



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

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

February 15, 2006

EPA-SAB-06-004

The Honorable Stephen L. Johnson
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Subject: SAB Report of FY2005 Recommended Scientific and Technological
Achievement Awards (STAA)

Dear Administrator Johnson:

We are pleased to recommend papers published in the peer-reviewed literature for the 2005 Scientific and Technological Achievement Awards. Of 110 nominations, the Panel found 39 worthy of awards and another 31 deserving honorable mention. Of the papers recommended for awards, three were recommended for the highest award -- Level I, six for Level II awards, and thirty for Level III awards.

The SAB recommends the Agency evaluate the current administrative procedure for the STAA program to: a) encourage increased numbers of nominated papers from EPA regional and program offices ; and b) publicly acknowledge the contribution of non-EPA scientists who co-author the nominated papers.

Thank you for providing us with the opportunity to assist the Agency with this important program over the last 25 years.

Sincerely,

/signed/

Dr. Granger Morgan, Chair
EPA Science Advisory Board

/signed/

Dr. Deborah Cory-Slechta, Chair
Scientific and Technological Achievement
Awards Panel (FY2003-2005)
EPA Science Advisory Board

NOTICE

This report has been written as part of the activities of the EPA 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 balanced, expert assessment of scientific matters related to the 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, nor of other agencies in the Executive Branch of the Federal government, nor does mention of trade names or commercial products constitute a recommendation for use. Reports of the EPA Science Advisory Board are posted on the EPA website at <http://www.epa.gov/sab>.

ABSTRACT

This report represents the conclusions and recommendations of the U.S. Environmental Protection Agency's Science Advisory Board regarding the FY2005 EPA Scientific and Technological Achievement Awards (STAA) Program. The STAA Program is an Agency-wide competition to promote and recognize scientific and technological achievements by EPA employees, fostering a greater exposure of EPA research to the public. The Program was initiated in 1980 and is managed by the Office of Research and Development (ORD).

The Agency submitted 110 nominations in eleven categories for review this year. The categories are: Control Systems & Technology (CS), Ecology, Ecosystem Risk Assessment & Protection (ER), Environmental Statistics (ES), Health Effects Research and Human Health Risk Assessment (HE), Integrated Risk Assessment (IR), Monitoring & Measurement Methods (MM), Review Articles (RA), Risk Management and Ecosystem Restoration (RM), Social Sciences (SS), Transport and Fate (TF), and Environmental Futures. The Panel recommended 39 nominations (35 percent of the nominations) for awards, and also identified an additional 31 nominations worthy of Honorable Mention. The authors of papers recommended for awards this year represent the Offices of Air and Radiation; Prevention, Pesticides and Toxic Substances; Research and Development; Solid Waste and Emergency Response; Water; and Regions 1, 7 and 9.

The Panel encouraged the Agency to continue support for the STAA program as a mechanism for recognizing and promoting high quality research in support of the Agency's mission. The Panel also strongly encouraged that EPA broadly acknowledge and disseminate the results of the award competition.

KEY WORDS: Awards, Technology, Scientific Achievements, Peer-Review

**U.S. Environmental Protection Agency
Science Advisory Board
Scientific and Technological Achievement Awards Review Panel
FY2003-2005**

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1. EXECUTIVE SUMMARY

EPA's Scientific and Technological Achievement Awards was established in 1980 to recognize Agency scientists and engineers who published their technical work in the peer-reviewed literature. The STAA program is administered and managed by EPA's Office of Research and Development (ORD). Each year the EPA Science Advisory Board has been asked to review EPA's nominated scientific papers and make recommendations to the Administrator for awards.

At a closed meeting July 19-21, 2005, the SAB Scientific and Technological Achievement Awards (STAA) Panel reviewed and evaluated the 110 nominations for the FY2004. The Panel recommended 39 for awards and an additional 31 nominations for honorable mention. These recommendations appear in Appendix A.

In 2003 and 2004, the Agency honored those EPA authors receiving the highest level of awards at the annual EPA Science Forum. The SAB supports the Agency's public recognition of the STAA program to encourage employees to participate, add luster to the awards, and make the general public more aware of the quality and depth of EPA science. Publication of Agency science in the peer reviewed literature improves the credibility of Agency decisions on important scientific issues of specific importance to EPA.

The SAB identifies two issues that warrant a careful review of the current administrative procedure to ensure the scientific integrity and equity of the award process. Many nominated papers are also co-authored by non-EPA scientists. The SAB recognizes that the Agency cannot provide monetary awards to non-EPA employees. However, the SAB believes that any non-monetary recognition would strengthen partnerships between EPA and external scientific organizations. In addition, the Agency needs to have full documentation of the relative contribution of individual authors of each nominated paper.

2. PROCEDURE

In 2003, the EPA Science Advisory Board convened a Panel to review and evaluate scientific and technological papers published in peer-reviewed journals by EPA authors and nominated for the FY2003-2005 Scientific and Technological Achievement Awards (STAA) program. The panel was formed in accordance with the principles set out in the 2002 commentary of the Science Advisory Board, *Panel Formation Process: Immediate Steps to Improve Policies and Procedures* (EPA-SAB-EC-COM-02-003).

