

Newsletter

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APRIL 1975

FROM THE PRESIDENT'S DESK

CLEAR TRENDS

There are two clear trends in environmental engineering education at the present time. One is the trend toward more part time graduate education and continuing education for practicing engineers. This trend is the result of three factors; namely, 1) the demand for engineers to work in the environmental field is so great that many engineers without specialized education in environmental engineering are practicing in the field, 2) the difficulty of finding financial support for full time graduate study, and 3) the relatively high salaries offered to engineers with a B.S. degree and no experience to work in the field. Last year at the Purdue Industrial Waste Conference the Tuesday morning seminar was on the topic of continuing education. It was an excellent seminar and helped many of us understand how to get started on continuing engineering education.

The second clear trend is the development of more and more undergraduate environmental engineering programs. This is a result of the public attention which our field has received over the last ten years and the desire of many undergraduate engineering students to get into a socially oriented field of engineering. However, the problems presented by this trend are much more complex than those presented by the trend toward more part time graduate work and continuing education.

There are many points of view on undergraduate environmental engineering programs. I do not pretend to represent any point of view other than my own. However, I believe that it is the obligation of AEEP to provide a forum for debate of the issues and for presentation of possible solutions to the problems. Some of the problems and issues are given below:

1. Why have undergraduate environmental engineering?
2. Do we need a separate department for undergraduate environmental engineering or can it be offered as an option in an existing department or as a non-departmental, interdisciplinary program?
3. What should an undergraduate environmental engineer learn?
4. Can a B.S. environmental engineer really find a professional identity which will enable him to function

effectively 30 or 40 years from now?

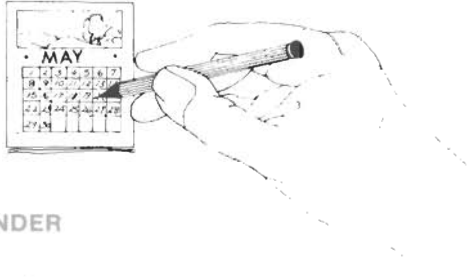
AEEP is clearly identified with the trend toward undergraduate environmental engineering programs mainly because of the activities of some of our younger members. One of the 1972 AEEP workshops was on the subject of programs for undergraduate environmental engineering education. One of the strongest reports presented at the 1973 Education Conference was the one on undergraduate environmental engineering education. AEEP is about to bring out a brochure which is intended to be used to recruit students into undergraduate environmental engineering programs.

Yet, with all this activity there is a strong segment of AEEP (including some Past Presidents and former Board Members) who feel that this trend will be harmful to the engineering profession in the long run. This segment has not presented a spokesman to develop the other side of the issues.

This year at the Purdue Industrial Waste Conference AEEP will again provide an opportunity for debate and discussion of undergraduate environmental engineering education. The Tuesday morning seminar will concern itself with the structure and organization of such programs. Jim Patterson, AEEP Seminar Committee Chairman, is doing an excellent job of organizing a comparison among programs at different universities. The AEEP Open Meeting on Tuesday evening will present a panel discussion (or perhaps argument) about the political and administrative aspects of such programs.

The trend toward undergraduate environmental engineering programs is still very clear and is probably the most significant educational development in our field in the last ten years. AEEP is at the point where we must accept this trend as de facto and move into supporting and expediting it even more vigorously unless we find good reason to oppose it. This message is a challenge to those members of AEEP who oppose the trend to at least try to muddy up its clearness at the meetings at Purdue. This may be your last good chance!

Wesley O. Pipes



MARK YOUR CALENDER

AEEP Activities at Purdue

Monday, May 5, 1975

9:00 A.M. - Board Meeting, West Lafayette Hilton Inn

Tuesday, May 6, 1975

8:00 A.M. - Seminar, Room 214, Stewart Center

8:00 P.M. - Open Meeting, Room 214, Stewart Center

All AEEP members attending the Conference are urged to attend the Seminar & the open meeting.

AEEP SEMINAR AT PURDUE

The AEEP Seminar to be held at Purdue is scheduled for 8:00 A.M., Tuesday morning, May 6th, Room 214, Stewart Center.

