

## Letter from the President

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### EnvE listed in Yahoo's Top Jobs for 2005

Relying heavily on data from the Bureau of Labor Statistics and Salary.com, Yahoo Fast Company has assembled a list of the 25 Top Jobs for 2005 at <http://biz.yahoo.com/special/bestjobs05.html>. Environmental Engineering was listed as one of the Top 5 Jobs for 2005. The list was based on four criteria:

- job growth
- salary potential
- education level
- room for innovation



Pedro Alvarez

Dear AEESP Members, Since its beginning in 1963, our organization (originally called the American Association of Professors in Sanitary Engineering) has promoted excellence in environmental engineering education and research. Our founders, past board members and many other volunteers have

consistently contributed to educational processes that teach how to learn, to enhance our versatility and preclude technological obsolescence. AEESP has also served our profession by providing leadership in setting environmental policies and research priorities that are timely and important to society, and has facilitated networking opportunities with other professional associations, government agencies, industry, and nonprofit organizations. Therefore, I am proud to be a member of AEESP and to have the opportunity to serve you in this tradition as AEESP's 38th president.

Regarding my tenure, I have had excellent examples from my mentors and past AEESP presidents about how to serve by seeking consensus from our constituency, and recognize that successful leadership must be based on a shared vision, transparency, and effective communication with all stake holders. Thus, your suggestions will always be welcome. My style as AEESP president will be to stay out of the way of efforts that are going well, help remove impediments that may arise, try to find resources to overcome limitations and help continuity, and protect our membership from bureaucratic burden, including "spam." One of our most important unstated missions is to build and sustain a sense of community. This is accomplished in part by our conferences, Web site, lecture series, and newsletter. Thus, our board

and committee members will continue to support these efforts and ensure that they continue to have an increasingly positive impact. We also hope to start some new traditions, such as regular mentorship workshops for our junior members, distinguished lecture series for practitioners to promote interactions with consultants, government agencies and industry, and help our colleagues abroad to create sister associations (beginning with India, Colombia and possibly South Korea) to enhance international interactions and contribute to global sustainability.

*"One of our most important unstated missions is to build and sustain a sense of community."*

The environmental engineering discipline has changed considerably since the early days of AEESP. We have diversified the scope and broadened the range of scales of our professional interests – from nanotechnology to global change. The problems that we address are becoming increasingly complex and multi-media. Many of our problem-driven efforts are no longer motivated by anthropocentric interests alone, and the increasing momentum of ecocentric ethics has stimulated efforts to protect not only public but also environmental health. AEESP has responded to such changes in societal values in an evolutionary rather than revolutionary way, recognizing the Darwinian wisdom that the lack of change (or changing too fast) can bring about extinction. In the words of Caroline Schoeder, "Some people change when they see the light, others when they feel the heat."

We are fortunate that our leadership and constituency have been generally proactive and belong in the first group. Thus, AEESP is likely to continue to broaden its constituency and influence, and become more international given the increasingly global nature of both environmental problems and

## Newsletter submissions

### Submissions may be sent electronically to:

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## AEESP Newsletter online

<http://www.aeesp.org/pubs/NewsArch.html>

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the workplace. However, diversifying and expanding will bring the challenges of balancing breadth with depth, reductionism with holism, and versatility with identity.

AEESP will continue to push the boundaries and be proactive, but it is difficult to anticipate what we will need to react to. Thus, I would like to conclude by paraphrasing the Serenity Prayer – I will pray for courage to change the things that should be changed, patience to accept those that cannot be changed, and wisdom to know the difference.

Thank you for your continued support of AEESP.

Pedro J. Alvarez, Ph.D., P.E.,  
DEE, F.ASCE

George R. Brown Professor of  
Civil and Environmental Engineering,  
Rice University  
President, AEESP

## Letter to the Editor

RE: Fates of Ph.D.s in Environmental Engineering

As university professors, we all aspire to advise graduate students leading to Ph.D. degrees. Upon graduation, a tiny fraction of the doctorates find jobs in the academia. The fates of the others remain uncertain. In this regard, the doctorates in environmental engineering are treated quite differently by the industries at large than the doctorates in other technical fields. Engineering consulting firms are the biggest employers of environmental engineers but are often reluctant to hire doctorates. These firms feel uncomfortable or somewhat embarrassed in sending Ph.D.s to collect field samples or to undergo OSHA training but claim that the environmental field needs engineers with appropriate training for continued innovation. Understandably, this problem is more pronounced with international Ph.D. graduates. In comparison, doctorates in chemical engineering or mechanical engineering find employment with competitive salary in all kinds of companies because those employers value the

training leading to doctoral degrees.

We continue to lobby for increased research funding from government agencies. In parallel, AEESP should do the same with potential employers for increased hiring of environmental engineering doctorates. Such a move and its realization would lead to infusion of new ideas and innovation in environmental engineering practice and will thus enhance the visibility of the field.

Sincerely,  
Arup K. SenGupta, Professor  
Lehigh University

## AEESP Board highlights

The membership approved the change in the mission statement, with 210 voting in favor of the change, 12 voting against it, and 10 abstentions.

The Board approved a plan to pair each new member with a Board member for the purpose of making new members feel at home in the organization.

Peter Vikesland provided a draft of an electronic program registry using Survey Monkey for Board comment. The name of this committee will be the Environmental Program Registry Committee (EPRC). The Board approved \$200 for professional subscription services to Survey Monkey for use by the EPRC.

John Crittenden was nominated for the NSF Advisory Committee for Environmental Research and Education to replace Bruce Logan whose term expired.

The audit committee report was received, and its comments were favorable.

In follow-up to the very successful Clarkson Conference, the Conference Planning Committee for the next Biennial AEESP conference in 2007 was asked to send out RFPs as soon as possible. The timing of the conference may be extended from summer 2007 through spring 2008 to accommodate a wider geographical region with different climactic conditions.

Elections for new Board officers were held. Jim Mihelcic will be the new vice president, Bill Ball will be the new treasurer, and Meny Elimelech will be the new

chief information officer for 2006-2007, after Paige Novak vacates this position next year.

A decision was made to hire a professional to restructure the AEESP Web site. We will wait for 6 months to formulate ideas for the new Web site, then transition to a professional Web site designer.

The price for faculty ads was raised to \$200.

A new design for the Sustaining Member page on our Web site was presented and approved.

An ad hoc committee was selected to solicit and review applications for a new Newsletter editor, with a deadline for submittal of September 1, 2005.

Recommendations from the sustainability workshop were presented and discussed. AEESP should take a leadership role in developing sustainability issues, develop educational resources, become a clearinghouse for educational and laboratory issues, create Web pages, provide workshops, establish awards/recognition, conduct surveys, and participate in seminars.

Approval was given to forming an ad-hoc committee comprised of faculty of undergraduate institutions to determine their needs; Jim Mihelcic will lead this effort.

## **New changes at AEESP Web site**

The AEESP Board of Directors would like to bring to your attention some exciting new changes on the AEESP Web site. Thanks to our Web site committee and our student services committee, we now have online renewals available (using Verisign for credit card payment) and a new student services Web page listing conferences, scholarship opportunities, and more (<http://www.aeesp.org/eesf/index.php>). Our Web site has also recently been updated to be easier to navigate and allow for member-uploaded news and job advertisements. Over the upcoming year, we plan to add versatility and utility to our Web site and encourage you to visit it.

## **New Board members**

We are pleased to announce the results of the election of three new members of the AEESP Board of Directors. Serving three-year terms, beginning October 2005, are: Amy Childress, University of Nevada, Reno; David Freedman, Clemson University; Charles Werth, University of Illinois, Urbana-Champaign. Our extended congratulations to all of them! We also extend our appreciation to all of the candidates for their willingness to serve our association. The election was remarkably close this year.

## **AAEE changes board certification & membership requirements**

At the April 2005 meeting, the American Academy of Environmental Engineers (AAEE) Board of Trustees enacted several major changes affecting the make-up and future of the Academy. The changes include expansion of the membership categories of AAEE, addition of a second specialty certification program (Board Certified Member), and addition of Student Members. The Board believes the changes enacted at the April meeting will better serve the environmental engineering community. Listed below are descriptions of the changes that were enacted at the Trustees meeting, along with the reasons that the Board believed they were necessary.

**Addition of Student Member Category:** AAEE will begin recruiting individual student members from those who are enrolled in Environmental (or similar) Engineering programs. The Board feels it is very important to encourage professionalism in the upcoming generations of environmental engineers. As student membership grows, it is hoped that more schools will form Environmental Engineering Student Societies and chapters of Tau Chi Alpha, the Environmental Engineering Honorary Society.