In 2005, the Office of Research and Development (ORD) provided 111 nominations, one of which was subsequently withdrawn (because it had won an award the previous year and had been forwarded in error). ORD grouped the papers into eleven science and technology categories and screened the papers for conformance with the nomination guidelines. The Panel used the *2005 STAA Nomination Procedures and Guidelines*, which describes the award levels, eligibility criteria (including the minimum EPA contribution and employer status of the principal author), and the criteria the SAB should use to evaluate the nominations. ORD requested the SAB consider whether the nominations qualified for each level of award. As defined by the Agency, these are:

- a) Level I awards - are for nominees who have accomplished an exceptionally high-quality research or technological effort. The nomination should recognize the creation or general revision of scientific or technological principle or procedure, or a highly significant improvement in the value of a device, activity, program, or service to the public. It must be at least of national significance or have high impact on a broad area of science/technology. The nomination must be of far reaching consequences and recognizable as a major scientific/technological achievement within its discipline or field of study.
- b) Level II awards - are for nominees who have accomplished a notably excellent research or technological effort that has qualities and values similar to, but to a lesser degree, than those described under Level I. It must have timely consequences and contribute as an important scientific/technological achievement within its discipline or field of study.
- c) Level III awards - are for nominees who have accomplished an unusually notable research or technological effort. The nomination can be for a substantial revision or modification of a scientific/technological principle or procedure, or an important improvement to the value of a device, activity, program, or service to the public. It must relate to a mission or organizational component of the EPA, or significantly affect a relevant area of science/technology.
- d) Honorable Mention - The Panel has also added a fourth non-cash level award for nominations which are noteworthy but which do not warrant a Level I, II or III award. Honorable Mention applies to nominations that: (1) may not quite reach the level described for a Level III award; (2) show a promising area of research that the Panel wants to encourage; or (3) show an area of research that the Panels feels is too preliminary to warrant an award recommendation at this time.

Copies of all nominations, the award program guidelines, and nomination evaluation criteria were provided to the Panel in advance of the review meeting.

The Panel met on July 19-21, 2005, in Washington, DC. This meeting was closed to the public to protect the personal privacy of the authors. All panelists were present at the meeting. Each panelist was asked to review a set of papers suited to his or her expertise. Before the meeting, the panelists provided their individual initial ratings of the papers which were subsequently organized onto a summary table and distributed to the Panel. At least two reviewers considered each nomination.

The Panel discussed the individual rankings and nominations to develop a preliminary consensus rating for each nomination. The Panel first discussed the rankings on a nomination-by-nomination basis. In some cases, additional readers reviewed the papers to provide further insights in their evaluation.

After the panelists achieving consensus on each individual nomination, the Panel considered whether the papers were correctly rated in comparison with one another. The Panel compared various rankings and made adjustments, where warranted, until it was comfortable that the nominations were rated consistently in relationship to one another. Papers being recommended for awards received particular attention. Nominations that were not initially recommended for an award were reconsidered to determine whether they might merit either an Honorable Mention or an award.

The final ranking agreed to at that meeting is a consensus ranking. All nominations receiving a recommendation for a Level I, II or III award or an Honorable Mention are listed in Appendix A.

When the Board considered the Panel's report for approval prior to transmittal to the Agency, it reviewed the Panel report without Appendix A which identifies the award recommendations.

3. RECOMMENDATIONS

Table I summarizes the Level I and Level II awards by year since 1996. The smaller number of awards this year reflects, to some degree, the smaller number of nominations. The awards criteria remained the same as the previous year.

TABLE I
Comparison of Number of Level I & II Award Recommendations over Time

Award Level	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Level I	4	3	1	0	2	4	7	6	3
Level II	16	11	7	5	11	7	18	13	6
Total Level I & II	20	14	8	5	13	11	25	19	9

Table II summarizes the distribution of award recommendations among categories. Of 110 nominations, the Panel recommended 39 for an award and 31 for honorable mention.

TABLE II
Summary Number of Award Recommendations By Category For FY2005

Nomination Categories	Total Nom.	Award Levels				Award %	Hon. Men.
		I	II	III	Tot		
Control Systems & Technology (CS)	5	0	0	2	2	40	1
Ecology, Ecosystem Risk Assessment & Protection (ER)	26	1	2	5	8	31	9
Environmental Statistics (ES)	1	0	0	1	1	100	0
Health Effects Research and Human Health Risk Assessment (HE)	6*	0	0	2	2	33	2
Integrated Risk Assessment (IR)	2	0	0	1**	1	50	0
Monitoring and Measurement Methods (MM)	22	0	2	4	6	27	12
Review Articles (RA)	17	1	0	8	9	53	0
Risk Management & Ecosystem Restoration (RM)	6	0	0	1	1	17	0
Social Sciences (SS)	4	1	0	0	1	25	0
Transport and Fate (TF)	15	0	2	5	7	47	4
Environmental Futures (EF)	6	0	0	1	1	17	3
TOTALS:	110*	3	6	30	39	35	31

* S5 HE 0037 was withdrawn, reducing the number of HE papers from 7 to 6.

**The Panel recommended a Level III award for a nomination in this category together with a nomination of two related papers in category ER.

The full list of award recommendations is contained in Appendix A.

Those nominations which were not recommended for awards also contain useful and important information. The Panel notes that while S5ER0020, *Geomorphic and Hydrologic Controls on Surface and Subsurface Flow Regimes in Riparian Meadow Ecosystems*, did not meet the criteria for the STAA Program and could not be rated, it was, nonetheless, very informative.

3.1 General Comments

Only ten of 110 nominations came from the regional and program offices. Although the program has been open to scientists and engineers in the regional and program offices for almost two decades – during which there has been significant outreach -- relatively few papers from these offices are nominated. The Panel is perplexed by the paucity of nominations from the regions and program offices. Good science is being done there, but little of it finds its way into the STAA nominations.

The numbers and quality of papers varies from year to year. For example, in FY03 there were 11 nominations in the health effects, but 25 in FY04 and 6 in FY05. It is hard to tell whether these changes relate to the quantity and quality of research overall or to some other organizational issue. The Panel would like to know the annual number of EPA funded peer reviewed published papers, the subset to which EPA authors contributed, and the pool of papers from which the STAA nominations were drawn for several years to see if there was a relationship to the number and quality of STAA nominations.

Many of the nominated papers were published in papers with a low impact factor. Although the Panel recognizes that there may be logistical reasons for publishing in a particular journal, the Panel discussed at length the benefits of publishing data generated by the EPA in high profile, high impact-factor journals. The Panel would like to encourage authors to publish in more widely recognized journals so that the Agency's work receives even more recognition and is communicated more widely.

3.2 Administrative Recommendations

The Panel has seven recommendations regarding the nomination process.