The seminar is entitled "Undergraduate Environmental Engineering Programs - Origins, Structures and Objectives." The seminar will focus on undergraduate programs which represent a major field of study in environmental engineering, as opposed to the more classical environmental options in civil and other engineering departments. Material on these programs has been gathered by questionnaires from all schools which could be identified as having undergraduate environmental engineering majors. Summary information on types of degrees offered, accreditation, type of program administration, current and past enrollments, and program curricula will be presented at the seminar. In addition two or three program directors will make short presentations on the development, implementation and current status of their particular programs.

There is a great deal of interest in undergraduate environmental engineering education, and the material presented at the AEEP seminar should provide a good perspective on where these programs stand.

James W. Patterson

AEEP BOARD TO MEET AT PURDUE

The AEEP Board of Directors will meet at 9:00 a.m. on Monday, May 5, 1975, in the West Lafayette Hilton Inn, West Lafayette, Indiana. The meeting is open to the AEEP membership and anyone having a matter to discuss or just wanting to find out if the Board is doing its job is invited to drop by.

Any AEEP member who is unable to be at the meeting on May 5 and still wants Board action on any appropriate item should contact President Pipes.

The annual open meeting will be held at 8:00 p.m. on Tuesday, May 6, 1975, in Room 214, Stewart Center on the lovely Purdue Campus in beautiful West Lafayette, Indiana. All university faculty members and other interested parties are invited to attend even if you don't have time to sober up after dinner.

The business meeting will feature several traditional acts including the Treasurer's Report and an exhortation to attend the 1975 AEEP Workshop. Some awards will be presented, so if you believe that you should have an award for something that you have done be sure to attend.

The entertainment following the business meeting is being sponsored by the great AEEP Education Committee. A string quartet will play "Where are You Now That I Need You," "Down by the Old Mill (Algae) Pond," and other traditional favorites.

"AEEP/ENGINEERING SCIENCE AWARD FOR BEST DOCTORAL THESIS RELEVANT TO PRACTICE"

This is to announce that applications are being accepted for the Engineering Science Awards of \$1000 for the best doctoral thesis relevant to practice published between July 1, 1974 and June 30, 1975. The award will be \$500 for the primary research supervisor and \$500 for the Ph.D. candidate, both monies to be spent at the individuals' discretion. Three copies of the candidate thesis must be submitted to David Jenkins, 11 Yale Circle, Kensington California 94708 to arrive prior to June 30, 1975."

AEEP GOES TO WASHINGTON

As part of a continuing effort to maintain a dialogue with governmental officials regarding manpower needs in the environmental engineering field, a group of approximately fifteen professors met on March 17-19, 1975, in Washington, D.C. The effort, sponsored in part by AEEP, was specifically aimed at disseminating information and discussing mutual concerns with appropriate Congressmen and officials of various operating agencies. Faculty representatives from at least ten states participated in the program and communication with many Congressional offices was established.

As most of the AEEP membership is well aware, the proposed EPA budget for fiscal year 1976 shows no new funds for graduate training grants. Funds for the 1975-76 academic year will be available only from previously allocated carry-over money. House Appropriations Committee hearings on the EPA budget will be conducted in May by the Subcommittee on HUD and Independent Agencies chaired by Congressman Boland of Massachusetts. Outside testimony will be heard the week of May 12. As has been the case in recent years, AEEP has requested the opportunity to testify at that time.

Paul King

AEEP TO PARTICIPATE IN
MANPOWER SYMPOSIUM AT AIR POLLUTION
CONTROL ASSOCIATION MEETING

A Symposium on Manpower and Educational Needs will be held at the Air Pollution Control Association Meeting in Boston on the morning of Tuesday, June 17, AEEP President Wesley O. Pipes will be a member of the panel which will discuss this subject. Following the symposium there will be a short period for visiting exhibits. Faculty members who teach air pollution control are invited to attend and learn more about AEEP activities.