**Changes in current classifications of membership:** The Bylaws provisions

## **Newsletter policies**

AEESP welcomes AEESP members to submit items such as letters to the editor, letters to the president, news, ads, and announcements to the Newsletter. The decision to publish is subject to the discretion of the Editor and the AEESP Board of Directors.

All submissions for the AEESP Newsletter should be sent electronically as an attached file to the Newsletter editor, Prof. Amy Childress.

### **Submissions deadline**

The AEESP Newsletter is published three times a year in January, April, and September. The deadline for newsletter submissions is one month prior to the publication date (e.g., the deadline for the January Newsletter is December 1). Please keep in mind when submitting items with deadline dates that members receive issues four to six weeks after the submissions deadline.

### **Advertising policy**

Any advertisement, including faculty, post-doc, or student ads, or other types of announcements submitted by an AEESP member, will be free for the first 250 words (approximately 1/4 page) and then charged at \$1 per word for additional content, if formatted to fit in a column. Non-members will be charged at the per word rate for any size column-formatted ad. Full page formatted advertisements will be charged at \$500 for members and \$1,000 for non-members. All formatted full page ads will be accompanied by a free Web ad.

### **Photo submissions**

Photo submissions to the AEESP Newsletter are encouraged. Please submit your photos electronically in jpeg format at the highest dimension for downsizing to print resolution (preferably less than 750 KB). Also, please include captions with names, locations, and dates.

for the Affiliate classes of Intern Environmental Engineer, Associate Environmental Engineer and Professor have been repealed. Instead, the people listed in those old categories will be designated in the new Member category. Members will have full voting rights in AAEE, can serve on committees and also serve as Trustees and Officers. AAEE will be a home for all environmental engineers, nurturing them through their career path from college, through Specialty Certification and their advanced careers, and into retirement where they can mentor the next generation.

**Board Certified Environmental Engineer:** Beginning immediately, all Diplomates (DEEs) will have the option of using "Board Certified Environmental Engineer" or "BCEE" as part of their credential, or in place of the DEE designation. Many Diplomates feel that the public better understands this title than the DEE designation.

**Addition of a Second Specialty Certification Program (Board Certified Member):** Beginning in 2006, the Academy will offer a second Specialty Certification Program for environmental engineers who do not have a P.E. License. Those achieving this certification will be referred to as a "Board Certified Member" or "BCM, AAEE". The requirements for applying for and testing to attain this certification will be exactly the same as the requirements for the Diplomate, or BCEE, exam and certification. For many professionals with environmental engineering degrees, state licensure has not been a priority or necessity, however many of them are highly qualified and have made significant contributions to the environmental engineering profession and are, therefore, deserving of earning a Specialty Certification from the AAEE and should not be denied that opportunity.

For more information regarding AAEE and membership requirements, visit the AAEE Web site at [www.aee.net](http://www.aee.net).

## 2006 Federal NSF & EPA R&D Budgets

by Allen P. Davis, AEESP Government Affairs Committee

As of the end of July, both the House and Senate appropriation committees have formalized FY06 budgets for the National Science Foundation. The budget for the Environmental Protection Agency has passed both houses of Congress and awaits only the President's signature.

The current Senate appropriations bill would give NSF a total budget of \$5.5 billion in FY 2006, an increase of \$58 million (1.1%) above this year. The NSF fares slightly better in the House bill, with an increase of 3.1 percent to \$5.6 billion. Both 2006 appropriations would fall approximately \$3 billion short of the \$8.5 billion authorized by the December 2002 NSF bill that called for a doubling of the NSF budget between FY 2002 and FY 2007.

In the Research and Related Activities (R&RA) category, which funds most of NSF's R&D, the Senate bill provides for a funding increase of \$125 million (3.0%) over this year to \$4.3 billion, while the House version increases R&RA to \$4.4 billion. These funding levels should allow for increases between 1 and 3 percent for most of NSF's research directorates. ENG expects to fund only 18 percent of its research grant applications, a success rate that would be up from just 15 percent last year and this year.

The EPA's R&D budget increases slightly by \$7 million (1.2%) to \$579 million in FY 2006. Clean air research (global change, particulate matter, tropospheric ozone) gains \$4 million to reach \$106 million. Clean water research increases to \$97 million, up \$3 million. Human health and ecosystems research (computational toxicology, endocrine disruptors, risk assessment related to human health) gains \$9 million to reach \$244 million. Sustainability research is reduced to \$29 million from \$40 million. Homeland security-related research nearly doubles, from \$33 million in FY 2005 to \$51 million next year. Two areas

are emphasized, drinking water security research and decontamination research. Nearly a third of EPA's R&D is performed by colleges and universities, with the rest performed by industrial firms, nonprofit institutions, state and local governments, and in the agency's own laboratories.

The congressional appropriations committee structure has been reorganized this year, giving different members of Congress jurisdiction over R&D budgets. NSF moved from the eliminated VA-HUD bill to a Commerce, Justice, and Science bill in the Senate (Science, Commerce, and Justice in the House). EPA moved from VA-HUD to the Interior bill.

[Summarized from information provided by the AAAS. Details can be found at the AAAS Science and Policy Web ([www.aaas.org/spp/rd/](http://www.aaas.org/spp/rd/))].

## News from NSF's Environmental Engineering Program (where all funded proposals are above average)

by Patrick L. Brezonik, Program Director

By the time you get this issue, I will have been at NSF for a year, and so this seems like a good time to take stock of what we have been doing and let you know what's in store for the coming year. First, I want to acknowledge my fellow program director for the past year, Tom Waite, who left NSF in early August to accept a position as Dean of Engineering at Florida Institute of Technology in Melbourne. I'm sure the community joins me in wishing Tom much success in his new responsibilities and thanks for three years of productive service to the environmental engineering community. A search for a replacement is underway, and I hope we will be able to announce a successor in the next issue of the Newsletter.

Second, I want to mention some important dates for FY 2006 funding opportunities. We now have a one-month window for submission of unsolicited proposals to EET. For FY 2006, the window is October 14-November 14, 2005,

and this is the only period during which unsolicited proposals will be accepted in FY 2006. Most NSF programs have moved to this approach rather than using target dates. We think it will facilitate a timelier processing of proposals and fairer access to funding for everyone. The past practice provided a target date but allowed proposals to be submitted at any time. In reality, funding prospects were exceedingly low for proposals received after the target date because nearly all our funds were allocated based on panel reviews of proposals submitted by the target date. In future years, we hope to return to semi-annual panels and have semi-annual windows for submissions. The deadline for submission of CAREER proposals to the EET Program for FY 2006 was July 22. We received 49 proposals by the deadline, and they will be reviewed by a panel in November, with successful proposers likely to be notified in late December. We do not know yet what NSF's (or EET's) FY 2006 budget will be, but based on current projections, we hope that the success rate for CAREER proposals will be in the range of 15-20% (in contrast to the disappointing rate of < 10% in 2005).

The last comment leads to a review of what we were able to accomplish in terms of new awards in EET during the past year. This turns out to be more difficult to determine than one might think because we co-funded some projects submitted to (and reviewed by) other programs and because some proposals reviewed by EET panels wound up being funded by other programs. The latter situation is common for special solicitations, such as those in nanoscience, but less so for unsolicited proposals. When NSF's FY 2005 budget was unveiled last October, most program directors understandably were depressed. This has been a very tight year for funding across the Foundation, and EET was no exception. For a while I thought my main task for the year was to be the bearer of bad news, but that turned out not to be the case. I am pleased to report that for the programs in which EET participates we made almost \$6.6 million in new awards in FY 2005. For unsolicited and CAREER

awards, which are awarded as continuing grants, this does not include substantial out-year commitments. Table 1 summarizes the number of new awards made in various categories in FY 2005, along with the total active awards in each category, and Table 2 summarizes the FY 2005 dollar value of the new awards. A more complete analysis for FY2005, including topics of the new awards, can be found on the EET page of NSF's Web site.

Finally, some congratulations. First, to Susan Powers and Amy Zander (Clarkson University) and Andria Costello (Syracuse University) for organizing a very successful and interesting AEESP biennial conference, July 24-26. They leave a tough act for the next set of organizers! We were pleased to be able to provide some financial support from NSF for the conference, as well as for the workshop on mentoring your faculty members held in conjunction with the conference. Second, to Barbara Minsker (UIUC), Chuck Haas (Drexel), and Jerry Schnoor (Iowa) as co-PIs of the newly awarded CLEANER Project Office. I also want to encourage AEESP members to find out more about this program by visiting the Web sites: <http://cleaner.ncsa.uiuc.edu> and <http://cleaner.nasce.org>.