1. Many nominations were authored by researchers from multiple institutions. These collaborations are healthy and valuable and should be continued. However, they present a practical problem because the administration of the STAA program requires that the relative contributions of each author to the nominated papers be determined. This requirement can be seen in the following criteria for eligibility for the STAA competition: (a) to be an eligible author, a person must have been an EPA employees or Public Health Service employee when the relevant research was conducted, (b) the eligible authors must have contributed collectively a minimum of 50% toward the publication, and (c) that the principal author must have been “eligible” when the research was conducted. Although the nominators approve the percentage attributions sent to the SAB, the Panel observes that some attributions seem implausible.

Because the authors are in the best position to understand their respective contributions, those authors are best suited to provide evidence of agreement that the reported relative contributions are correctly characterized by the percentages reported. Therefore, the Panel repeats its request that each nomination be accompanied by a record of agreement among the co-authors that credit has been correctly assigned. The Panel would not need to see signatures. An email from each author agreeing to the assignment would suffice. There would be no need of such documentation, of course, for single authored papers, papers where the authors share equally in the credit, or from an author who was deceased. The Panel has determined that it will not review any nomination in 2006 which lacks such documentation.

2. The Panel was pleased to see ten nominations from the regional and program offices. Yet the Panel is aware of papers published by these offices that are worthy of consideration but were not nominated. The Panel can only speculate on the reasons for this. The Panel encourages the Agency to further outreach efforts to encourage participation of scientists and engineers from across the Agency.
3. The Panel is not overly concerned with the categories to which nominations are assigned and would not wish to exclude any papers because they did not fit into a disciplinary category.
4. While the Panel encourages increased participation in the STAA program, as a practical matter, the Panel can only review 150 papers per year. Therefore the Agency may wish to consider limiting nominations to no more than three papers each.
5. It would be convenient for the Panel if the nomination materials included the impact factor, citation index, and citation half-life of the journal in which the material(s) were published.

7. The Panel requests that the review process be moved to an electronic as well as paper form. Having both media will be more convenient for the Panel. In time, the Panel hopes to move to a “paperless” review.

The Panel has two recommendations regarding the post-award process.

1. While the Panel understands that the Agency cannot give monetary awards to non-EPA authors, it believes the Agency can recognize non-EPA authors with a letter informing them that the paper they contributed to has received a STAA award. Anecdotal evidence indicates that at least some non-EPA authors of award winning papers have not been notified that the paper to which they contributed had been judged worthy of an STAA award.
2. The Panel urges the Agency to publicize the names of the award winning scientists and engineers and their papers both within the Agency and outside the Agency in a variety of ways. The Panel hopes that the valuable attention given the last two years to the Level I awardees can be continued. Perhaps STAA could also have a booth at the Science Forum where it could communicate more broadly and directly with scientists and engineers in the Agency. Perhaps the authors of Level I papers could present a talk on these papers at the EPA Science Forum or an at EPA retreat. Perhaps even more visibility can be attained through the good offices of the public relations office, the use of the EPA and other Front Pages at the EPA web-site. Possibly the Level I awardees could be named “EPA Scholars of 2005” and provided with some additional non-monetary recognition associated with that status.

Appendix A - Nominations Recommended for Awards

FY2005 Scientific and Technological Achievement Awards (STAA)

Nominations Recommended for Awards

Nominations Recommended for a Level I Award -- Total of Three			
Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5ER 0031	Evidence for Landscape-Level, Pollen-Mediated Gene Flow from Genetically Modified Creeping Bentgrass with CP4 EPSPS as a Marker. <i>Proceedings of the National Academy of Sciences, 101(40):14533-1453 (2004)</i>	Lidia S. Watrud (30%) Constance A. Burdick (15%) Jay R. Reichman (15%) E. Henry Lee (10%) Anne Fairbrother (10%) NHEERL, Corvallis, OR	Exceptional Research That Changed the Paradigm About the Potential for Gene Flow GM Crops to Natural Environments
S5RA 0069	The Genotoxicity of Ambient Outdoor Air, a Review: Salmonella Mutagenicity. <i>Mutation Research - Reviews, 567(2-3):347-399 (2004)</i>	Larry D. Claxton (70%) Sarah H. Warren (15%) Peggy P. Matthews (15%) NHEERL, Research Triangle Park, NC	Providing a Scholarly Review and Analysis of Airborne Compounds, Mixtures, and Products That are Mutagenic
S5SS 0106	Health-Related Benefits of Attaining the 8-Hr Ozone Standard. <i>Environmental Health Perspectives, 113(1):73-82 (2005)</i>	Bryan J. Hubbell (60%) OAQPS, Research Triangle Park, NC	Innovative Work in Developing and Applying the BenMAP Model To Demonstrate the Benefits of Attaining the Ozone NAAQS
<i>*Note: The percentages given after name represent the current percent of the total level of effort as documented in the EPA nomination</i>			