Dr. Joe F. Allen
Associate Professor of Chemistry
Clemson University
Clemson, S. C. 29631

Proceedings of the Workshop will be published and can be ordered from:

Donald Fox
Workshop Co-chairman
University of North Carolina
School of Public Health
Environmental Sciences and Engineering
Chapel Hill, N. C. 27514

Russell F. Christman

AEEP WORKSHOP ON
ENVIRONMENTAL IMPACT AND LINKAGES
SUMMARY REPORT

At the recent Workshop on Environmental Education in Charleston a number of efforts were described which may be useful in the development of instructional programs in Environmental Engineering. Aarne Vesilind (Duke University) presented a lecture to the conferees on the use of BOD, in a convincingly traditional style. Dr. Vesilind made a specific effort to demonstrate all of the unsatisfactory teaching tools associated with the usual lecture approach. Robert Gearhart (Utah State University) presented the case for the use of instructional objectives in graduate education, and was able to demonstrate how the use of clearly stated objectives is not only an effective tool for the teacher but improves learning for the student as well. Jim Lamb (The University of North Carolina at Chapel Hill) reviewed reasons for using audiovisual materials, the types of tools available today, the basis for selecting among them and some techniques for preparing and using slides and tapes. The discussion was presented as a taped lecture, with slides to illustrate key points and demonstrate certain techniques which could be used in slide-tape presentations.

These efforts were basically the application of performance objectives in training courses for water and wastewater treatment plant operators as well as for BS and MS Environmental Engineering course work. John Austin (Clemson University) in his discussion indicated how performance objectives could be used to improve existing lecture courses as well as serve as a basis for developing self-paced instruction. Contact John if you would like information on whether something has been developed in a particular area of interest to you.

Of the materials on display at the 1974 AEEP Workshop on Environmental Impact And Linkages, the General Chemistry Minicourses by Joe F. Allen (Clemson University) may be obtained from Burgess Publishing Company, 7108 Ohms Lane, Minneapolis, MN 55435, in two volumes. Volume I covers the introductory concepts of the mole, stoichiometry, atomic and molecular structure, states of matter, nuclear changes, gas law calculations, acids and bases, and concentrations of solutions. Volume II includes electrochemistry, thermodynamics, kinetics, equilibria (including gas phase, solubility, acid-base, buffers, and pH calculations), organic and biochemistry, chemistry of the elements, and a brief qualitative analysis scheme.

Also on display was a book entitled *Minicourses in General Chemistry* which was prepared at Clemson University under sponsorship of the U. S. Environmental Protection Agency. This book is no longer available from Clemson, but much of the material has been revised and expanded and is found in Volume II of Allen's *General Chemistry Minicourses*.

Additional information about the use of the minicourses in a self-paced, audio-tutorial program may be obtained by writing to:

SUMMARY REPORT
FROM
MR. KJELL BAALSRUD
AEEP DISTINGUISHED
FOREIGN LECTURER, 1974

When the Chairman for the Distinguished Foreign Lecture Committee of the Association of Environmental Engineering Professors, Professor P. Aarne Vesilind in a letter of August 30, 1974 invited me to be the AEEP lecturer for 1974-75, I was as surprised as I was flattered. Fortunately it had proved possible to arrange the trip during November. Thanks to excellent arrangements, modern transportation (15 flights) and warm hospitality, it was possible in 15 days to visit 6 states, 7 universities, 8 campuses and give 12 lectures. The tour gave me an unusual opportunity to get acquainted with people, learn of running research projects, discuss difficult issues and feel that we really belong to the same scientific community. It was, however, impossible to accept and store all the impressions I received.

Here is a summary report of the visit:

November 12 - 14. Visit to the Tensselaer Polytechnical Institute, Albany, New York. Host Professor Donald B. Aulenbach.

November 14 - 16. University of Maine, Department of Civil Engineering, Orono, Maine. Host Director of Environmental Research Center, Mr. Wayne Hall.

November 16 - 18. Visit to Duke University, Durham, host Professor P. Aarne Vesilind, and the University of North Carolina, Chapel Hill, North Carolina, host Professor Charles Weiss.

November 19 - 21. Duke University, Marine Laboratory, Beaufort N.C.

November 21 - 23. University of Iowa, Iowa City. Host Professor Wayne Paulson.