## Fortune lists EnvE as one of fastest growing jobs

Fortune Magazine (Fortune, March 21, 2005) lists one of the fastest growing jobs in the next 10 years to be environmental engineering. The number of jobs is expected to grow by 54.3% during that time period.

**Table 1.** Number of projects awarded in FY 2005 and total active projects of various types in EET.

Activity*	FY 2005	Total Active
Unsolicited	14 (3)**	87 (9)**
CAREER	4	43
SGER	3	10
Nano-science		
NER	6 (3)***	8
NIRT	1	4
S&SN	6	8
CLEANER	2	14
Workshops	5	8
MRI	1	3

\*SGER = small grants for exploratory research; NER = nano exploratory research; NIRT = nano interdisciplinary Research teams; S&SN = sensor and sensor networks special solicitation; CLEANER = collaborative, large-scale engineering analysis network for environmental research; MRI = major research instrumentation.

\*\*Collaborative projects funded to other universities in association with a lead proposal counted in column to the left.

\*\*\*Reviewed by an EET panel but taken by other programs for funding.

**Table 2.** Approximate dollar value of EET FY 2005 awards by major type.

Activity Area	Total Dollars*
Unsolicited	1250
CAREER	320
SGERs	310
NER	690
NIRT	700
Sensors	1600
CLEANER	1075†
MRI	430
Workshops & misc.	<u>220</u>
	\$6595

\*FY 2005 funds only; funds for continuing years not included.

†Almost all from ENG Directorate and not EET core funds.

## In memoriam



**Nicholas “Nick” Presecan**, senior vice president and chief engineer for Parsons Corp. passed away on July 5, 2005 after a battle with

pancreatic cancer. Nick was born in Indianapolis, IN on September 4, 1940. The family migrated to California and Nick spent his high school days exploring the wonders of Joshua Tree National Park. He graduated from Twentynine Palms High School and entered Purdue University. Nick earned a B.S. degree from Purdue University and entered the Marine Corps just after receiving his Bachelors Degree. He served in Vietnam from 1963-1966 at the rank of Captain. Upon returning to civilian life he returned to school and earned an M.S. degree in Sanitary Engineering from the University of California, Berkeley.

Nick’s professional life started at Engineering-Science Inc., which was eventually merged with the Parsons Corporation. Engineering-Science and Parsons annually award AEESP’s best doctoral thesis. Nick was the presenter in most years. Nick worked for Engineering-Science/Parsons for 37 years. As its Chief Engineer, he was licensed as a professional engineer in 34 states. Nick was involved in a number of major projects for the Corporation – many were on the cutting edge of wastewater treatment. He served as a mentor to many of the young engineers who joined the corporation. He always had a calming influence on the staff. He always had a solution for whatever problem occurred – be it a technical, client, or political is-

sue. It was always “let’s ask Nick, and see what he has to say about this.”

Nick is survived by his wife, Joan, whom he met while attending Purdue University; daughter, Julie Parker; son-in-law, Rodd Parker; grandson, Jake Parker; daughter, Mary Presecan; son-in-law, Garry Roseman; and daughter, Anne Presecan.

A memorial service was held July 9 in Claremont, CA. Contributions may be made to Claremont Community Foundation–Presecan Fund, 205 Yale Ave., Claremont, CA 91711.

## AEESP Member News

News items about AEESP members may be submitted for publication in the ‘Member News’ section by sending them to: Amy E. Childress, AEESP Newsletter Editor, amyec@unr.edu

## Conference and Legacy/ Reunion Dinner a big success

*Submitted by Amy Zander and James Mihelcic*

The first biennial AEESP Research and Education Conference took place at Clarkson University in Potsdam, NY, July 23-27, 2005. The conference brought almost 250 environmental engineering and science professors and graduate students to Clarkson University for workshops, oral and poster presentations, and networking opportunities. The conference theme, Pushing the Boundaries: Making Research and Education in Environmental Engineering and Science Count, was focused on interdisciplinary research and education activities, multimedia approaches for understanding environmental impacts and solutions, and outreach activities to increase knowledge about and reputation of environmental engineering and science.



At the AEESP Board Meeting, held in conjunction with the AEESP Conference, are (back row) Amy Childress, Joanne Fetznner, Meny Elimelech, Charlie Werth, Kim Jones, David Freedman, Lynn Katz, Bill Ball, (front row) Jim Mihelcic, Pedro Alvarez, and Phil Singer.

Several areas of interest emerged from the conference sessions. First, it was obvious that AEESP members are engaged in research and education involving sustainability. It is showing up in our courses and in our interactions on the campus and beyond. Great ideas are circulating, and AEESP can step up to the plate and facilitate information exchange. Suggestions for action in sharing sustainability information were forwarded to the AEESP Board from one of the Sunday workshops.

Another emerging theme was the involvement of AEESP members in international work in environmental engineering, moving the profession into integrated solutions for international development, involving low tech solutions for sustainable, and socially responsible, provision of water treatment, wastewater treatment and energy development. Harvey Ludwig's discussion of the role of US universities in developing countries was reiterated in several presentations and discussions throughout the conference.

Networking opportunities included the well-attended poster sessions and an afternoon of hiking, swimming, canoeing and/or sightseeing in the local area. Conference attendees managed to mix and match and make new acquaintances for discussion of the profession and their work.

The AEESP Business Meeting was well attended, loud and boisterous, thanks to support provided by HDR and the Clarkson University Center for the Environment. After the socializing had been ratcheting up for many minutes, AEESP President Pedro Alvarez quieted the crowd and provided a positive update on the state of AEESP. Then Pedro and Phil Singer presented AEESP Distinguished Service Awards to Craig Adams, Nicholas Clesceri, Allen Davis, Marc Edwards, Charles Haas, Syed Hashsham,



AEESP Legacies present at the Legacy and Reunion Dinner along with the year they received their degree. **Back row, left to right:** Timothy Shea (1968), Patrick Brezonik (1968), Charles O'Melia (1963), Robert Baillod (1968), Ray Letterman (1972), Nicholas Clesceri (1963), Ronald Neufeld (1973), Phil Byer (1975), Jerald Schnoor (1975). **Middle row, left to right:** Perry McCarty (1959), Richard Dick (1965), Jim O'Shaughnessy (1973), Michael Semmens (1973), Paul Roberts (1966), Rhodes Trussell (1972), Louis Thibodeaux (1968), Richard Luthy (1975), Aarne Vesilind (1968), Raymond Loehr (1961). **Front row, left to right:** C. Herb Ward (1960), Alan Molof (1960), Earnest Gloyna (1953), Linvil Rich (1951), George Tchobanoglous (1969), Robert Baumann (1954), Harvey Ludwig (1942), John Novak (1969), Francis DiGiano (1969), Joseph Delfino (1968), Phillip Singer (1969).

Bruce Rittmann, Aarne Vesilind, Charlie Werth, Thomas M. Young, and Amy Zander.

Immediately following the business meeting was the Legacy Reunion and Appreciation Dinner. Over 220 people attended and heard Aarne Vesilind present a wonderful view of the first 5,000 years of environmental engineering. This was followed by a moving talk and great photos by Perry McCarty that focused on the past 50 years of environmental engineering, highlighting the many scientific and engineering accomplishments our profession has made during that time period. Attendees, young and old, were on the edge of their seats throughout the night.

Later in the evening, the inaugural Fred Pohland Memorial Award was co-presented by Pedro Alvarez and Tim

Shea (AAEE President) to Rhodes Trussell and Ray Loehr for their outstanding contributions to bridging environmental engineering research, education, and practice. The night ended with Marc Edwards and Tim Shea presenting an AEESP/AAEE Founders Award to Harvey F. Ludwig. Harvey has been credited as providing the idea to create our group and was present at a Founders Meeting (in September 1963) along with Warren Kaufman, Earnest Gloyna, Gerald Rohlich, Earman Pearson, and Linvil Rich. Earnest, Linvil, and Harvey were present at the Legacy Dinner along with 30 other "Legacies," which made for quite a reunion.

## The First 5000 Years

by P. Aarne Vesilind



This is a slightly shorter version of a talk presented at the AEESP “Legacy” dinner at Clarkson University in July 2005. The charge was to cover the first 5000 years of environmental

engineering history in 15 minutes.

There is a move afoot in education circles to get teachers to focus their educational efforts toward what is called “the big idea.” Big ideas are those that are significant, enduring, and foster other ideas that then push knowledge forward. Big ideas are what we want our students to grasp at the end of our courses. It is knowledge of the big ideas that often differentiates the environmental engineer from the general public, and makes him or her valuable to society. For example, just last week the members of the homeowners association around the lake where we have a summer camp were talking about the weeds in the lake, and I tried to explain to them that weeds are a normal part of a healthy lake. But they did not want to hear this, and kept insisting that we pull the weeds out and create a lake that looks like a swimming pool. My neighbors did not grasp the big idea that a lake is a complex living organism with an intricate and dynamic ecology.

