



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
THE ADMINISTRATOR

April 29, 1991

EPA-SAB-RSAC-91-006

Honorable William K. Reilly
Administrator
U. S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Mr. Reilly:

The Science Advisory Board's 1990 Scientific and Technological Achievement Awards (STAA) Subcommittee has completed its review of the 120 papers nominated by the Agency for this year's awards program. As you are aware, the STAA program is sponsored by the Office of Research and Development. Our recommendations for awards and further improvements in the STAA program are discussed in the attached report.

The Subcommittee believes that the STAA program contributes very positively towards strengthening the level of Agency expertise by recognizing researchers for their special achievements. Therefore, we urge that the program receive support from the highest levels of Agency management and that the winners receive broad recognition throughout the Agency. We are pleased to have participated in this process and believe it is appropriate for the Board to continue this annual review function. The Subcommittee recommends that the Agency publicly congratulate these award winners by a special publication, such as an EPA Journal feature article, which should be distributed to all EPA employees. We also suggest that news releases be prepared describing each award for distribution to the primary scientific/technical societies of each awardee and to the peer reviewed journals that published the work.

The Subcommittee believes that papers selected to receive awards report the results of research fully equivalent to some of the best in most of the fields nominated. However, the decrease in the number of Level 1 awards is striking and warrants your attention regarding possible causes. Recognizing the current Agency needs and focus in the areas of waste minimization, multimedia transport and pollution control, wetlands protection and ecological risk assessment, we look forward to the development of complementary research programs and Agency expertise that will lead to the nomination of superior research papers in these areas.


The Subcommittee identified four papers of notable quality characterized by careful, thorough, extensive work which did not reach the award level but definitely deserve honorable mention. The Subcommittee hopes that these authors will be recognized appropriately for their high quality work.

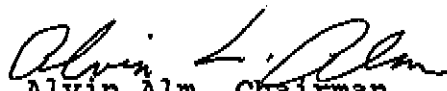
The Subcommittee recommends that Agency managers be encouraged to nominate peer reviewed papers from all programs and areas of scientific research. We also recommend that the Office of Research and Development revise its guidance to nominators to further and more explicitly clarify criteria for nomination. In addition, greater care should be exercised to ensure that the nomination packages are complete; including proper endorsements and justifications where EPA employees are not the senior authors. We also recommend that all of the peer reviewed articles by the EPA authors that are relevant to the achievement be combined and included in the nomination package.

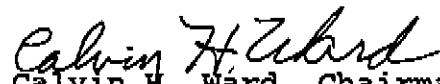
To ensure the credibility of the review process and broaden the base of expertise used in the review, the Subcommittee obtained additional reviews from experts by mail. We did not attempt to ensure equality of numbers or proportion of awards across the categories or laboratories. Rather, good science and technology were our sole criteria for recommending awards.

The SAB would appreciate being informed of the final disposition of awards. We look forward to serving the Agency again in this important activity.

Sincerely,


Raymond C. Loehr, Chairman
Executive Committee
Science Advisory Board


Alvin Alm, Chairman
Research Strategies
Advisory Committee
Science Advisory Board


Calvin H. Ward, Chairman
1990 Scientific and
Technological Achievement
Awards Subcommittee



EPA

**U.S. Environmental
Protection Agency**

**Washington, DC
EPA-SAB-RSAC-91-006**

**Report of the Scientific
and Technological Achievement
Awards Subcommittee of the
Research Strategies
Advisory Committee**

**Recommendations on the 1990
EPA STAA Nominations**

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ABSTRACT

The report represents the conclusions and recommendations of the U.S. Environmental Protection Agency's Science Advisory Board regarding the 1990 EPA Scientific and Technological Achievement Awards (STAA) program. The Scientific and Technological Achievement Awards Subcommittee of the Science Advisory Board reviewed and evaluated the 1990 nominations for the STAA program. The Subcommittee evaluated 120 papers that were nominated by EPA managers. The Subcommittee recommended twenty-four (20%) papers for awards and also recommended to the Office of Research and Development that four additional papers be recognized with honorable mention. The Subcommittee made no attempt to ensure equality of numbers or proportion of awards across the categories or Agency research components. However, the Subcommittee recommended awards for papers from eleven EPA research laboratories. The Subcommittee recommended that the Agency clarify its instructions to nominators. The Subcommittee also encouraged the Agency to support the program at the highest levels of management.