November 23 - 25. University of California, Berkeley California. Host Professor E. A. Pearson.

November 25 - 27. University of Washington, Seattle, Washington. Host Professor Dale Carlson.

November 27, evening, departure for Oslo, Norway.

At all places visited I was very well taken care of. I was always met at the airports and had the pleasure to join a number of social activities such as lunches, dinners, receptions and family visits. For all this I am most grateful.

Frequently there were questions during the lecture, and on every occasion there was a vivid and interesting discussion at the end. It is my impression that we had no problems in exchanging scientific and technical views on research topics during these discussions. The close and informal contact with the audience was a result of the well qualified and limited number of persons present. There is every reason that close contact should be kept between research centers in the field of environmental

engineering.

Two impressions I feel very strongly. One is the tremendous size of the country of USA. The other one is the broad field of common interests we have in environmental engineering.

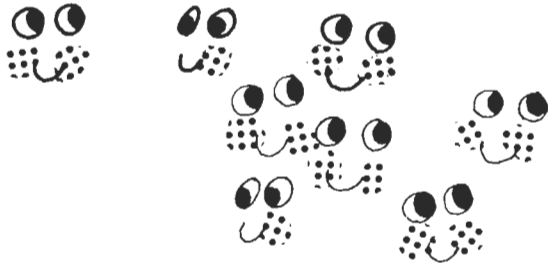
I am most grateful to the AEEP for the invitation. I found the arrangement as a visiting lecturer to be most useful, and would like to extend my great appreciation and thanks to Dr. A. Vesilind on behalf of AEEP for the invitation and the arrangements.

Kjell Baalsrud

University, Bozeman, Montana 59715.

Several authors are nationally known experts including among others: Dr. Eugene B. Welch, Dr. William E. Sopper, Dr. Raymond D. Loehr, and Dr. G. Fred Lee. Some of the 13 papers are: Treatment Processes and Environmental Impacts of Liquid Waste Disposal on Soil, Land Disposal of Liquid Industrial Wastes, Acceptability of Sewage Effluents by Soils, Hydrogeological Aspects of Liquid Waste Disposal, Design, Cost Estimating and Operation of Spray Irrigation Facilities, Disposal of Agricultural Wastes on Land, Potential Problems of Land Disposal of Domestic Wastewaters, and Engineering Investigations for Land Disposal.

MEMBERS IN THE NEWS



WELCOME TO AEEP NEW MEMBERS



John Andrews & Jack Matson Join University of Houston

John F. Andrews and Jack V. Matson have been appointed as Professor and Assistant Professor, respectively, in the Civil Engineering Department at the University of Houston. They will serve as the core faculty for a graduate program in Environmental Engineering. John Andrews completed his Ph.D. in Sanitary Engineering at the University of California (Berkeley) and prior to coming to the University of Houston served as Head of the Environmental Systems Engineering Department at Clemson University. Jack Matson completed his Ph.D. in Environmental Engineering at Rice University with prior experience at Exxon and S&B Engineers.

Dr. James C. Lamb, III
Professor of Sanitary Engineering
University of North Carolina
Public Health
Chapel Hill, North Carolina 27514

Dr. Michael J. Humenick
Associate Professor
University of Texas
Department of Civil Engineering
Austin, Texas 78712

Edward Thackston named Conservationist of the Year

Dr. Edward L. Thackston, Associate Professor of Environmental and Water Resources Engineering at Vanderbilt University, Nashville, Tennessee, was recently named by the Tennessee Conservation League, an affiliate of the National Wildlife Federation, as Tennessee's Conservationist of the Year for 1974.

Thackston won the award for the work he did in serving as Staff Assistant for Environmental Affairs to former Tennessee Governor Winfield Dunn. He helped write, secure support for, and worked with the legislature in passing new air and water pollution control laws, a new surface mine reclamation act, a mandatory certification law for treatment plant operators, a safe dams act, a mineral prospecting control act, and a natural areas preservation system.