I would like to nominate some big ideas in environmental sciences and engineering, ideas that have evolved over the past 5000 years and that have endured into modern times. These are not the only, or perhaps even the best big ideas in environmental sciences and engineering, but they are a start.

### 1. Clean is healthy.

Animals seem to be quite conscious

of their own waste. Phoebes, for example, never use the same nest twice in a row and will go to great trouble to build a new nest each year. My dog had a special place in the yard where he would poop, and he never went there except to do his business. Pigs, although they love to wallow around in mud, are fastidious about their own waste.

Human animals have also disliked waste since pre-recorded times. There is, for example, evidence of latrines and sewers in the Minoan civilization on Crete dating before 1500 BC. The Egyptian pharaohs had their water clarified by draining it through sand in silver vessels. The Romans were so inundated by garbage that they invented municipal dumps. Even air quality was a concern in ancient cities. The Roman philosopher Seneca writes, “When I had left the putrid air of Rome, I immediately felt an alteration of my disposition.”

In colonial times many of the cities in the United States were beset by annual epidemics of cholera, typhoid and other infectious diseases. How did they choose to fight the epidemics? They cleaned the city of waste.

Our forbearers in the public health field in the 19th century instinctively believed that waste caused disease but they did not have the knowledge of microbiology to prove it, so they invented the concept of “miasma.” Miasma was supposed to have been emitted by waste and dirty water and to travel through the air, causing disease in others. Edwin Chadwick, the father of sanitation, was a firm believer that the odor emanating from waste produced miasma and that this was the root of public health problems. Even George Waring, the engineer who installed the first small-bore sewers in the United States did so in order to reduce the amount of miasma produced by wastewater.

Why did human civilizations, stretching as far back as recorded history permits, believe that the absence of human waste was healthy? We now know that human waste (water, solid, or air) can carry pathogenic organisms, and that com-

ing into contact with such wastes can produce disease. Perhaps this is simply Darwinian. Those of our ancestors who did not find their own waste repugnant got more disease and died out, and those who avoided such waste survived. Perhaps we are genetically wired to dislike our waste, and this is a perfectly logical reason for why we have survived as a species. If poop smelled like raspberries, I doubt if we would be around to discuss the issue.

So the first big idea is that cleanliness is good. Humans have “known” this for over 5000 years, but it has only been during the past 150 of those years that we have understood the reason for it.

### 2. Nature knows best.

Nature has, up until very recently, been considered the enemy of human civilizations. The Old Testament tells us to “subdue nature,” and Lord Tennyson described nature as being “red in tooth and claw.” For the past 5000 years, people have believed that our survival depends on our winning the battle against nature.

When the germ theory was first proposed in the 1880s, the fight against nature became even more important. Not only were larger animals, inclement weather, and even large plants to be subdued, but now there were new enemies to fight against – the invisible germs in air and water. It is no wonder that H. G. Wells’ book, *The War of the Worlds*, written in 1898, ended with the microorganism winning. Not only could these critters make us sick, but they could even kill Martians.

But some people started to suspect that not all of these tiny creatures were bad for us. Perhaps some were useful. The making of beer, for example, had been up to that time thought of as a purely chemical reaction, but now it appeared that it was the tiny microbes that were responsible for fermentation. In our field, this understanding was slow in coming. It took until the 1890s before William Dibdin in London demonstrated that if the aquatic microorganisms were



kept alive and healthy they would actually reduce the putrescence of wastewater, ushering in the concept of biological treatment. At the same time, Henry Clifton Sorby working on the River Thames sampled thousands of organisms from the bottom deposits and found that the number and nature of these organisms changed as the water quality improved, thus establishing the idea that rivers can undergo self-cleaning.

At the beginning of the 19th century there were many natural scientists undertaking expeditions that discovered thousands of new species, but it took Alexander von Humbolt, German explorer, to recognize the interaction between plants, animals, and their natural environment. Arthur Transey, a British biologist, coined the term “ecosystem” and first described how these interactions among living creatures occur.

It took a long time for environmental engineering to respect the complexity of natural ecosystems. In undergraduate school, I learned to design activated sludge tanks on the basis of so many cubic feet per capita, totally oblivious of the fact that the aeration basin is an intricate ecosystem and that the process is biological. In the early 1960s, a Ph.D. student at UNC, Alan Cassell, set up a series of chemostats to study the activated sludge system. His objective was to get these units to come to equilibrium and then change the variables to see how they would behave. After four years of trying to get them to come to equilibrium, he gave up and wrote a dissertation entitled “The Dynamics of the Activated Sludge System.”

So the second big idea is that nature knows what it wants to do, and nature has its own dynamics that we occasionally can use and sometimes successfully manipulate, but we ignore it only at our peril.

3. Energy moves things.

Why do things happen? Why, for example, does water flow downhill? A few years ago a student in a non-engineering pollution class asked me why the water

flows in a river, but does not flow in a lake. Where do you start?

In 1776 Antoine Chézy had been studying the flow of water in a ditch near Paris and discovered that the velocity of the water was proportional to the square root of the slope and area and inversely proportional to the wetted perimeter. Chézy understood that it was the slope, the difference in potential energy, that made water flow, and every subsequent flow equation such as the Manning, Darcy-Weisbach, Hazen and Williams, and others are basically restatements of the classical Chézy formula.

How does a gas diffuse through a fluid membrane? Adolf Fick, in 1885 figured it out and elucidated what we all now know as Fick’s Law, making possible the understanding of membranes, gas transfer, and other applications. Differences in concentrations, seeking equilibrium, make things flow through membranes.

How does water flow through a porous medium like sand? In 1852 Henri Philbert Gaspard Darcy published his famous book on hydraulic experiments, “The Public Fountains of the City of Dijon,” in which he derived what became known as Darcy’s Law. Flow occurs through the sand, because there is more potential energy on one side of the porous medium than the other, and the greater that pressure, the higher is the flow.

Why do chemicals react? In 1873 J. Willard Gibbs used principles of thermodynamics to describe the spontaneity of reactions.

All of these and many more scientists of the past centuries set the groundwork for environmental engineering science because they recognized one big idea – that movement of water, particles, or molecules occurs from a higher energy state to a lower energy state, and that the rapidity of such movement is proportional to the difference in energy.

4. Sustainability is worthwhile.

When Rachel Carson’s *Silent Spring* was published in 1962, I was trying to figure what I wanted to do with an un-

dergraduate civil engineering degree. At first, *Silent Spring* was just another book, and I did not pay much attention to it, but then I began to witness the vitriolic reaction to it by the chemical companies. For example, one industry leader accused the book as being a Communist plot to starve Americans.

Any book that produces such a reaction must have something to say, I thought, and so I read the book to find out what the kartuffle was all about. It changed my career and my ambitions. I did not want to be the engineer who made the pesticides. I wanted to be the one who protected the birds from these chemicals, and I was pleased to discover that I could do so by studying environmental engineering.

I believe that my experience resonates with many who have chosen this profession at least in part because it is one that directly benefits others. We environmental engineers and scientists care about our rivers, and our air, and our land, and we want to make sure that the quality of life for future generations is not impaired by our selfish use of environmental resources. In short, we care about and believe in sustainability -- the notion that the world is worth preserving. And this, for us, is a really big idea.

## EnvE #11 on Careerbuilder

Environmental engineering is number 11 on the Careerbuilder.com list of the fastest-growing jobs in the United States. The full list is located at <http://msn.careerbuilder.com/Custom/MSN/CareerAdvice/511.htm>.

## Member News

### UC Berkeley

The Department of Civil and Environmental Engineering welcomes **Fotini (Tina) Katopodes Chow**, who joined the faculty in July 2005 as Assistant Professor. Professor Chow will contribute to the department's Environmental Engineering program with her research and teaching expertise in environmental fluid mechanics.



Tina Chow received a B.S. (1998) in Engineering Sciences from Harvard University and an M.S. (1999) and Ph.D. (2004) in Environmental Fluid Mechanics and Hydrology from Stanford University.

In 2004-2005, Professor Chow was a postdoctoral researcher in the atmospheric science division at Lawrence Livermore National Laboratory, where she worked primarily on contaminant dispersion simulations for urban environments.