KEY WORDS: Awards, Scientific Achievements, Contest

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE

This report has been written as a part of the activities of the Science Advisory Board, a public advisory group providing extramural scientific information and advice to the Administrator and other officials of the Environmental Protection Agency. The Board is structured to provide a balanced expert assessment of scientific matters related to problems facing the Agency. This report has not been reviewed for approval by the Agency; and, hence, the contents of this report do not necessarily represent the views and policies of the Environmental Protection Agency or other agencies in Federal government. Mention of trade names or commercial products does not constitute a recommendation for use.

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1.0 EXECUTIVE SUMMARY

The Scientific and Technological Achievement Awards (STAA) Subcommittee of the Science Advisory Board reviewed and evaluated the 1990 nominations for the STAA program. The Subcommittee evaluated 120 papers that were nominated by EPA research laboratory directors and program division directors. The Subcommittee met in Washington, D.C. on March 11-12, 1991 to determine which papers would be recommended for awards.

The Subcommittee recommended twenty-four papers for awards and recommended that four additional papers be recognized with honorable mention. The Subcommittee made no attempt to ensure equality of numbers or proportion of awards across the categories or Agency research components. However, the Subcommittee recommended awards for papers from eleven EPA research laboratories.

The Subcommittee recommended that the Agency clarify its instructions to nominators. The Subcommittee also encouraged the Agency to support the program at the highest levels of management.

2.0 INTRODUCTION

2.1 Request and Charge for Science Advisory Board Review

At the request of the Office of Research and Development (ORD), the Science Advisory Board agreed to convene a committee to review and evaluate scientific papers published by EPA employees that were nominated for the 1990 EPA Scientific and Technological Achievement Awards program. The SAB authorized the formation of a Subcommittee to recommend papers for awards. In December 1990 the Office of Research Program Management (ORPM) in ORD provided the SAB with copies of 120 nominations, a Statement of the Principles and Processes for the awards program, and rules and advice to nominators. ORPM grouped the papers into categories and reviewed the nominations for eligibility and the Subcommittee was asked to recommend papers for awards bases on the rules developed by ORD.

The SAB advises the Assistant Administrator for Research and Development of its evaluation and judgement of the nominations, and recommends the winning nominees for each of three Levels of Award. Level 1 awards are for nominees who have accomplished an exceptionally high-quality research or technological effort. These awards recognize the initiation or general revision of scientific/technological principles or procedures, or highly significant improvements in the value of a device, program or service to the public. Level 2 awards are to nominees who have

accomplished a notably excellent research or technological effort. This award is for research that has timely consequences and contributes to an important achievement within its discipline. Level 3 awards are to nominees who have accomplished an unusually good research or technological effort. Research for this award must relate to a mission or organizational component of the EPA, or significantly affect an area of science/technology.

2.2 Subcommittee Review Procedures

Copies of all papers and the award program procedures were sent to Subcommittee members for preliminary review to be certain that the members had sufficient expertise to review all nominated papers. As part of the evaluation, Subcommittee members were also asked to rank their own expertise in the field of science and technology addressed by each paper. Prior to making final recommendations for awards, each paper and nomination was reviewed for compliance with the STAA program rules. To ensure the credibility of the review process and broaden the base of expertise used in the review, the Subcommittee obtained additional reviews from experts by mail and would like to recognize the assistance of the following reviewers:

Dr. Anders W. Andren	University of Wisconsin
Dr. Lenore S. Clesceri	Rensselaer Polytechnic Institute.
Dr. Rolf Hartung	University of Michigan
Dr. Gerald Keeler	University of Michigan
Dr. Richard Sextro	Lawrence Berkeley Laboratory
Dr. Charles O. Velzy	Velzy and Associates

The Subcommittee met on March 11 and 12, 1991, in Washington, D.C. in a closed meeting to develop recommendations for awards. All committee members were present except Dr. Michael Kavanaugh, who provided extensive written evaluations prior to the meeting.

3.0 EVALUATION OF THE 1990 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS NOMINATIONS

3.1 Award Recommendations

The papers recommended for awards were widely distributed among eleven EPA research laboratories. Awards were recommended for each category of science and technology. Review papers from all other categories were compared and several were recommended for awards. A summary of the award recommendations is presented in Table 1.

Table I Summary of Award Recommendations of the 1990 Scientific and Technological Achievement Awards Subcommittee.