Mr. David H. Howells
Professor of Biological and
Agricultural Engineering
North Carolina State University
124 Riddick Building
Raleigh, North Carolina 27607

Dr. Charles Richard O'Melia
Professor of Environmental Sciences
and Engineering
University of North Carolina
Chapel Hill, North Carolina 27514

Dr. Alonzo William Lawrence
Associate Professor of Environmental
Engineering
Cornell University
219 Hollister Hall
Ithaca, New York 14853

PROCEEDINGS AVAILABLE

The Proceedings of the Fourth Environmental Engineering Conference - Montana State University (264 pages) have just been published and are available in a soft-cover, plastic-bound edition at \$7 per copy including postage from the Department of Civil Engineering and Engineering Mechanics, Montana State

Dr. Donald Thomas Lauria
Associate Professor of Environmental
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University of North Carolina
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Chapel Hill, North Carolina 27514

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Assistant Professor
University of New Hampshire
Civil Engineering Department
Durham, New Hampshire 03824

Dr. Leland L. Harms
Assistant Professor
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University of Miami
Coral Gables, Florida 33124

Dr. Irwin H. Suffet
Associate Professor of
Environmental Science & Chemistry
Drexel University
Environmental Engineering & Science
Philadelphia, PA 19104

- engineers and environmental specialists through its grants to colleges, universities and students;
2. The program is destined for termination by June 30, 1976;
 3. Trained personnel will continue to be needed by the State Water Resources Control Board and other Federal, State, and Local agencies concerned with environmental protection and enhancement;
 4. University and college programs funded by the program and students receiving EPA fellowships will not have this financial assistance from EPA to complete their education. These programs have contributed not only educationally, but as a resource for the Board in terms of recruitment and expertise;

THEREFORE BE IT RESOLVED:

1. That the State Water Resources Control Board endorses the EPA Training Grants Program and encourages the Federal Government to continue this important effort;
2. That the Executive Officer be directed to transmit this resolution to the appropriate agencies.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on August 15, 1974.

Bill B. Dendy
Executive Officer

AAEE SETS DATE FOR CERTIFICATION EXAM

The next qualifying examination for certification by the American Academy of Environmental Engineers will be held on June 24, 1975. The examination will consist of two parts: one in the specialty field selected by the applicant and an oral section. Areas of specialty recognized by the Academy are general sanitary and environmental engineering, air pollution control engineering, industrial hygiene engineering, radiation protection engineering, and solid waste engineering.

Each applicant who achieves certification becomes a Diplomat of the Academy. In addition to the examination, requirements for certification include good moral and professional character, a degree in engineering from a qualified institution, registration as a professional engineer, and 8 years of professional environmental engineering work, at least 4 of which must be in a position of responsible charge.

Application forms for the examination may be obtained from the office of the Executive Director, American Academy of Environmental Engineers, P.O. Box 1278, Rockville, Md. 20850. Applications for the 1975 exam must be received before May 15, 1975.

CALIFORNIA STATE WATER RESOURCES
CONTROL BOARD PASSES RESOLUTION ON
EPA TRAINING GRANTS

SUPPORT OF EPA TRAINING GRANTS PROGRAM
Resolution No. 74-65

Whereas:

1. The EPA Training Grants Program has provided needed support to the educational development of environmental

SUPPORT AEEP ACTIVITIES

POSITIONS AVAILABLE**University of Southern California**

The University of Southern California has an opening at the Assistant Professor level starting September, 1975 in Environmental Engineering.

The successful candidate should have a strong background in environmental microbiology and aquatic biology. He is expected to teach both graduate and undergraduate courses and develop research support.

Send resume to Dr. K. Y. Chen, Environmental Engineering Program, University of Southern California, Los Angeles, CA 90007. USC is an equal opportunity/affirmative action employer.

Rice University

The Department of Environmental Science and Engineering at Rice University has an opening for an Associate Professor of Environmental Engineering. Candidate should have strong background in physical-chemical water and wastewater treatment. Teaching and research experience required; practical experience in consulting and/or industry desirable. Undergraduate and graduate teaching and graduate research training are all equally important duties of the position. A major leadership role in the department is anticipated. The position is open immediately with salary commensurate with background and experience. Send resume to: Dr. C. H. Ward, Chairman, Department of Environmental Science and Engineering, Rice University, Houston, Texas 77001. Affirmative action-equal opportunity employer.