Nominations Recommended for a Level II Award -- Total of Six			
Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5ER 0019	Removal of Ammonia Toxicity in Marine Sediment TIEs: A Comparison of "Ulva lactuca," Zeolite and Aeration Methods. <i>Marine Pollution Bulletin</i> , 46:607-618 (2003)	Robert Burgess (30%) Marguerite Pelletier (30%) Kay T. Ho (10%) Jonathan Serbst (10%) Stephen Ryba (5%) Mark Cantwell (5%) Anne Kuhn (5%) NHEERL, Narragansett, RI	A Comparative Study of Approaches for Diagnosing Ammonia Toxicity in Marine Sediments
S5ER 0025	a) A Physiologically Based Toxicokinetic Model for Dietary Uptake of Hydrophobic Organic Compounds by Fish. I. Feeding Studies with 2,2',5,5'-Tetrachlorobiphenyl. <i>Toxicological Sciences</i> , 77(2):206-218 (2004) b) A Physiologically Based Toxicokinetic Model for Dietary Uptake of Hydrophobic Organic Compounds by Fish. II. Simulation of Chronic Exposure Scenarios. <i>Toxicological Sciences</i> , 77(2):219-229 (2004)	John W. Nichols (45%) Patrick N. Fitzsimmons (20%) Frank W. Whiteman (20%) NHEERL, Duluth, MN	The Development and Application of a Physiologically Based Dietary-Uptake Model for Fish
S5MM 0051	Importance of Groundwater Sulfate to Acidification in the Goose River Watershed, Maine. <i>Water Resources Research</i> , 40(W09402):1-10 (2004)	William C. Sidle (90%) Derrick Allen (10%) NRMRL, Cincinnati, OH	Source-Water Detection Methods for Acidification of Surface Waters
S5MM 0063	a) Characterization of the Fugitive Mercury Emissions at a Chlor-Alkali Plant: Overall Study Design. <i>Atmospheric Environment</i> , 38(4):633-641 (2004) b) Characterization of Fugitive Mercury Emissions from the Cell Building at a US Chlor-Alkali Plant. <i>Atmospheric Environment</i> , 38(4):623-631 (2004)	John S. Kinsey (70%) Frank R. Anscombe (10%) NRMRL, Research Triangle Park, NC	The First Directly Measured Fugitive-Mercury Emission Factors From a Chlor-Alkali-Cell Building
S5TF 0090	Kinetic Control of Oxidation State at Thermodynamically Buffered Potentials in Subsurface Waters. <i>Geochimica et Cosmochimica Acta</i> , 68(23):4831-4842 (2004)	John W. Washington (90%) NERL, Athens, GA	Elucidating Fundamental Controls on, and Developing a Quantitative Modeling Approach for, the Redox State of Environmental Systems
S5TF 0097	Divalent Inorganic Reactive Gaseous Mercury Emissions from a Mercury Cell Chlor-Alkali Plant and Its Impact on Near-Field Atmospheric Dry Deposition. <i>Atmospheric Environment</i> , 38(4):613-622 (2004)	Matthew S. Landis (70%) NERL, Research Triangle Park, NC	Contributions to the State of Science in Atmospheric-Mercury-Speciation Measurement and Source-Emission Characterization
*Note: The percentages given after name represent the current percent of the total level of effort as documented in the EPA nomination			

Nominations Recommended for a Level III Award -- Total of Thirty-One			
Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5CS 0002	Simulation and Evaluation of Elemental Mercury Concentration Increase in Flue Gas Across a Wet Scrubber. <i>Environmental Science & Technology</i> , 37(24):5763-5766 (2003)	John Chang (80%) NRMRL, Research Triangle Park, NC	Making Wet Scrubbers an Efficient and Cost-Effective Mercury-Emission Control Technology
S5CS 0004	A Permeable Barrier for Treatment of Heavy Metals. <i>Ground Water</i> , 40(1):59-66 (2002)	Ralph Ludwig (65%) NRMRL, Ada, OK	Advancing the Acceptance and Deployment of Organic-Based Permeable Reactive Barriers for the Treatment of Metals in Contaminated Groundwater
S5EF 0010	a) Alternative Futures for the Willamette River Basin, Oregon. <i>Ecological Applications</i> , 14(2):313-324 (2004) b) Projecting the Biological Condition of Streams Under Alternative Scenarios of Human Land Use. <i>Ecological Applications</i> , 14(2):368-380 (2004) c) Projecting Wildlife Responses to Alternative Future Landscapes in Oregon's Willamette Basin. <i>Ecological Applications</i> , 14(2):381-400 (2004) d) Alternative-Futures Analysis for the Willamette River Basin, Oregon. <i>Ecological Applications</i> , 14(2):311-312 (2004)	Joan P. Baker (25%) John Van Sickle (20%) Nathan H. Schumaker (20%) Denis White (10%) Dixon Landers (5%) NHEERL, Corvallis, OR	Innovative Research Addressing Complex, Large Environmental Problems - Willamette Basin Alternative Futures Analysis
S5ER 0024	Relative Role of Lake and Tributary in Hydrology of Lake Superior Coastal Wetlands. <i>Journal of Great Lakes Research</i> , 28(2):212-227 (2002)	Anett S. Trebitz (60%) John A. Morrice (30%) Anne M. Cotter (10%) NHEERL, Duluth, MN	Research Defining the Role of Hydrology in Mediating Potential Ecological Responses of Great Lakes Coastal Wetlands
S5ER 0026	Hypoxia in Chesapeake Bay, 1950-2001: Long-Term Change in Relation to Nutrient Loading and River Flow. <i>Estuaries</i> , 27(4):634-658 (2004)	James Hagy (75%) NHEERL, Gulf Breeze, FL	Scientific Clarity and Insight to Support Management of Nutrient Loading, Eutrophication and Hypoxia in the Chesapeake Bay
S5ER 0027	Growth of the Marsh Elder "Iva frutescens" in Relation to Duration of Tidal Flooding. <i>Estuaries</i> , 27(2):217-224 (2004)	Glen B. Thursby (50%) Mohamed A. Abdelrhman (50%) NHEERL, Narragansett, RI	Quantifying Flooding Effects on a Marsh Plant ("Iva frutescens") as a First Step To Identify Anthropogenic Effects