Professor Chow's main research area is computational fluid dynamics for large-eddy simulation. Her research addresses numerical methods for environmental applications such as atmospheric boundary layer flow over complex terrain, urban boundary layer flow, and coupled land-atmosphere interactions.

In Fall 2005, Professor Chow will teach CE 100, Elementary Fluid Mechanics. In Spring 2006, she will teach CE 200B, Numerical Modeling of Environmental Flows, in which she will cover numerical methods and various environmental applications.

### UC Riverside

New AEESP member **Sharon L. Walker** is Assistant Professor and the John Babbage Chair in Environmental Engineering in the Department of Chemical and Environmental Engineering at University of California Riverside.

Dr. Walker's research interest lies at the intersection of physical, chemical, and biological processes in natural and engineered aquatic systems. In particular, work focuses



on understanding the factors controlling bacterial adhesion and transport in subsurface environments. Emphasis is placed on the fundamental mechanisms involved in cellular adhesion, and the interactions occurring at the molecular scale between the bacterium and mineral surfaces. These mechanisms apply not only to bacterial-mineral interactions, but also between bacteria and surfaces such as membranes, filter media, and biomedical materials. The overall goal of Dr. Walker's work is to optimize effective water treatment, wastewater reclamation, and to understand mechanisms controlling microbial transport in subsurface environments.

Dr. Walker earned her Ph.D. in Environmental Engineering from Yale University in 2004. She is a member of Chi Epsilon and Tau Beta Pi honor societies, and maintains professional memberships in the American Chemical Society (ACS), American Society of Microbiology (ASM), Association for Environmental Engineering and Science Professors (AEESP), American Society of Civil Engineers (ASCE), Society of Women Engineers (SWE) and the Association of Women in Science (AWIS).

### Georgia Tech

**Professor Jim Spain** joined the School of Civil and Environmental Engineering at the Georgia Institute of Technology in January 2005 and will expand the focus on microbial systems and processes in Environmental Engineering. Professor Spain also has an appointment in the School of Biology. Ms. Shirley Nishino has been attracted to Georgia Tech as a Senior Research Scientist with Dr. Spain, as well as other current collaborating scientists.



Prior to joining Georgia Tech, Dr. Spain directed the Environmental Biotechnology research program at the Air Force Research Laboratory in Panama City, Florida, where he studied biodegradation of synthetic organic compounds in the environment. Dr. Spain received his Ph.D. in microbiology from the University of Texas at Austin and has a B.S. in Biology from the University of Texas at Arlington.

His research interests in environmental biotechnology include: discovery and construction of bacteria for degradation of substituted aromatic compounds; physiological and ecological factors controlling microbial processes; and discovery of biocatalysts for green-chemistry synthesis of novel materials. He works at the interface between basic microbiology research and practical applications to solve environmental problems.

Dr. Spain is a former editor for Applied and Environmental Microbiology and has over 100 peer-reviewed papers, several books, and numerous book chapters on biodegradation and biosynthesis of organic compounds. He has served on review committees for the EPA, DOE, NIEHS, and DoD and on the editorial boards of a variety of journals. Jim Spain can be contacted thru the CEE Web site at <http://www.cee.gatech.edu/>.

### University of Pittsburgh

The Civil and Environmental Engineering Department welcomes **Jason D. Monnell** as a Research Associate and Laboratory Manager. Monnell's research focuses on the chemical and physical interactions of heavy metals, anthropogenic molecules, and nano-sized particles and their environment. In addition to his research, his expertise in analytical chemistry has proved to be an invaluable



asset in mentoring students. He received his Ph.D. in Chemistry at The Pennsylvania State University in 2005 under the supervision of Dr. Paul S.

Weiss. At Penn State, he investigated the molecular scale properties of functional materials and molecules using custom-designed scanning probe microscopy and other surface sensitive techniques. This work has resulted in six peer-reviewed publications and has been presented at international conferences.

## Yale University

**Dr. Jordan Peccia** has joined the Environmental Engineering Program at Yale University as an assistant professor. Dr. Peccia's research group uses biotechnology tools to investigate pathogens and microbial

processes in air, water, and the subsurface. His research currently focuses on understanding the quantity, type, and fate of aerosols emitted during the land application of biosolids and in assessing wastewater reuse safety and sustainability in Latin America. He earned his M.S. in environmental engineering (1995) from the Center for Biofilm Engineering at Montana State University. After working as a consultant he earned a Ph.D. from the University of Colorado in 2000. He was a post doctoral researcher at the University of Wisconsin for one year and an assistant professor in the Civil and Environmental Engineering Department at Arizona State University

from 2001 to 2005. Dr. Peccia will teach courses related to environmental engineering microbiology.

## Menachem Elimelech receives the Clarke Prize

**Dr. Menachem Elimelech**, the Roberto Goizueta Professor of Environmental and Chemical Engineering at Yale University, is the 2005 recipient of the Clarke Prize for outstanding achievement in water science and technol-



ogy. This award is one of only a dozen water prizes awarded worldwide. It is awarded annually to an outstanding individual who has demonstrated significant contributions in one of the following areas: the discovery, development, improvement, and/or understanding of the issues associated with water quality, quantity, technology, or public policy.

Dr. Elimelech received the Prize's gold medallion and \$50,000 honorarium from the National Water Research Institute (NWRI) co-founder Mrs. Joan Irvine Smith at the Twelfth Annual Clarke Prize Award Ceremony and Lecture, held on July 7, 2005, at the St. Regis Monarch Bay Resort & Spa in Dana Point, California. Over 250 people attended the award ceremony, which featured Dr. Elimelech's lecture "The Global Challenge for Adequate and Safe Water." As part of the ceremony, Dr. Elimelech received letters of congratulations from university professors, senators, U.S. House of Representatives, California's Governor Arnold Schwarzenegger, and President George W. Bush.

Dr. Elimelech has played the leading role in building Yale's Environmental Engineering Program. He is currently serving as Director of the program as well as Chair of the Chemical Engineering

Department. Dr. Elimelech also serves on the AEESP Board of Directors.

## Jennifer Jay receives PECASE Award

The faculty of the Civil and Environmental Engineering Department at the University of California, Los Angeles (UCLA) congratulate Assistant Professor **Jennifer Jay** for being selected as one of only 20 young National Science Foundation-supported scientists and engineers to receive the prestigious Presidential Early Career Award for Scientists and Engineers (PECASE).



Professor Jay is researching the environmental factors contributing to mercury contamination of food chains, a worldwide problem. Along with her team, she is studying the microbial transformation of mercury in wetlands and the accumulation of mercury in endangered sea turtles, among other topics. Jay also collaborates with local non-profit groups to answer research questions concerning the microbial water quality at local California beaches.

In addition to her research efforts, Jay also has developed an innovative service-learning course in which UCLA students learn and then teach environmental engineering concepts to sixth grade classrooms of economically disadvantaged students in Los Angeles, helping to promote increased involvement and diversity in environmental engineering. This year, UCLA students taking the course helped the sixth graders with hands-on water quality testing, gave tours of a restored wetland, and finally invited the sixth graders to UCLA for demonstrations of robotic environmental samplers in conjunction with another project being developed at the university.

### **Donald Aulenbach recognized by NSPE**

In recognition of exemplary service to the engineering profession, the community, and the Society, the National Society of Professional Engineers (NSPE) has named **Donald B. Aulenbach** a Fellow Member.

Aulenbach received his bachelor's degree in Chemistry from Franklin & Marshall College in 1950 and his master's and doctor's degrees in sanitation from Rutgers University in 1952 and 1954, respectively. He served as Chemist-Bacteriologist for the State of Delaware's (then) Water Pollution Commission. He taught Environmental Engineering at Rensselaer Polytechnic Institute from 1960 to 1990, advancing to full Professor, and now Professor Emeritus. He also taught at Lenox Institute of Water Technology (Massachusetts). Besides his Professional Engineers license, he is a licensed Professional Hydrologist, and a Diplomat of the American Academy of Environmental Engineers. He is a life member of the Water Environment Federation, the American Water Works Association, and the American Chemical Society.

Besides serving on numerous committees on the New York State Society of Professional Engineers, including Vice President of Professional Engineers in Education, Aulenbach served for 21 years as Chapter and State Coordinator for the MATHCOUNTS program, a math competition for 6th, 7th, and 8th graders.

Aulenbach and his wife, Marie, have lived in Clifton Park since 1967. They presently have four children, seven grandchildren, and one great grandchild.

For further details, you may contact Don at: 28 Valencia Lane, Clifton Park, NY 12065-5800; (518) 371-7572; [aulied@juno.com](mailto:aulied@juno.com).