Recommendations for Awards	Number Nominated	Level 3	Level 2	Level 1	Total Awards	(Percent)
Control Technology	23	4	0	0	4	(17%)
Ecology	13	2	0	0	2	(15%)
Monitoring and Measurement	28	4	1	0	5	(23%)
Transport and Fate	13	1	2	0	3	(23%)
Health Effects	34	5	1	1	7	(25%)
Reviews	12	3	0	0	3	(25%)
	120	19	4	1	24	(20%)

Although awards were recommended in each category, the Subcommittee noted that there was a lack of scientific research papers nominated for wetlands protection, groundwater restoration, waste minimization, and ecological risk assessment - areas in which the Agency is facing many regulatory questions regarding ecology and control technologies. The Subcommittee believes that the Agency should emphasize the publication of its basic regulatory research in peer reviewed journals because it subjects the foundation for the Agency's regulatory programs to the most rigorous level of technical evaluation. In addition, this emphasis on the quality of technical achievements enhances the stature of the Agency's research and its scientific and technical staff.

The Subcommittee recommendations for awards are listed below for six areas: Control Systems and Technology, Ecology, Health Effects, Monitoring and Measurements, Transport and Fate, and Review Papers.

CONTROL SYSTEMS AND TECHNOLOGY

Risk Reduction Engineering Laboratory
Cincinnati, Ohio
Timothy Oppelt, Director

LEVEL 3
AWARD "Formation and Control of Non-Trihalomethane Disinfection By-Products", Journal of the American Water Works Association, Vol. 81, pp. 54-60, 1989.
EPA Authors: Alan A. Stevens, Leown A. Moore, and Richard J. Miltner

LEVEL 3
AWARD "Absorption Capacity of GAC for Synthetic Organics", Journal of the American Water Works Association, Vol. 87, pp. 72-75, 1990.
EPA Authors: Thomas F. Speth and Richard J. Miltner

AND

"Effect of Preloading on the Scale-Up of GAC Microcolumns", Journal of the American Water Works Association, Vol. 81, pp. 141-148, 1989.
EPA Authors: Thomas F. Speth and Richard J. Miltner

Note: The Subcommittee combined two nominated papers for this award.

Air and Energy Engineering Research Laboratory
Research Triangle Park, North Carolina
Frank T. Princiotta, Director

LEVEL 3
AWARD "Calcium Oxide Sintering in Atmospheres Containing Water and Carbon Dioxide", Industrial and Engineering Chemistry Research, Vol. 28, pp. 493-500, 1989.
EPA Author: Robert H. Borgwardt

AND

"Sintering of Nascent Calcium Oxide", Chemical Engineering Science, Vol. 44, pp. 53-60, 1989.
EPA Author: Robert H. Borgwardt

ECOLOGY

Environmental Research Laboratory - Corvallis
Corvallis, Oregon
Thomas A. Murphy, Director

- LEVEL 3
AWARD "A Root-Microcosm for Growing Ectomycorrhizal Hyphae
Apart from Host Roots While Maintaining Symbiotic
Integrity", Plant and Soil, Vol. 109, pp. 281-284,
1988.
EPA Author: Paul T. Tygiewicz
Non-EPA Authors: Steven L. Miller and Daniel M. Durall

Environmental Research Laboratory - Duluth
Duluth, Minnesota
Gilman D. Veith, Director

- LEVEL 3
AWARD "Littoral Enclosures for Aquatic Field Testing of
Pesticides: Effects of Chlorpyrifos on a Natural
System", Entomological Society of America, Misc. Publ.
No. 75, 1989.
EPA Authors: Richard Siefert, John C. Brazner, and
Michael L. Knuth
Non-EPA Author: Steven J. Lozano

AND

- "A Littoral Enclosure for Replicated Field
Experiments", Environmental Toxicology and Chemistry,
Vol. 8, pp. 1209-1216, 1989.
EPA Author: John C. Brazner
Non-EPA Authors: Larry J. Heinis and Douglas A. Jensen

MONITORING AND MEASUREMENT METHODS

Environmental Research Laboratory - Corvallis
Corvallis, Oregon
Thomas A. Murphy, Director

- LEVEL 2
AWARD "An Approach to Environmental Risk Assessment Using
Avian Toxicity Tests", Archives of Environmental
Contamination and Toxicology, Vol. 16, pp. 263-271,
1988.
EPA Authors: Mostafa A. Shirazi and Richard S. Bennett
Non-EPA Author: LeVaughn Lowrie