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5ER 0029	Relation of Environmental Characteristics to Fish Assemblages in the Upper French Broad River Basin, North Carolina. <i>Environmenta Monitoring and Assessment</i> , 93(1-3):139-156 (2004)	Brenda Rashleigh (100%) NERL, Athens, GA	Developing an Innovative and Practical Research Approach to Diagnose Causes of Impairment in Stream Ecosystems
S5ER 0112	Whole Seedling Biomass Allocation, Leaf Area and Tissue Chemistry for Douglas-Fir Exposed to Elevated CO2 and Temperature for Four Years. <i>Canadian J. of Forest Research</i> , 33:269-278 (2003)	David M. Olszyk (20%) Mark G. Johnson (15%) David T. Tingey (15%) Paul T. Rygielwicz (15%) Claudia Wise (15%) NHEERL, Corvallis, OR	A Unique Study on the Ecological Effects of Climate Change on Trees
S5ES 0034	Regional Trends in Rural Sulfur Concentrations. <i>Atmospheric Environment</i> , 38(66):1673-1684 (2004)	David M. Holland (50%) NERL, Research Triangle Park, NC	Estimation of Emission-Related Regional Trends in Air Quality Data
S5HE 0035	Smoking as a Confounder in Ecologic Correlations of Cancer Mortality Rates with Average County Radon Levels. <i>Health Physics</i> , 84(4):526-532 (2003)	Jerome S. Puskin (100%) ORIA, Washington, DC	An Outstanding Paper Elucidating a Negative Correlation Between Lung Cancer Mortality and Radon Levels in Homes
S5HE 0041	a) Bioassay-Directed Fractionation and "Salmonella" Mutagenicity of Automobile and Forklift Diesel Exhaust Particles. <i>Environmental Health Perspectives</i> , 112(8):814-819 (2004) b) Sample Characterization of Automobile and Forklift Diesel Exhaust Particles and Comparative Pulmonary Toxicity in Mice. <i>Environmental Health Perspectives</i> , 112(8):820-825	Pramila Singh (25%) David M. DeMarini (20%) Matthew I. Gilmour (15%) William P. Linak (10%) Lance R. Brooks (10%) Dennis G. Tabor (8%) Sarah H. Warren (7%) Jeff V. Ryan (1%) NHEERL, Research Triangle Park, NC	Setting Standards for Conducting Multidisciplinary Environmental-Effects Studies of Complex Particulate Mixtures

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5IR 0042	<p>a) Cloning and in vitro Expression and Characterization of the Androgen Receptor and Isolation of Estrogen Receptor from the Fathead Minnow ("Pimephales promelas"). <i>Environmental Science & Technology</i>, 38(23):6314-6321 (2004)</p> <p>b) Evaluation of the Model Anti-Androgen Flutamide for Assessing the Mechanistic Basis of Responses to an Androgen in the Fathead Minnow ("Pimephales promelas").</p> <p><i>This award is shared with:</i></p>	<p>Gerald T. Ankley (15%) Vickie Wilson (15%) L. Earl Gray (10%) Phillip Hartig (10%) Ann L. Miracle (10%) Mary Cardon (5%) Jeff Welch (5%) Kathleen M. Jensen (5%) Elizabeth Makynen (5%) Michael Kahl (5%) Joseph J. Korte (5%) David L. DeFoe (5%)</p> <p>NHEERL, Duluth, MN</p>	<p>Androgen Receptor-Mediated Processes in the Fathead Minnow: A Basis for Species Extrapolation and Individual Population Level Projections</p>
S5ER 0032	<p><i>Environmental Science & Technology</i>, 38(23):6322-6327 (2004)</p> <p>Modeling Impacts on Populations: Fathead Minnow ("Pimephales promelas") Exposure to the Endocrine Disruptor 17 B-Trenbolone as a Case Study. <i>Ecotoxicology and Environmental Safety</i>, 59(1):1-9 (2004)</p>	<p>David H. Miller (75%) Gerald T. Ankley (25%)</p> <p>NHEERL, Duluth, MN</p>	<p>Formulation of a Modeling Framework To Link Laboratory Toxicity Tests on the Individual to Population-Level Projections</p>
S5MM 0044	<p>A LC/MS Method for the Determination of Cyanobacteria Toxins in Water. <i>Analytical Chemistry</i>, 76(5):1342-1351 (2004)</p>	<p>William L. Budde (60%)</p> <p>NERL, Cincinnati, OH</p>	<p>Research Demonstrating EPA Leadership in Developing More Accurate and Precise, Faster, and Less Expensive Analytical Methods for Unregulated Cyanobacteria Toxins in Water</p>
S5MM 0045	<p>A Quantitative Assessment of a Combined Spectral and GIS Rule-Based Land-Cover Classification in the Neuse River Basin of North Carolina. <i>Photogrammetric Engineering and Remote Sensing (PERS)</i>, 69(3):299-310 (2003)</p>	<p>Ross S. Lunetta (30%) John S. Iames (15%) Andrew N. Pilant (15%) John G. Lyon (10%)</p> <p>NERL, Research Triangle Park, NC</p>	<p>Original Research in the Area of Land-Cover Characterization</p>

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5MM 0056	<p>a) Formation of Nitro Musk Adducts of Rainbow Trout Hemoglobin for Potential Use as Biomarkers of Exposure. <i>Aquat. Toxicol.</i>, 67:315-324 (2004)</p> <p>b) Determination of a Bound Musk Xylene Metabolite in Carp Hemoglobin as a Biomarker of Exposure by Gas Chromatography-Mass Spectrometry Using Selected Ion Monitoring. <i>Journal of Analytical Toxicology</i>, 28(7):581-586 (2004)</p> <p>c) Nitro Musk Metabolites Bound to Carp Hemoglobin: Determination by GC with Two MS Detection Modes: EIMS Versus Electron Capture Negative Ion MS. <i>Intern. J. Environ. Anal. Chem.</i>, 84(15):1069-1078 (2004)</p>	<p>G. Wayne Sovocool (30%) William C. Brumley (20%) Steven M. Pyle (10%)</p> <p>NERL, Las Vegas, NV</p>	<p>Seminal Work in the Determination of Biomarkers of Exposure (Fish Hemoglobin Adducts) for a Sentinel Species</p>
S5MM 0058	<p>a) An Investigation of the Chemical Stability of Arsenosugars in Simulated Gastric Juice and Acidic Environments Using IC-ICP-MS and IC-ESI-MS/MS. <i>The Analyst</i>, 127:781-785 (2002)</p> <p>b) An Investigation of the Chemical Stability of Arsenosugars in Basic Environments Using IC-ICP-MS and IC-ESI-MS/MS. <i>The Analyst</i>, 128:1458-1461 (2003)</p> <p>c) Extraction and Detection of a New Arsine Sulfide Containing Arsenosugar in Molluscs by IC-ICP-MS and IC-ESI-MS/MS. <i>Journal of Analytical Atomic Spectrometry</i>, 19:1454-1459 (2004)</p>	<p>John T. Creed (21%) Patricia A. Gallagher-Creed (21%) Carol A. Schwegel (21%) Jody A. Shoemaker (10%)</p> <p>NERL, Cincinnati, OH</p>	<p>An Investigation of Arsenosugars as an Arsenic Dietary-Exposure Source With an Emphasis on Chemical Stability</p>
S5RA 0066	<p>Advances in Encapsulation Technologies for the Management of Mercury-Contaminated Hazardous Wastes. <i>Journal of Hazardous Materials</i>, 114(1-3):211-223 (2004)</p>	<p>Paul Randall (80%)</p> <p>NRMRL, Cincinnati, OH</p>	<p>Advances in Mercury-Encapsulation Technologies</p>
S5RA 0067	<p>Brominated Flame Retardants: Cause for Concern? <i>Environmental Health Perspectives</i>, 112(1):9-17 (2004)</p>	<p>Linda S. Birnbaum (90%)</p> <p>NHEERL, Research Triangle Park, NC</p>	<p>Concern About Brominated Flame Retardants</p>

