethical, then we are letting them down. We let them down because for the rest of their professional lives, ethics is going to play a big role in their success or failure as engineers.

If you want to help your students become ethically astute, you may want to get this book. Published in Canada, this is one of the best professional ethics books I have read. The focus is Canadian, but there is plenty of material that applies to both sides of the border. The chapters in this book include introduction to the engineering profession; regulation of the engineering profession (quite Canado-centric); engineering employment;

engineers in management; engineers in private practice; principles of engineering ethics; ethical problems of engineers in industry; ethical problems of engineers in management; ethical problems of engineers in private practice; the engineer's duty to society and the environment; product safety; disciplinary powers and procedures (again mostly Canadian); maintaining engineering competence; engineering societies (both in Canada and the United States); writing the professional practice examination; and excerpts from the provincial and territorial engineering acts and regulations. The appendix includes addresses of professional organizations, the professional engineering admission requirements in the United States, the National Society of Professional Engineers (NSPE) guidelines for professional employment for engineers and scientists, and (most interestingly) the codes of ethics for some engineering societies, which includes the engineering societies of the Canadian provinces, all of which seem to have a separate code of ethics. Just reading these to see how engineers resolve the question of writing codes of ethics is worth the price of the book. The best part of the book, however, are the sample questions from previous professional engineering examinations. Most provinces test not the technical skill of the applicant, but rather the ability to reason through ethical problems. Professors who include ethics in their engineering courses will find these case studies (and the authors' suggested solutions) of great help.

The authors of this book recognize that engineers do not always work in private practice (a blind spot that ASCE and NSPE often demonstrate) but that most engineers are in industry and eventually evolve into management. The ethical issues can be just as complex and just as difficult as those for engineers in private practice.

All in all, this is a really neat book. I am glad I stumbled on to it (on e-bay, believe it or not). The authors should be encouraged to publish an edition with more United States content as a companion volume. Maybe if I had had such a book when my snide undergraduate friend challenged me, I could have made that teachable moment count.

Gordon Andrews is a professor of mechanical engineering at the University of Waterloo in Ontario, and John Kemper is the former dean of engineering at the University of California, Davis.

Air Pollution Control: A Design Approach, C. David Cooper and F.C. Alley, Waveland Press, Prospect Heights, IL, 1994

Sources and Control of Air Pollution, Robert Jennings Heinsohn and Robert Lynn Kabel, Prentice Hall, Upper Saddle River, NJ, 1999

Air Pollution: Its Origin and Control, Kenneth Wark, Cecil F. Warner, and Wayne T. Davis, Addison Wesley, Reading, MA, 1998

Fundamentals of Air Pollution, Richard W. Boubel, Donald L. Fox, D. Bruce Turner, and Arthur C. Stern, Academic Press, San Diego, CA, 1994

Some years ago a Princeton musicologist published an influential paper, the title of which was something like "It does not matter if nobody listens." His point was that music, at least academic music, was concerned not with writing music people can enjoy, but rather with developing new musical ideas. In his opinion it did not matter if the musical composition was pleasing to anyone. What mattered was that it was new and unique.

In contrast to the musicologist, Duke Ellington believed that as far as music was concerned, "If it sounds good, it is good." He judged the value of music not by its originality or its complexity, but by how much it was appreciated by the public. He also meant, of course, that many different kinds of music would "sound good," as long as it was appreciated by the public. (I don't know what he would say about rap, though).

Obviously many kinds of music can sound good. For example, I still hold (and you can write this down and call me in 100 years) that one of the greatest 20th century American composers was Leroy Anderson. His Bugler's Holiday, Sleigh Ride, Trumpeter's Lullaby, The Waltzing Cat, The Typewriter, Blue Tango, Serenata, and so many others will live well through the next century. It is good because it sounds good.

Books, like music, are highly varied in style and take different approaches to the same topic. And in the case of textbooks, it *does* matter if nobody listens. Textbooks have to "sound good."

The four air pollution books listed above can all be used for a course entitled "Air Pollution" and they all are good books; yet they have significant and important differences.

The Cooper and Alley book is, as the title implies, a very practical engineering text. It is designed for upper level undergraduates or graduate students who have had fluid mechanics and thermodynamics. But the approach is not heavily calculus based. Most topics are presented from the perspective of how

things can be designed, not how things work. There is very little on effects of air pollutants on health and only a cursory nod at global problems like the ozone layer. The chapter topics begin with an overview chapter, leading to a very useful discussion of process design. The rest of the book chapters are particulate matter; cyclones; electrostatic precipitators; fabric filters; particulate scrubbers; auxiliary equipment (hoods, ducts, fans and coolers); a discussion of a real-world particulate control problem; properties of gases and vapors; VOC incinerators; gas adsorption; gas absorption; control of sulfur oxides; control of nitrogen oxides; a discussion of a vapor control problem; mobile sources; air pollution meteorology; and atmospheric dispersion modeling.

David Cooper is at the University of Central Florida, and F. C. Alley is an emeritus professor at Clemson University.