**Risk Reduction Engineering Laboratory
Cincinnati, Ohio
Timothy Oppelt, Director**

LEVEL 3
AWARD "Detection of Fecal Coliforms in Water by Using [14C] - Mannitol", Applied and Environmental Microbiology, Vol. 55, pp. 907-911, 1989.
EPA Authors: Donald J. Reasoner and Edwin E. Geldreich

**Environmental Research Laboratory - Narragansett
Narragansett, Rhodes Island
Norbert A. Jaworski, Director**

LEVEL 3
AWARD "Power Cost Efficiency of Eight Macrobenthic Sampling Schemes in Puget Sound, Washington, USA", Canadian Journal of Fisheries and Aquatic Sciences, Vol. 46), pp. 2165, 1989.
EPA Authors: Steven P. Ferraro, Faith A. Cole, Waldemar A. De Ben, and Richard C. Swartz

**Environmental Monitoring Systems Laboratory - Las Vegas
Las Vegas, Nevada
Robert N. Snelling, Director**

LEVEL 3
AWARD "Analysis of Organophosphorus Pesticide Samples by High-Performance Liquid Chromatography/Mass Spectrometry and High-Performance Liquid Chromatography/Mass Spectrometry/Mass Spectroscopy", Environmental Science and Technology, Vol. 22, pp. 1430-1434, 1988.
EPA Authors: L. Donnelly Betowski and Tammy L. Jones

**Exposure Assessment Laboratory
Research Triangle Park, North Carolina
Gary J. Foley, Director**

LEVEL 3
AWARD "Design and Performance of a High-Volume Compound Annular Denuder", Atmospheric Environment, Vol. 23, pp. 2205-2211, 1989.
EPA Author: Robert G. Lewis
Non-EPA Authors: Robert W. Coutant, Patrick J. Callahan, and Michael R. Kuhlman

TRANSPORT AND FATE

Robert S. Kerr
Environmental Research Laboratory - Ada
Ada, Oklahoma
Clinton W. Hall, Director

- LEVEL 2 AWARD "Influence of Macromolecules on Chemical Transport",
Environmental Science and Technology, Vol. 23, pp.
1278-1286, 1989.
EPA Authors: Carl G. Enfield
Non-EPA Authors: Goran Bengtsson and Roland Lindqvist

Atmospheric Research and Exposure Assessment Laboratory
Research Triangle Park, North Carolina
Gary J. Foley, Director

- LEVEL 2 AWARD "A Field Strategy for Sorting Volatile Organics into
Source-Related Groups", Environmental Science and
Technology, Vol. 23, pp. 1373-1379, 1989.
EPA Authors: William A. McClenny and Joachim D. Pleil
Non-EPA Author: Karen D. Oliver

Environmental Research Laboratory - Athens
Athens, Georgia
Rosemarie Russo, Director

- LEVEL 3 AWARD "Characterization of the Reducing Properties of
Anaerobic Sediment Slurries Using Redox Indicators",
Environmental Toxicology and Chemistry, Vol. 9, pp.
289-295, 1990.
EPA Author: N. Lee Wolfe
Non-EPA Author: Paul G. Tratnyek

HEALTH EFFECTS

Health Effects Research Laboratory
Research Triangle Park, North Carolina
Lawrence W. Reiter, Director

- LEVEL 1 AWARD "Ozone-Induced Inflammation in the Lower Airways of
Human Subjects". American Review of Respiratory
Disease, Vol. 139, pp. 407-415, 1989.
EPA Authors: Hillel S. Koren, Robert B. Devlin,
Delores E. Graham, Donald H. Horstman,
and Dennis E. House

Non-EPA Authors: Richard H. Mann, Maria P. McGee,
Walter J. Kozumbo, Philip Bromberg,
Susanne Becker, and William McDonnell

LEVEL 2
AWARD "Interspecies Differences in the Stability of Mammalian Sperm Nuclei Assessed In Vivo by Sperm Microinjection and In Vitro by Flow Cytometry", Biology of Reproduction, Vol. 39, pp. 157-167, 1988.
EPA Authors: Sally Perreault and Randy Barbee
Non-EPA Authors: Kenneth H. Elstein and Robert M. Zucker