### **Earth, Island**

*by Andrew Schuler*

**A**EESP members may remember an e-mail from Marc Edwards last year about Hollywood's search for an academic to play the Professor on a new reality show, *The Real Gilligan's Island*. Well, the secret is out — I'm embarrassed to admit that my interest was piqued, and I called the number (after getting Marc's assurance that this was not likely to be career suicide). Why? Aside from the fun factor, I did think it might get some beneficial press for Duke and our program, and I also hoped to get an environmental message out on national television. Once I made that call, the whole thing really had a life of its own—in a few months, I was flying to Mexico. There were plenty of surreal moments along the way, as I found myself going from a screen test in Hollywood to being blindfolded in the back of a Mexican cab bouncing through the jungle, and finally to a reconstructed *Gilligan's Island* set, dressed the sitcom part with my fellow castaways. I think we all had the same thought as we sized each other up in the jungle heat, camera crews, microphone booms, and producers buzzing about: "What have I gotten myself into now?" I was probably the only one thinking, "What will the Provost think of all this?" In the end, I didn't walk away

with the big money, and in fact I had to bear the humiliation of getting offed by one "Dr. Love" in a catapult competition that should have favored a geeky engineer. But I did manage to escape with my integrity intact, more or less (leaving on the early side has its benefits, no doubt), and in the follow-up press I did my best to plug increasing action on global warming (for the record, not my research area)...I can only hope there was a net, if small, positive for environmental advocacy. I take no responsibility for the entertainment value of the final production (my apologies to those who put this to the test!), but I can say that the experience was absolutely amazing and worthwhile...ask me next year what the Provost thought.

### **News submissions deadline**

The submissions deadline for the January 2006 AEESP Newsletter is **December 1, 2005**. Send news items to:

**Amy E. Childress**  
AEESP Newsletter Editor  
[amyec@unr.edu](mailto:amyec@unr.edu)

## **Penn State Capital College, Harrisburg**

ASSOCIATE OR FULL PROFESSOR OF SUSTAINABLE ENGINEERING. Penn State Capital College is accepting applications for an Associate or Full Professor of Sustainable Engineering available 2005-2006. Exceptional candidates will be considered for Professor and the endowed "Quentin Berg University Chair in Engineering." Candidate must have an outstanding record of interdisciplinary environmental practice, teaching and research; experience in one or more areas of sustainable engineering systems, green engineering, pollution prevention and/or industrial ecology; and leadership of environmental initiatives and coordination of green engineering research and teaching. Teaching responsibilities include undergraduate courses in green engineering, graduate courses in specialty areas, and other related engineering and environmental subjects. Candidates must have experience in developing an externally funded research program and supervising diverse groups of majors, including engineering, science, and business students. Ph.D. with at least one earned degree in engineering or a related discipline required. Acceptable backgrounds could include environmental, civil, architectural, mechanical, chemical, or electrical engineering with sustainable engineering as the primary research and teaching focus. Additional information can be found at the Penn State Harrisburg Web page [www.hbg.psu.edu/epc](http://www.hbg.psu.edu/epc).

Applicants should submit curriculum vitae, three references, and a research and teaching statement to: Quentin Berg Professor Search Committee, c/o Mrs. Dorothy Guy, Director of Human Resources, Penn State Capital College, Box AEESP, 777 West Harrisburg Pike, Middletown, PA 17057-4898. Direct e-mail applications to Mrs. Dorothy Guy at [djg1@psu.edu](mailto:djg1@psu.edu). Nominations are welcome. Applicant review will begin in September 2005 and will continue until the position is filled. Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.

## **University of Iowa**

POST-DOCTORAL RESEARCH ASSOCIATE. The University of Iowa Department of Civil and Environmental Engineering invites applicants for a post-doctoral position. The selected applicant will be conducting research funded by the American Water Works Association Research Foundation investigating the influence of free chlorine, chloramines and natural organic matter on release of lead into drinking water. It is anticipated that the position will be available in early September 2005 (although a later starting date early in 2006 may be possible) and have duration of approximately two years. Persons interested in this position should have a Ph.D. in Environmental Engineering and/or Science or related field with a strong background and interest in experimental work in environmental chemistry, analytical methods, and/or physical-chemical processes. Knowledge of numerical methods appropriate for analyzing kinetic data and developing reaction models is also desirable but not required.

The University of Iowa is an equal opportunity/affirmative action employer. Inquires should be made to Professor Richard L. Valentine preferably by email or phone ([richard-valentine@uiowa.edu](mailto:richard-valentine@uiowa.edu), 319-335-5653). Applicants should also send a resume, a list of references who may be contacted, and letter describing qualifications by paper mail to Dr. Richard L. Valentine, Department of Civil and Environmental Engineering, University of Iowa, 4105 Seamans Center, Iowa City, Iowa 52242.

## **Clarkson University**

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

tial are strongly encouraged to apply. All candidates would be expected to pursue a vigorous, nationally visible, externally funded research program and maintain a strong commitment to teaching at all levels. A Ph.D. in environmental engineering or a closely related field is required of all applicants.

The successful candidate will have an interest in collaborative research that complements existing expertise among the environmental engineering faculty and aligns with one or more of Clarkson's interdisciplinary research centers. A wide range of collaborative research opportunities exist within the Center for the Environment, which facilitates interdisciplinary research and education, and the Center for Advanced Material Processes for research on materials processing technologies with industrial applications. Persons are especially sought with expertise in innovative water or wastewater treatment technologies, applications employing biomolecular tools, environmental systems analysis, or engineering and policy for sustainability.

The Department of Civil and Environmental Engineering, with 16 faculty, and the Clarkson Center for the Environment, with over 40 faculty affiliates, provide research, education and outreach opportunities for faculty and their graduate students. The range of research expertise among these faculty has resulted in Clarkson being ranked 24th in the country in environmental engineering and health graduate programs in 2004. Research income for the Center of the Environment exceeded \$2.5 million in the 2005 academic year. Separate bachelor's degrees are offered in Civil Engineering and Environmental Engineering. Masters and Doctoral degrees are offered in Civil & Environmental Engineering, and in Environmental Science and Engineering.

Interested individuals should submit curriculum vitae, statements of research and teaching interests, and a list of at least three references to: Professor Thomas Holsen, Chair of the Faculty Search Committee, Department of Civil and Environmental Engineering, Box 5710 Clarkson University, Potsdam, NY 13699-5710. Applications received by November

# Employment Opportunities

1, 2005 will receive highest consideration. For more information about the CEE Department, see [www.clarkson.edu/cee](http://www.clarkson.edu/cee). For more information about the interdisciplinary research centers, see <http://www.clarkson.edu/dor/centers/>. Clarkson University is an Equal Opportunity Affirmative Action Employer.

## Yale University

**JUNIOR-LEVEL FACULTY POSITION IN GREEN ENGINEERING.** Yale University's School of Forestry & Environmental Studies (FES) and the Environmental Engineering Program seek to fill a joint junior-level faculty position in green engineering and product design for the environment. We seek an individual with experience in these areas of specialty. Research topics of interest include but are not limited to: materials selection, green design, design for recycling, energy efficiency, clean production, and remanufacturing. The successful candidate will have an active research program that complements those of existing faculty in FES's resource-related programs and the Environmental Engineering Program, and will serve as a bridge between the two Yale organizations. She or he will demonstrate capacity for excellence in teaching, and will be expected to advise undergraduate, Master's, and Doctoral students, who may be following either professional or academic career paths. Candidates may have training in a range of disciplines including industrial ecology, environmental engineering, chemical engineering, or allied fields.

Applicants should send a c.v., a statement of research and teaching interests, two reprints or other professional publications, and a list of three references to: Green Engineering Search Committee, Yale University, 205 Prospect St., New Haven, CT 06511, USA. The deadline for applications is October 31, 2005.

Yale University is an affirmative action/equal opportunity employer. Men and women of diverse racial/ethnic backgrounds and cultures are encouraged to apply. Women and minority candidates, as well as candidates from developing countries, are particularly urged to apply.

## Public Works Research Institute of Japan

**FULL-TIME SCIENTIST/ENGINEER.** The Public Works Research Institute of Japan is seeking a full-time, fixed-term scientist/engineer for a position at the International Centre for Water Hazard and Risk Management under the auspices of UNESCO, located in Tsukuba, Japan. The period of employment is three years from December 1 2005 to November 30, 2008. This position requires conducting interdisciplinary research on forecasting and warning systems for developing countries as a team member, by analyzing the current status of forecasting/warning systems in developing countries with insufficient hydrological information and communications infrastructures, as well as studying cases of advanced forecasting/warning systems utilizing satellite data.