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5RA 0073	<p>a) Antimicrobial Activity of Copper and Zinc Accumulated in Eastern Oyster Amebocytes. <i>Journal of Shellfish Research</i>, 23(2):321-351 (2004)</p> <p>b) Relationship of Amebocytes and Terrestrial Elements to Adult Shell Deposition in Eastern Oysters. <i>Journal of Shellfish Research</i>, 23(2):353-367 (2004)</p>	<p>William S. Fisher (100%)</p> <p>NHEERL, Gulf Breeze, FL</p>	<p>Demonstrating the Significance of Terrestrial Elements in Freshwater Inflow to Estuarine Habitat</p>
S5RA 0074	<p>a) Overview of Phytotransformation and Control of Wastes. <i>Phytoremediation: Transformation and Control of Contaminants edited by S.C. McCutcheon and J. L. Schnoor, Wiley Interscience, pp: 1-58 (2003)</i></p> <p>b) Proof of Phytoremediation for Explosives in Water and Soil. <i>Phytoremediation: Transformation and Control of Contaminants edited by S.C. McCutcheon and J. L. Schnoor, Wiley Interscience, pp: 429-480 (2003)</i></p> <p>c) Five-Year Pilot Study: Aberdeen Proving Ground, Maryland. <i>Phytoremediation: Transformation and Control of Contaminants edited by S.C. McCutcheon and J. L. Schnoor, Wiley Interscience, pp: 635-659 (2003)</i></p> <p>d) Hydrologic Feasibility Assessment and Design in Phytoremediation. <i>Phytoremediation: Transformation and Control of Contaminants edited by S.C. McCutcheon and J. L. Schnoor, Wiley Interscience, pp: 695-716 (2003)</i></p> <p>e) Field Evaluations of Phytotechnologies. <i>Phytoremediation: Transformation and Control of Contaminants edited by S.C. McCutcheon and J. L. Schnoor, Wiley Interscience, pp: 905-924 (2003)</i></p>	<p>Steven C. McCutcheon (55%) Steve Rock (10%) James Weaver (5%) Steven Hirsh (4%) Harry R. Compton (3%) Dale Haroski Matey (2%) Stacy L. Hutchinson (1%)</p> <p>NERL, Athens, GA</p>	<p>Reviews of the New Field and Pioneering the Practice of Phytoremediation To Clean Up Hazardous Waste Sites Using Green Plants</p>

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5RA 0075	a) Distributed Structure-Searchable Toxicity (DSSTox) Database Network: A Proposal. <i>Mutation Research</i> , 499:27-52 (2002) b) Public Sources of Mutagenicity and Carcinogenicity Data: Use in Structure-Activity Relationship Models. <i>Quantitative Structure-Activity Relationship (QSAR) Models of Mutagens and Carcinogens</i> , Ed. R. Benigni, CRC Press, pp:145-173 (2003) c) DSSTox Web Site Launch: Improving Public Access to Databases for Building Structure-Toxicity Prediction Models. <i>Preclinica</i> , 2(2):103-108 (2004)	Ann M. Richard (80%) ClarLynda R. Williams (20%) NHEERL, Research Triangle Park, NC	Distributed Structure-Searchable Toxicity Database Network (DSSTox) Website and Related Publications
S5RA 0077	a) Geochemistry of PAHs in Aquatic Environments: A Synthesis of Source, Distribution and Persistence. <i>PAHs: An Ecotoxicological Perspective</i> , P.E.T. Douben (Ed.), John Wiley & Sons, Ltd., London, pp:35-45 (2003) b) An Overview of the Partitioning and Bioavailability of PAHs in Sediments and Soils. <i>PAHs: An Ecotoxicological Perspective</i> , P.E.T. Douben (Ed.), John Wiley & Sons, Ltd., London, pp:99-126 (2003)	Robert Burgess (59%) NHEERL, Narragansett, RI	Preparation of Review Articles Discussing the Geochemistry and Bioavailability of PAHs in Aquatic Environments
S5RA 0078	Rising Atmospheric CO ₂ and Carbon Sequestration in Forests. <i>Frontiers in Ecology and Environment</i> , 2(6):315-322 (2004)	Peter A. Beedlow (35%) David T. Tingey (30%) William E. Hogsett (15%) Donald L. Phillips (10%) David M. Olszyk (10%) NHEERL, Corvallis, OR	Synthesizing Research on the Ability of Forests To Absorb Anthropogenic Carbon and Proposing Land-Management Approaches
S5RA 0113	Recent Advances in Transgenic Arthropod Technology. <i>Bulletin of Entomological Research</i> , 94:95-110 (2004)	Melissa Kramer (100%) OSCP, Washington, DC	Work in Understanding Environmental Risks that may be Associated with Deployment of Transgenic Arthropods in Nature
S5RM 0082	Industrial Surface Impoundments: Environmental Settings, Release and Exposure Potential and Risk Characterization. <i>The Science of the Total Environment</i> , 317(1-3):1-22 (2003)	W. Barnes Johnson (20%) Becky Cuthbertson (18%) Jan Young (14%) Paul Balsarak (8%) OSW, Washington, DC	Important Contributions to Knowledge of Waste-Management Practices and Their Human Health and Environmental Impacts