University of Iowa

Two faculty positions as described below are available in the Environmental Engineering Program, Division of Energy Engineering, at the University of Iowa. It is intended that both positions be filled at the beginning of the Fall Semester 1975. An earlier starting date is, however, possible.

Both positions are academic year appointments, with opportunities for on-campus summer employment, and include assignments in graduate and undergraduate teaching, student advising and research.

Professor or Associate Professor of Environmental Engineering - Candidate must have considerable full-time academic experience and an established record of research in the environmental area. Professional registration or requisite qualifications for registration are required. The position entails a likelihood of responsibilities for leadership and administration of an established graduate program and development of an undergraduate program in environmental engineering. The position will also involve teaching, student advising and research duties. The candidate should have evidence of broad activity in the water quality area and the ability to interface with other disciplines.

Assistant Professor of Environmental Engineering - Candidate must hold a Ph.D. Degree in Environmental Engineering with a strong emphasis in chemistry, particularly analytical instrumentation. Responsibilities include graduate teaching and research in environmental chemistry, ability to teach undergraduate and graduate courses in environmental processes and supervision of laboratory operations. Supplementary background in systems engineering is desirable but not required. Write to: Dr. John F. Kennedy, Chairman, Division of Energy Engineering, University of Iowa, Iowa City, Iowa 52242

The University of Iowa is an Equal Opportunity/Affirmative Action Employer

The environmental programs in the Department of Engineering Technology at Western Kentucky University have a faculty opening for someone qualified to teach undergraduate courses in solid waste, occupational and radiological health, as well as courses in the water and waste water area.

The initial appointment will be on a contractual basis. Application should be made to: Boyce Tate, Chairman, Department of Engineering Technology, Western Kentucky University, Bowling Green, Ky. 42101

Western Kentucky University is an affirmative action-equal opportunity employer.

Washington State University

Assistant Professor Position available for a general environmental health program beginning September 1975 with an academic appointment. In addition to teaching and research, the responsibilities include coordination of the undergraduate program. Doctorate preferred, but applicants must have at least a master's degree in environmental health or equivalent. Three to 5 years' field experience required in applicable areas of environmental health. Washington State University is an equal opportunity/affirmative action employer. Send resume, transcripts, and five letters of reference to Dr. L. P. Mallavia, Chairman, Search Committee, Department of Bacteriology and Public Health, W.S.U., Pullman, Washington 99163. Application review will begin May 9, 1975.

University of California - Berkeley

Civil/Sanitary Engineering Faculty, University of California, Berkeley is receiving applications for senior level professorship in the graduate Sanitary Engineering Program. Mature, experienced, nationally recognized civil engineering with the masters, and preferably the doctorate in sanitary engineering is sought. Emphasis will be placed upon teaching, research, and practical experience in the design area. The applicant should have demonstrated interest or experience in the systems area, e.g., systems analysis/operations research, and desire to pursue advanced work in this area related to practical problems. Duties will include teaching, course development, and research, all primarily at the graduate level, and expansion of professional knowledge by working involvement with industry.

The position is now open with the starting date being as soon as possible within the 1975-76 academic year. Appointment level will be determined by experience and qualification of applicant, but preference given to Full Professor or Senior Associate Professor level. The University is an affirmative action employer and encourages applications from women and members of minority groups. Respond to Chairman, Division of Hydraulic and Sanitary Engineering, Department of Civil Engineering, University of California, Berkeley, California 94720.

University of Missouri - Columbia

Faculty position is open in the Department of Civil Engineering of the University of Missouri - Columbia. Candidate must have Ph.D. in Sanitary/Environmental Engineering, specializing in physical-chemical processes. Position involves teaching at undergraduate and graduate level as well as directing graduate student research. Rank and salary open. Send resume to: John T. O'Connor, Chairman, Department of Civil Engineering, University of Missouri - Columbia, Columbia, Missouri 65201. University of Missouri is an equal opportunity - Affirmative action employer.