The Heinsohn and Kabel book is a wonderfully written book that is the most student-friendly of the four. The authors' writing style is *to the student* and not the disinterested, impersonal, and passive tone often found in other textbooks. The problems are truly excellent, forcing the student to think far beyond the text material. The level of the book is high. It expects much from the students, and gives a lot in return. Material in the book is developed with mathematical rigor and any student who uses this book will have not only an appreciation of air pollution problems, but also a strong engineering background to do something about it. The chapter headings include an introductory section that covers ecology and exponential growth, followed by air pollution legislation; effect of pollutants on the respiratory system; aesthetics; atmospheric chemicals (sources, reactions, transport, and sinks); formation and control of pollutants in combustion systems; uncontrolled pollutant emission rates; atmospheric dispersion; capturing gases and vapors; motion of particles; capturing particles; and cost of air pollution control systems.

Robert Heinsohn is emeritus professor of mechanical engineering, and Robert Kabel is emeritus professor of chemical engineering, both at Penn State University.

The book by Wark, Warner and Davis is the third edition of the highly successful Wark and Warner book first published in the early 1970s. This book has a lot of appeal because it finds a comfortable niche between the science of air pollution and the engineering of air pollution control. The subject matter is rigorous, but most of the topics are not derived from first principles. Practicality and usefulness are important throughout. The book has a plethora of good problems for homework and classroom discussion, but these are generally not very imaginative. Too many of them start out with "Estimate the...." and involve plugging and chugging. Calculus is used throughout, but it is not oppressive or necessary for the understanding of the material. The chapter topics include effects and sources of air pollutants; federal legislation and regulatory trends; meteorology; dispersion of pollutants; particulate control; control of gases and vapors; control of sulfur oxides; control of oxides of nitrogen; atmospheric photochemical reactions; and mobile sources. The appendix contains an excellent discussion of instrumentation.

Kenneth Wark and Cecil Warner are both emeritus professors of mechanical engineering at Purdue, and Wayne Davis is professor of environmental engineering at the University of Tennessee.

Boubel, Fox, Turner and Stern try to achieve a middle ground between air pollution science, management, and engineering. In a way this book is an outgrowth of the classic three-volume air pollution book by the late Arthur Stern, because all three of the other authors are his former students. This book has a wonderful section on air pollution history and the development of the field, and the best discussion of health effects of any of the four books. Topics covered in this book missing in the others include monitoring, surveillance, and organization of air pollution control programs. The book has little engineering rigor, but is rich in air pollution control philosophy and management. It would be an excellent text for a course that welcomes non-engineering students. The chapter headings include history of air pollution; natural versus polluted atmospheres; scales of air pollution problems; air quality; the philosophy of air pollution control; sources of air pollution; effects on human health and welfare; effects on vegetation and animals; effects on materials and structures; effects on the atmosphere, soil and water bodies; long term effects on the planet; atmospheric chemistry; ambient air sampling; ambient air pollutants (analysis and measurement); air pollution monitoring and surveillance; air pathways from hazardous waste sites; the physics of the atmosphere; the meteorological bases of atmospheric pollution; transport and dispersion; modeling and prediction; climatology; air quality criteria and standards; indoor air quality; the U.S. Clean Air Act; emission standards; regulatory control; engineering control concepts; control devices and systems; control of stationary sources; control of mobile sources; and source sampling and monitoring.

Richard Boubel is at Oregon State University, Don Fox is at the University of North Carolina, and Bruce Turner is with Trinity Consultants in Chapel Hill, NC.

Four books on the same topic, and they all "sound good" in their own way.

Publications

Environmental Engineering and Policy

International Journal of Environmental Engineers, Scientists and Policy Makers

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Conferences/Call for Papers

Molecular Biology Tools in Environmental Engineering Microbiology

Division of Environmental Chemistry/221st American Chemical Society National Meeting
San Deigo, CA
April 1-6, 2001

Techniques and tools from the rapidly expanding field of molecular biology are becoming increasingly valuable in environmental engineering and environmental biotechnology research. Indeed, their application to these fields represents a promising and exciting research frontier. They are being used in diverse research applications, making possible the understanding of complex biological systems and processes, both in natural and in engineered systems, in much greater detail than previously has been feasible. This symposium will focus on current uses of molecular biology methods in environmental engineering microbiology. These uses include general topics such as assessment and indication of environmental quality, potential for and effectiveness of environmental bioremediation, and evaluation of engineered treatment systems. More specifically, the symposium will address environmental engineering applications of methods for obtaining DNA, RNA, and protein samples from environmental matrices; techniques for acquiring information about microbial community composition; and techniques for acquiring information about microbial metabolic activities.

Relevant topics for this symposium include environmental engineering research applications of techniques such as amplification of DNA by PCR, RT-PCR, RAPD, or cloning; probing of genetic materials by, for example, FISH assays; separations of DNA and RNA materials by techniques such as gel electrophoresis, DGGE, and other methods; identification of organisms by their DNA or rRNA sequences; evaluation of gene expression by examining mRNA or protein synthesis; methods involving biosensors, bioreporters, and fluorescent activity indicators; and emerging techniques, for example, DNA arrays and TRFLP.

Short abstracts (required by ACS) and extended abstracts no longer than four pages (required by the Division of Environmental Chemistry) must be submitted electronically by October 15, 2000 to one of the organizers listed below:

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