LEVEL 3
AWARD "A Dose-Response Analysis of Methoxychlor-Induced Alterations of Reproductive Development and Function in the Rat", Fundamental and Applied Toxicology, Vol. 12, pp. 92-108, 1989.
EPA Authors: L. Earl Gray Jr., Joseph Ostby, Janet Ferrell, Georgia Rehnberg, Ralph Linder, Ralph Cooper, and John Laskey
Non-EPA Authors: Jerome Goldman and Valerie Slott

LEVEL 3
"Antifertility Effect of Methoxychlor in Female Rats: Does-and Time-Dependent Blockade of Pregnancy", Toxicology and Applied Pharmacology, Vol. 97, pp. 454-462, 1989.
EPA Authors: A. M. Cummings and L. E. Gray Jr.

LEVEL 3
AWARD "Unattenuated Structural and Biochemical Alterations in the Rat Lung during Functional Adaptation to Ozone", American Review of Respiratory Disease, Vol. 140, pp. 493-501, 1989.
EPA Authors: Daniel L. Costa and Gary E. Hatch
Non-EPA Authors: Jeffrey S. Tepper, Jim R. Lehmann, and Mary F. Webber

LEVEL 3
AWARD "A Multi-factor Ranking Scheme for Comparing the Carcinogenic Activity of Chemicals", Mutation Research, Vol. 239, pp. 83-115, 1990.
EPA Author: Stephen Nesnow

LEVEL 3
AWARD "Influence of Electromagnetic Fields on the Effects of Calcium ions from Brain Tissue in Vitro: A three-Model Analysis Consistent with the Frequency Response up to 510 HZ", Bioelectromagnetics, Vol 9, pp. 215-227, 1988.
EPA Authors: C. F. Blackman, S. G. Benance, D. E. House, and M. M. Pollock
Non-EPA Author: D. J. Elliott

AND

"Multiple Power-Density Windows and Their Possible Origin", Bioelectromagnetics, Vol.10, pp. 115-128, 1989
EPA Authors: C. F. Blackman, L. S. Kinney, D. E. House, and W. T. Joines

AND

"Importance of Alignment Between Local DC Magnetic Field and an Oscillating Magnetic Field in Responses of Brain Tissue In Vitro and In Vivo", Bioelectromagnetics Vol. 11, pp. 159-167, 1990.
EPA Authors: C. F. Blackman, S. G. Benane, D. E. House
Non-EPA Author: D. J. Elliott

AND

"Effect of Ambient Levels of Power-Line-Frequency Electric Fields on a Developing Vertebrate", Bioelectromagnetics, Vol. 9, pp. 129-140, 1988.
EPA Authors: C. F. Blackman, S. G. Benane, D. E. House, William T. Joines, and Ronald J. Spiegel

AND

"Effects of ELF Fields on Calcium-Ion Efflux from Brain Tissue in Vitro", Radiation Research, Vol. 92, pp. 510-520, 1982.
EPA Authors: C. F. Blackman, L. S. Kinney, W. T. Joines, D. E. House, and S. G. Benane

AND

"Effects of ELF (1-120 Hz) and Modulated (50 Hz) RF Fields on the Efflux of Calcium Ions From Brain Tissue In Vitro", Bioelectromagnetics, Vol. 6, pp. 1-11, 1985.
EPA Authors: C. F. Blackman, W. T. Joines, D. E. House, and S. G. Benane

AND

"A Role for the Magnetic Field in the Radiation-Induced Efflux of Calcium Ions From Brain Tissue In Vitro", Bioelectromagnetics, Vol. 6, pp. 327-337, 1985.
EPA Authors: C. F. Blackman, W. T. Joines, D. E. House, S. G. Benane, and J. R. Rabinowitz

REVIEWS

Risk Reduction Engineering Laboratory
Cincinnati, Ohio
Timothy Oppelt, Director

LEVEL 3 "Drinking Water Microbiology-New Directions Toward
AWARD Water Quality Enhancement", International Journal of Food Microbiology, Vol. 9, pp. 295-312, 1989.
EPA Author: Edwin E. Geldrich

Atmospheric Research and Exposure Assessment
Research Triangle Park, North Carolina
Gary J. Foley, Director

LEVEL 3 "Recent Advances in the Matrix Isolation Infrared
AWARD Spectrometry of Organic Compounds", Applied Spectroscopy Reviews, Vol. 25, pp. 1-61, 1989.
EPA Author: Nancy K. Wilson
Non-EPA Author: Jeffrey W. Childers