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5RM 0083	a) Advances in Biotreatment of Acid Mine Drainage and Biorecovery of Metals: 1. Metal Precipitation for Recovery and Recycle. <i>Biodegradation, 14(6):423-436 (2003)</i> b) Advances in Biotreatment of Acid Mine Drainage and Biorecovery of Metals: 2. Membrane Bioreactor System for Sulfate Reduction. <i>Biodegradation, 14(6):437-453 (2003)</i>	Henry H. Tabak (50%) Richard Scharp (10%) Fred K. Kawahara (10%) NRMRL, Cincinnati, OH	Advance in Biorecovery of Metals and Biotreatment of Sulfate in Acid-Mine Drainage Wastes
S5TF 0095	Influence of pH and Oxidation-Reduction Potential(Eh) on the Dissolution of Mercury-Containing Mine Wastes from the Sulphur Bank Mercury Mine. <i>Minerals & Metallurgical Processing, 21(2):93-98 (2004)</i>	Paul Randall (80%) NRMRL, Cincinnati, OH	The Study on the Effect of pH and Redox Conditions on Leaching of Mercury-Containing Mine Wastes
S5TF 0098	a) Ambient Ammonia and Ammonium Across a Region of Variable Ammonia Emission Density. <i>Atmospheric Environment, 38(9):1235-1246 (2004)</i> b) Atmospheric Concentrations of Ammonia and Ammonium at an Agricultural Site in the Southeast United States. <i>Atmospheric Environment, 36(10):1661-1674 (2002)</i>	John T. Walker (70%) NRMRL, Research Triangle Park, NC	Assessing the Influence of Agricultural Ammonia Emissions on Ambient Concentrations of Ammonia and Inorganic PM2.5
S5TF 0099	a) Screening Model for Volatile Pollutants in Dual Porosity Soils. <i>Hydrology, 260:58-74 (2002)</i> b) Theoretical Development and Analytical Solutions for Transport of Volatile Organic Compounds in Dual-Porosity Soils. <i>Hydrology, 279:18-42 (2003)</i>	Mohamed M. Hantush (75%) NRMRL, Cincinnati, OH	Developing Models for Soil, Air, and Groundwater-Vulnerability Assessment and Management of the Use and Disposal of Organic Chemicals

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5TF 0102	a) Effects of Aging and pH on Dissolution Kinetics and Stability of Chloropyromorphite. <i>Environmental Science and Technology</i> , 36(10):2198-2204 (2002) b) In-vitro Formation of Pyromorphite via Reaction of Pb Sources with Soft-Drink Phosphoric Acid. <i>Science of the Total Environment</i> , 302(1-3):253-265 (2003) c) Assessment of a Sequential Extraction Procedure for Perturbed Lead Contaminated Samples With and Without Phosphorus Amendments. <i>Environmental Science and Technology</i> , 37(9):1892-1998 (2003) d) Spectroscopic Speciation and Quantification on Chemical Alterations of Pb in Phosphate Amended Soils. <i>Journal of Environment Quality</i> , 33(4):1288-1295 (2004)	Kirk G. Scheckel (54%) James A. Ryan (40%) Christopher A. Impellitteri (5%) NRMRL, Cincinnati, OH	Thermodynamic and Spectroscopic Understanding of In-Situ Pb Remediation
S5TF 0103	Modeling Leaching of Viruses by the Monte Carlo Method. <i>Water Research</i> , 37(19):4719-4729 (2003)	Barton R. Faulkner (55%) Faruque A. Khan (10%) NRMRL, Ada, OK	Development of a Method to Predict Risk of Contamination by Viruses for Drinking-Water-Supply Aquifers
<p align="center"><i>*Note: The percentages given after name represent the current percent of the total level of effort as documented in the EPA nomination</i></p>			

Nominations Recommended for Honorable Mention (No Monetary Award) -- Total of Thirty-Two			
Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5CS 0003	a) Sorption of Arsenate and Arsenite on RuO ₂ -xH ₂ O: A Spectroscopic and Macroscopic Study. <i>Environmental Science and Technology</i> , 37(13):2936-2940 (2003) b) Lead Sorption on Ruthenium Oxide: A Macroscopic and Spectroscopic Study. <i>Environmental Science and Technology</i> , 38(10):2836-2842 (2004)	Christopher A. Impellitteri (40%) Kirk G. Scheckel (40%) James A. Ryan (20%) NRMRL, Cincinnati, OH	Leading-Edge Research on the Sorption of Inorganic Contaminants by Ruthenium Oxide Compounds
S5EF 0005	Regulating the Ultimate Sink: Managing the Risks of Geologic CO ₂ Storage. <i>Environmental Science and Technology</i> , 37(16):3476-3483 (2003)	Elizabeth J. Wilson (75%) Timothy L. Johnson (20%) NRMRL, Research Triangle Park, NC	Analysis of Future Research and Regulatory Considerations for Geologic Carbon Sequestration
S5EF 0006	a) Selective Oxidation of Alcohols by Molecular Oxygen Over a Pd/MgO Catalyst in the Absence of Any Additives. <i>Green Chemistry</i> , 6:161-165 (2004) b) Mesoporous Iron Phosphate as an Active, Selective and Recyclable Catalyst for the Synthesis of Nopol by Prins Condensation. <i>Chemical Communication</i> , 7:826-827 (2004) c) Phenanthroline-Stabilized Palladium Nanoparticles in Polyethylene Glycol - An Active and Recyclable Catalyst System for the Selective Hydrogenation of Olefins Using Molecular Hydrogen. <i>J. Molecular Catalysis</i> , 222(1 - 2):153-158 (2004) d) Selective Oxidation of Alcohols Over Vanadium Phosphorus Oxide Catalyst Using Hydrogen Peroxide. <i>Applied Catalysis A: General</i> , 276: 139-144 (2004)	E. Sahle-Demessie (83%) NRMRL, Cincinnati, OH	Developing Novel Catalyst Systems That Help the Competitiveness of the Chemical Industry, the Natural Environment and Our Quality of Life
S5EF 0008	In vivo Synchrotron Study of Thallium Speciation and Compartmentation in Iberis Intermedia. <i>Environmental Science and Technology</i> , 38(19):5095-5100 (2004)	Kirk G. Scheckel (50%) Steve A. Rock (5%) NRMRL, Cincinnati, OH	Innovative Synchrotron Methods to Determine Metal Speciation in Biological Systems