**EPA PLAYS SAFE WITH
PL 92-500 AMENDMENTS**

The Environmental Protection Agency after deleting the more controversial proposals for amendments to PL 92-500 from its list, is planning to send to the 94th Congress amendments on toxic standards, *ad valorem* taxes, extension of expiring authorities, and allowing state water quality reports to be submitted biennially instead of annually. The agency will also support the bill proposed by Rep. James C. Cleveland (R-N.H.) giving states the authority for certifying compliance with federal requirements for construction grants.

Excluded from this list are proposals on reducing the 75 percent federal share, limiting eligible candidates for grant support, and limiting federal support for treatment works (Design capacity would be limited to 10 years and interceptors to 20 years.)

Possible reasons for EPA's omission of these amendments are several. First, EPA was unable to compile a consensus from its consultations with Congressional staff, state officials, and interested outside organizations; without a consensus, EPA felt that there was little hope of getting the controversial amendments through Congress. Second, Congress wants to postpone dealing with any controversial subject until the report of the National Water Quality Commission is completed in October. Third, EPA is withholding any amendment on financing for the present time as a result of the Office of Management and Budget's rejection of EPA's proposal that \$5 billion per year for the next 5 years be allocated for the construction grant program. (Only \$4 billion would be available for next year from the impounded funds.)

However, on January 15, in Kansas City, James L. Agee, assistant administrator for water and hazardous materials at EPA, in an address to the state administrators, commented that OMB had requested that EPA review certain issues for possible inclusion in an additional series of amendments that may be proposed toward the end of 1975; the issues are eligibilities, federal sharing, and design limits.

Highlights
February, 1975

CONTINUING EDUCATION

University of Massachusetts

**Applications of Stormwater Management Models
July 28 - August 1, 1975**

This Short Course is a follow-up to the Short Course "Applications of Stormwater Management Models", sponsored by the U. S. EPA and held August 19-23, 1974 at the University of Massachusetts. The objective is to present concepts and modeling techniques used for prediction, control and management of urban stormwater problems. Emphasis will be placed on the EPA Stormwater Management Model; workshops are designed to acquaint attendees with the preparation of data input for the computer model. Participants are expected to be from consulting firms and government agencies specializing in design and management of water quality.

Fee - \$125 (includes Short Course Notebook, daily luncheons and banquet)

For Registration Information:

Course #CS 75-99
Conference Office 920 Campus Center
University of Massachusetts/Amherst 01002
Telephone: 413-545-2591

For Short Course Details:

Francis A. DiGiano
Department of Civil Engineering
University of Massachusetts/Amherst 01002
Telephone: 413-545-0685
or
Richard Field
U.S. Environmental Protection Agency
Advanced Waste Treatment Research Lab
Edison, New Jersey 08817
Telephone: 201-548-3347

Sponsored by
The U. S. Environmental Protection Agency -
Storm and Combined Sewer Technology Program
Advanced Waste Treatment Laboratory, Cincinnati, Ohio
in cooperation with the
Department of Civil Engineering
University of Massachusetts/Amherst

Cornell University

**Industrial Wastewater Control Course
June 23-27, 1975**

A short course on the engineering control of industrial wastewaters will be given at the Cornell University College of Engineering, June 23-27, 1975.

Designed for engineers and others responsible for industrial wastewater control, the course is intended both to make them aware of the severe limitations that Federal and State regulatory agencies are imposing on all wastewaters discharged to natural waters and to sewers, and to improve their ability to produce effluents that meet the new standards.

Topics will include water pollution control legislation, regulations and standards; industrial wastewater disposal alternatives; effluent reclamation; biological and physical-chemical treatment process theory and application; solids disposal; synthesis and cost estimation of wastewater treatment systems.

For further information, write to Prof. R. H. Lance, Associate Dean, College of Engineering, Carpenter Hall, Cornell University, Ithaca, New York 14853.

Clemson University

**Industrial and Municipal Wastewater Treatment:
Process Design and Operation
May 19-23, 1975**

Department of Environmental Systems Engineering, Clemson University, Clemson, SC (Prof. T. M. Keinath, Department of Environmental Systems Engineering, Clemson University, Clemson, SC 29631).



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