Applicants must have earned a doctoral degree by the date of employment, profound knowledge of warning systems for flood disasters, the capability both to carry out research from an inter-disciplinary point of view and to be flexible when dealing with various related activities, and a good command of English in order to conduct a broad array of activities in various international settings. Applicants should be preferably 35 years old or under for this position. Candidates will be selected for the position by the qualifications written on the submitted documents and an interview considering: level of knowledge and experience, motivation towards research activities, level of English and Japanese language proficiency, possession of a working visa issued by the Japanese government and others. Note that traveling costs for an interview will not be covered by PWRI.

To apply, send resume, outline of past achievements, certificate of degree, or certificate of estimated date of reception of degree, list of research papers, research plan of your work at PWRI no more than 800 words, and names and contact addresses of three references to: Shinji Fukushima, Head of Planning Division, Planning and Research Administration Department, Public Works Research Institute, 1-6, Minamihara, Tsukuba, Ibaraki 305-8516 Japan; e-mail: [kikaku-1@pwri.go.jp](mailto:kikaku-1@pwri.go.jp); Fax: +81-29-879-6752.

Applicants are required to print "Job

Application" in red ink on the front of the envelope. All the necessary documents must be sent by registered mail to the above address. For more information, please visit our Web site, [www.unesco.pwri.go.jp](http://www.unesco.pwri.go.jp).

## Purdue University

**FACULTY POSITIONS IN ENVIRONMENTAL ENGINEERING.** Purdue University presently has several possible openings for tenure-track faculty positions, starting Fall 2006, in the Environmental Engineering area within the School of Civil Engineering. We are looking for highly qualified applicants at all levels from assistant to full professor. An earned Ph.D. in Civil Engineering or related field is required by the time of appointment. We seek persons with strong academic training and research interests in water, wastewater, or air treatment that will support one of Purdue's eight signature areas (<https://engineering.purdue.edu/Engr/Cluster>).

Candidates will be expected to develop a strong externally-funded research program and become involved in undergraduate and graduate instruction. Successful candidate/s will likely hold joint or courtesy appointments and work in interface areas. Teaching responsibilities will include core undergraduate courses in environmental engineering, and development of graduate courses in related specialty and interdisciplinary areas.

Applicants should send a letter of interest, a detailed resume, a statement of teaching and research interests, and the names and addresses of three references by Nov. 15, 2005 to receive full consideration. Review of applications will begin Nov. 15, 2005, and continue until the position is filled. Purdue University is an equal opportunity/equal access/affirmative action employer fully committed to achieving a diverse workforce. Please send application materials to: Environmental Engineering Faculty Search Committee, School of Civil Engineering, Purdue University, 550 Stadium Mall Drive, West Lafayette, IN 47907-2051.

## UC Santa Barbara

**FACULTY POSITION IN HYDROLOGIC SCIENCE.** The Donald Bren School

# Employment Opportunities

of Environmental Science & Management ([www.bren.ucsb.edu](http://www.bren.ucsb.edu)) invites applications for a tenure-track Assistant Professor position, to start July 1, 2006. We seek a hydrologic scientist whose work is clearly relevant for environmental policy or resource management. Applicants should possess a Ph.D. or have completed all requirements for the degree by the appointment date.

The successful candidate will have an interest in scientific investigations of water in its role as a resource or a hazard at the scale of regions or river basins and in applications of scientific research to significant water policy issues. We seek a person with a strong analytical background and experience in empirical studies of hydrologic processes using innovative methods of data acquisition. The ability to teach both advanced courses for Ph.D. students and courses on surface hydrology and/or groundwater science and management for professional masters-level students is essential. The candidate will be expected to carry out an outstanding research program.

The Bren School is a graduate school providing rigorous, multi-disciplinary training in environmental science and management to Masters and Ph.D. students. The faculty is drawn from the natural sciences, engineering, social sciences, and management.

Send applications to: Hydrologic Science Search Committee, Donald Bren School of Environmental Science and Management, University of California, Santa Barbara, CA 93106-5131; e-mail [hydrosci@bren.ucsb.edu](mailto:hydrosci@bren.ucsb.edu), fax (805) 893-7612. Electronic submission of the application as a single package is highly desirable, and must include a curriculum vitae, statements of research interests and teaching goals, copies of up to three publications, and the names and contact information, including email addresses, of three academic referees. For fullest consideration, all materials should be received by November 18, 2005, although the position will remain open until filled.

The University of California is an Equal Opportunity/Affirmative Action Employer. We encourage all qualified applicants to apply, including minorities, women, and persons with disabilities.

The School is especially interested in candidates who will contribute to the diversity and excellence of the academic community through research, teaching and service.

## Harvard University

FACULTY POSITION IN ENVIRONMENTAL MICROBIOLOGY. The Division of Engineering and Applied Sciences at Harvard University invites applications for a faculty position in Environmental Microbiology. The position is part of an initiative at Harvard in Environmental Sciences and Engineering. In addition, there are important linking opportunities with a University initiative in the Microbial Sciences and in interdisciplinary connections to the Department of Earth and Planetary Sciences. We intend to make this appointment at the Assistant or, in exceptional cases, at the Associate Professor level (untenured).

Several examples of topics of Environmental Microbiology are provided below, although excellent candidates from any area of Environmental Microbiology will be considered:

- geomicrobiology and applications to environmental problems
- genetic, proteomic, and molecular microbiology to solve environmental problems
- biofilms and/or microbial ecology and applications to environmental problems
- transformation and fate of pollutants
- microbial processes and feedbacks related to human impacts on climate

We particularly encourage applications from women and minorities. An application, assembled as a single PDF file, should include a curriculum vitae, separate two-page statements of research and teaching interests, and up to three scientific papers. Three to five letters of recommendation should be requested and sent separately. Applications will be reviewed beginning October 1, 2005, although applications received after that date may also be considered.

Applications should be sent via email to [environmental\\_microbiology@deas.harvard.edu](mailto:environmental_microbiology@deas.harvard.edu). Letters of recommendation are also preferred by email at the same address but may optionally be mailed

to: Chair, Environmental Microbiology Search Committee, Division of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138. Harvard University is an Affirmative Action/Equal Opportunity Employer.

## University of Nevada, Reno

TENURE-TRACK FACULTY POSITION IN ENVIRONMENTAL ENGINEERING. The Civil and Environmental Engineering (CEE) Department at the University of Nevada, Reno (UNR) invites applications for a tenure-track assistant professor position in Environmental Engineering. The appointment will be effective July 1, 2006. Applicants must have earned a doctorate in environmental engineering, civil engineering, or a closely related field and must demonstrate the potential for high quality research and teaching. Experience in one or more of the following areas is desirable: innovative water treatment technologies, water reuse systems, contaminant transport, environmental sensors, or aquatic chemistry. The successful applicant will be expected to develop a strong externally funded research program as well as to work in a collaborative environment with faculty in the CEE Department, the College of Engineering, and interdisciplinary programs on campus.

In addition to developing a strong research program and supervising graduate students, the new faculty member will be responsible for teaching existing undergraduate and graduate courses and developing new courses. It is highly desirable that the candidate be a registered professional engineer – or demonstrate the ability and interest in becoming registered – and be capable of teaching environmental engineering design courses.

Qualified applicants should submit a letter of application, a curriculum vitae, a statement of research and teaching interests, and names and contact information of four references after October 3, 2005 via our online application system at <http://jobs.unr.edu/professional/>. Full consideration will be given to applications received by December 1, 2005. EEO/AA women and under-represented groups are encouraged to apply.



**Publishing**

## ***IWA Publishing is proud to join AEESP***

**IWA Publishing**, the wholly owned subsidiary of the International Water Association (IWA) provides information services on all aspects of water, wastewater and related environmental fields. The publishing programme includes *Water21* (the IWA membership magazine) and a broad range of journals, books, research reports, manuals and online services.

Uniquely placed to respond to the information needs of the international water industry and research community, **IWA Publishing** offers a high-quality, cost-effective publishing service with information delivery in both print and online format.

As a leading supplier of water, wastewater and environmental publications, **IWA Publishing** is committed to excellence in delivery of information and continues to invest in innovation and development of services to encourage usage of its publications worldwide.

### ***NEW Book***

#### **\*Preventing Legionellosis\***

Author: William F McCoy

*Preventing Legionellosis* covers the biology of *Legionella* and presents a comprehensive review of risk reduction best practices from around the world. It will be an invaluable source of information for public health administrators, epidemiologists, infection control professionals, facility safety managers, industrial hygienists, and academic engineers and scientists.