Health Effects Research Laboratory
Research Triangle Park, North Carolina
Lawrence W. Reiter, Director

LEVEL 3 "Workshop on the Qualitative and Quantitative
AWARD Comparability of Human and Animal Developmental Neurotoxicity: Summary and Implications", Neurotoxicology and Teratology, Vol. 12, pp. 285-292, 1990.
EPA Authors: Elaine Z. Francis, Carole A. Kimmel, and D. Cooper Rees

3.2 Honorable Mention

The Subcommittee also identified four papers of notable quality characterized by careful, thorough, extensive work which did not reach the award level, but definitely deserve honorable mention. They are:

1. A paper entitled: "Comparison of Finite-Difference Time-Domain SAR Calculations with Measurements in a Heterogeneous Model of Man", IEE Transactions on Biomedical Engineering, Vol. 36, 1989.

EPA Author: Ronald J. Speigel
Non-EPA Author: M. B. A. Fatmi

2. A paper entitled: "Stable Carbon Isotope Analysis of Nucleic Acids to Trace Sources of Dissolved Substrates used by Estuarine Bacteria", Applied and Environmental Microbiology, Vol. 56(7), pp. 2012-2020, 1990.

EPA Author: Richard B. Coffin
Non-EPA Authors: L. Cifuentes, R. Devereux, D. Velinski, and
W. Price

3. A paper entitled: "Marine Complex Effluent Toxicology Program: Test Sensitivity, Repeatability, and Relevance to Receiving Water Toxicity" Environmental Toxicology and Chemistry, Vol. 8, 739-746, 1989.

EPA Authors: Steven C. Schimmel, George E. Morrison, and
Margarete A. Heber

4. A paper entitled: "Minimization of Interferences in Inductively Coupled Plasma Mass Spectrometry Using On-Line Preconcentration", Analytical Chemistry, Vol. 62, pp. 857-864, 1990.

EPA Authors: Edward M. Heithmar and Thomas, A. Hinnens
Non-EPA Authors: John T. Rowan and John M. Riviello

3.3 Other Findings of the Subcommittee

The Subcommittee believes that the STAA program contributes very positively towards strengthening the level of Agency expertise by recognizing researchers for their special achievements. Therefore, we urge that the STAA program receive support from the highest levels of agency management and that the winners receive broad recognition throughout the Agency. We are pleased to have participated in this process and believe that it is appropriate for the Board to continue this annual review function. The Subcommittee recommends that the Agency acknowledge these award winners through a special publication, such as an EPA Journal feature article, which should be distributed to all EPA employees. We also suggest that news releases be prepared describing each award for distribution to the primary scientific/technical societies of each awardee and to the peer reviewed journals that published the work.

The Subcommittee is pleased to see an increase in the number of nominations for the STAA program, however, fewer papers have been recommended for higher awards (Level 1 and 2) this year than last year. There was a significant increase in the number of nominations in the Monitoring and Measurement Methods, and Control Systems Technology categories. While the Subcommittee believes that EPA has strengthened its expertise in some cases, there is still a limited base for outstanding research. Quality research requires a stable and long-term commitment of resources which has been difficult for EPA to sustain.

The Subcommittee believes that papers selected to receive awards report the results of research fully equivalent to some of the best in most of the fields nominated. However, the decrease in the number of level 1 awards is striking and warrants Agency attention regarding possible causes. Recognizing the current Agency needs and focus in the areas of waste minimization, multimedia transport and pollution control, wetlands protection and ecological risk assessment, we look forward to the development of complementary research programs and Agency expertise that will lead to the nomination of superior research papers in these areas.

During the review, the Subcommittee noted several instances in which the nominations did not conform to the rules of the STAA program. In fact several papers of high merit were excluded because the nominations did not conform to the rules. For instance, some nominations lacked the required explanation when the first author was not an EPA employee. In one case, a meritorious paper was based on work performed by a current employee during a period that he was a contractor. Several other papers were improperly nominated by an author or first line supervisor. ORD should give special notice to nominators that they must justify nominations for which EPA employees are not the

first authors. In several papers of high merit, we felt that the contribution of the EPA author was too small to justify an award recommendation. We recommend that the nominators realistically appraise the contribution made by the EPA authors. We also recommend that all of the peer reviewed articles by the EPA authors that are relevant to the achievement be combined and included in one nomination package.