ISBN: 1843390949 · October 2005  
150 pages · Hardback  
IWA Members Price: US\$97.50 / £48.75  
Non Members Price: US\$130.00 / £65.00  
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### ***BESTSELLER***

#### **\* Safe Drinking Water: Lessons from Recent Outbreaks in Affluent Nations \***

Authors: SE Hrudey, EJ Hrudey  
*Safe Drinking Water* aims to raise



understanding and awareness of those factors that have most commonly contributed to or caused drinking-water-transmitted disease outbreaks – essentially a case-history analysis within the multi-barrier framework. It contains detailed analysis of the failures underlying drinking-water-transmitted disease epidemics that have been documented in the open literature, by public inquiry, in investigation reports, in surveillance databases and other reliable information sources.

ISBN: 1843390426 · June 2004  
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Editors: Rolf Gimbel, James K Edzwald & Yoshimasa Watanabe

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### **Reduced costs for AEESP members at WEFTEC 2005**

WEFTEC05 will be held Oct. 29-Nov. 2 at the Washington Convention Center, Washington D.C. (for details see [www.weftec.org](http://www.weftec.org)). This year, members of AEESP can attend the entire Research Symposium for \$300 (including presentations on Monday, Tuesday, and Wednesday). International experts will present their latest work in the areas of anaerobic treatment, biological nutrient removal, attached growth bioreactors, membrane bioreactors, pharmaceuticals in waste, molecular biology techniques, and drinking water research at DCWASA. On Monday, Oct. 31, the AEESP/WEF Scientists Luncheon will feature a panel to discuss lead in Washington D.C. drinking water. The cost for the luncheon is \$50. Immediately following the luncheon, Dr. Richard Speece will provide the AEESP/WEF Lecture. Registration for Session 1 and the Monday Expo is \$50. In response to the efforts of many, these discounted prices were graciously provided by William J. Bertera, Executive Director of WEF, to encourage participation from faculty and students. Register using the AEESP Advanced Registration Form on page 18.

### **Call for Papers**

#### **IWA Young Researchers Conference May 24-26, 2006 NTU, Singapore**

Call for Papers for the IWA Young Researchers Conference, 24-26 May 2006 at NTU, Singapore. More information can be found on the Conference Web site:

<http://www.yrc2006.iwa-conferences.org>

Abstract submission: September 30, 2005

Sponsorship from IWA, Public Utility Board, Singapore and the Singapore Water Association will provide support for the attendance of 60 delegates to YRC06 (i.e. conference registration and accommodation). Delegates will still need to secure travel funds to attend the conference. The 3-day conference will include oral and poster presentations, career development workshop, and technical visits to Singapore desalination and water reclamation plants.

#### **The Influences of Air Quality on the Mayan Heritage Sites in Mesoamerica: an International Workshop**

**May 24-26, 2006  
NTU, Singapore**

The ancient Mayan ruins, the jewels of the Yucatan Peninsula, are undergoing dramatic damage due to air pollutants. These many sites, which are bordered by Mexico, Guatemala, Belize and Honduras, attract hundreds of thousands of visitors per year

and are both world treasures as well as major revenue sources for these economically beleaguered nations. The Mayans created colorful murals and many other beautiful works of art that have been enjoyed by people for years, but are now endangered due to the incursions of air pollution. At some sites, paint is flaking off by the handful and stucco surfaces and stone inscriptions are corroding and crumbling. This devastation is attributed to acid rain and particulate emissions emanating from electrical, industrial, and petrochemical plants located around the Gulf of Mexico and include sources from the United States and even as far away as Venezuela. The meteorological conditions controlling the transport and transformation of air pollutants to and around this region are complex and add to the difficulty of understanding the causes of the problems. Solutions must be found soon or these treasures will be lost forever.

A workshop to discuss these problems, and formulate possible solutions is planned to be held in Mexico during the fall of 2005. The workshop is organized by Drs. Tim C. Keener and Mingming Lu, of the Department of Civil and Environmental Engineering, Univ. of Cincinnati under a grant from the National Science Foundation. It will be held in Cancun, Mexico from Oct. 16-22, 2005. It will involve researchers, administrators, and interested citizens from the U.S. and countries on the Mayan route. The purpose of this workshop is to discuss the problems facing these world heritage sites and how we as researchers can help.

For more information, please visit our Web site at: [www.eng.uc.edu/mayan](http://www.eng.uc.edu/mayan). You can also contact Drs. Keener or Lu at [tim.keener@uc.edu](mailto:tim.keener@uc.edu), or [mingming.lu@uc.edu](mailto:mingming.lu@uc.edu).

#### **Anaerobic Treatment Short Course in September**

**September 22-23, 2005  
Marquette University  
Milwaukee, Wisconsin**

A short course titled "Anaerobic Treatment of High-Strength Industrial and Agricultural Waste" will be held on September 22-23, 2005 at Marquette University in Milwaukee, Wisconsin. The course will present anaerobic treatment fundamentals, operating strategies, design/construction/start-up guidelines, equipment information, case studies of operating systems, and selected, recent research. Speakers include R. E. Speece (Vanderbilt University), Michael Switzenbaum (Marquette University), Robert Burns (Iowa State University), Dennis Totzke (Applied Technologies, Inc.), and Daniel Zitomer (Marquette University). Standard registration is \$675. The discount student registration rate is \$180. Attendees receive R. E. Speece's textbook, course notebook, and lunches. For more information, please contact Dan Zitomer, 414-288-5733 ([Daniel.Zitomer@mu.edu](mailto:Daniel.Zitomer@mu.edu)) or see <http://www.mu.edu/wqc> under "short courses."



**78th Annual Technical Exhibition & Conference  
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EC01 Administration/enforcement of government environmental programs EC02 Municipal pretreat programs EC03 Administration of public health programs EC04 Publicly owned municipal or district sanitary, water, or wastewater treatment system or plant processing > 1 mgd or 44 L/sec EC05 Publicly owned municipal or district sanitary, water, or wastewater treatment system or plant processing ≤ 1 mgd or 44 L/sec EC06 Privately owned municipal or district sanitary water or wastewater treatment system or plant EC07 Privately owned industrial waste treatment facility	EC08 Independent environmental laboratory EC09 Mining EC010 Consulting engineer and contractor EC011 Electric/gas utility EC012 Manufacturer of pollution control equipment EC013 Educational institution EC014 Retired EC015 Law firm EC016 Manufacturer's representative EC017 Other _____ EC029 Misc. manufacturing	JT01 Collection systems management JT02 Plant manager JT03 Plant operations manager JT04 Operations JT07 Corporate responsibility for environmental management JT12 Executive management JT13 Division management JT14 Engineering, non-management JT15 Scientific non-management JT16 Independent lab manager/executive JT18 Public official JT23 Other _____
EV01 Wastewater EV02 Drinking water EV03 Process water EV04 Coastal, river, lake ecology/surface water EV05 Toxic and hazardous materials EV06 Solid waste EV07 Air EV08 Groundwater EV09 Storm water EV010 Pollution prevention EV011 Instrumentation/automation/controls EV012 Residuals/biosolids management EV013 Public education/information EV014 Other _____		

*Registration Deadline: October 7, 2005*

REGISTRATION	FEES
<input type="checkbox"/> <b>AR</b> AEESP – Research Sessions Only (luncheon not included)	<b>\$300</b>
<input type="checkbox"/> <b>AS</b> AEESP – Session & Expo Only – Monday Only (luncheon not included)	<b>\$50</b>
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**Method of Payment:**

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*I authorize WEF to charge my credit card for the amount indicated above.*

**Cancellation Policy:** Written cancellation notice is required and must be received by October 7, 2005. A 25% service fee will be retained on all cancellations. No refunds can be given after October 7th.

Completed and fax registration form to Tangela Williams at 703-684-2471 or mail your registration form with payment to WEFTEC.05/WEF, 601 Wythe Street, Alexandria, VA 22314 by Friday, October 7, 2005. This form is not valid for onsite registration.

Registration Questions? Call: 1-800-666-0206 or 1-703-684-2452 – Select option #2 on main menu,

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



## **Application for Membership**

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### **PLEASE ATTACH A BRIEF (1-3 PAGE) CURRICULUM VITAE**

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

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**Please return this form along with your dues and c.v. to the Secretary of AEESP:**

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**Please send submissions and comments to:** Amy E. Childress, Ph.D., AEESP Newsletter Editor, University of Nevada, Reno, Department of Civil and Environmental Engineering/258, Reno, NV 89557-0152; phone (775) 784-6942; fax (775) 784-1390; e-mail [amyec@unr.edu](mailto:amyec@unr.edu). To estimate the amount of lead time needed for your announcement, please note that members receive the newsletter 4-6 weeks after the submissions deadline.

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Amy E. Childress, Editor  
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