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5ER 0012	Exposure and Effects of 2,3,7,8 - Tetrachlorodibenzene-p-Dioxin in Tree Swallows ("Tachycineta bicolor") Nesting Along the Woonasquatucket River, Rhode Island, USA. <i>Environmental Toxicology and Chemistry</i> , 24(1):93-109 (2005)	Cornell J. Rosiu (54%) Region 1, Boston, MA	Significant Contributions to the Use and Development of Sound Science in Agency Decisions and Population-Level Ecological Risk Assessment
S5ER 0015	Acute Sensitivity of Juvenile Shortnose Sturgeon ("Acipenser brevirostrum") to Low Dissolved Oxygen Concentrations. <i>Transactions of the American Fisheries Society</i> , 133(3):772-776 (2004)	Jed G. Campbell (50%) Larry R. Goodman (50%) NHEERL, Gulf Breeze, FL	Research in Support of Derivation of Ambient Water Quality Criteria for Saltwater
S5ER 0016	Phytoplankton and Zooplankton Seasonal Dynamics in a Subtropical Estuary: Importance of Cyanobacteria. <i>Journal of Plankton Research</i> , 26(3):371-382 (2004)	Michael C. Murrell (80%) Emile M. Lores (20%) NHEERL, Gulf Breeze, FL	Advancement of Understanding of Critical Processes in Estuaries Subject to Eutrophication
S5ER 0017	Bank Stabilization, Riparian Land Use and the Distribution of Large Woody Debris in a Regulated Reach of the Upper Missouri River, North Dakota, USA. <i>River Research and Applications</i> , 20:829-846 (2004)	Theodore R. Angradi (75%) E. William Schweiger (10%) David W. Bolgrien (5%) Peter C. Ismert (5%) Anthony R. Selle (5%) NHEERL, Duluth, MN	Research on River Ecology in Support of EPA's Commitment to the Protection and Restoration of Our Nation's Great River Ecosystems
S5ER 0018	Effects of Agricultural Activities and Best Management Practices on Water Quality of Seasonal Prairie Pothole Wetlands. <i>Wetlands Ecology and Management</i> , 10(4):335-54 (2002)	Naomi Detenbeck (50%) Frank Puglisi (15%) William Sanville (15%) NHEERL, Duluth, MN	Experimental Validation of Effects of Land-Management and Restoration Practices on Isolated Prairie Wetlands
S5ER 0021	Developing and Applying an Index of Environmental Integrity for the US Mid-Atlantic Region. <i>Journal of Environmental Management</i> , 67(2):175-185 (2003)	John F. Paul (100%) NHEERL, Research Triangle Park, NC	Innovative Methodology for Multiresource Assessments
S5ER 0022	Landscape Metrics and Estuarine Sediment Contamination in the Mid-Atlantic and Southern New England Regions. <i>Journal of Environmental Quality</i> , 31(3):836-845 (2002)	John F. Paul (50%) NHEERL, Research Triangle Park, NC	Demonstrating Quantitative Linkage Between Watershed Land Use and Estuarine Condition
S5ER 0104	Photooxidation and its Effects on the Carboxyl Content of Dissolved Organic Matter in Two Coastal Rivers in the Southeastern United States. <i>Environmental Science and Technology</i> , 38:4113-4119 (2004)	Richard G. Zepp (50%) NERL, Athens, GA	Contributing to the Development of New Modeling and Experimental Techniques for Assessing the UV-Influenced Photooxidation of Organic Matter in Coastal and Estuarine Environments

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5ER 0109	Estuarine and Scalar Patterns of Invasion in the Soft-Bottom Benthic Communities of the San Francisco Estuary. <i>Biological Invasions</i> , 5(1-2):85-102 (2003)	Henry Lee, II (60%) NHEERL, Corvallis, OR	Research Into the Spatial Patterns of Estuarine Invasive Species and Invasive Species Indices
S5HE 0038	a) Developing Meaningful Cohorts for Human Exposure Models. <i>J Expos Anal Environ Epidemiol</i> , 14(1):23-43 (2004) b) Understanding Variability in Time Spent in Select Locations for 7-12-Year Old Children. <i>J Expos Anal Environ Epidemiol</i> , 14(3):222-233 (2004) c) Using Human Activity Data in Exposure Models: Analysis of Discriminating Factors. <i>J Expos Anal Environ Epidemiol</i> , 13(4):294-317 (2003)	Stephen E. Graham (32%) Jianping Xue (32%) Thomas R. McCurdy (32%) Haluk Ozkaynak (2%) NERL, Research Triangle Park, NC	Providing Practical Solutions to Complex Science Issues Faced by Exposure and Risk Assessors
S5HE 0040	Differential Pulmonary Inflammation and in vitro Cytotoxicity of Size-Fractionated Fly Ash Particles from Pulverized Coal Combustion. <i>Journal of the Air & Waste Management Association</i> , 54(3):286-295 (2004)	M. Ian Gilmour (35%) William P. Linak (30%) C. Andrew Miller (10%) NHEERL, Research Triangle Park, NC	Demonstrating the Size-Dependent Pulmonary Toxicity of the Ultrafine Fraction of Coal-Combustion Particles
S5MM 0046	17-alpha-Ethynylestradiol-Induced Vitellogenin Gene Transcription Quantified in Livers of Adult Males, Larvae, and Gills of Fathead Minnows ("Pimephales promelas"). <i>Environmental Toxicology and Chemistry</i> , 21(11):2385-2393 (2002)	David Lattier (30%) Tirumuru Reddy (30%) Denise A. Gordon (25%) James Lazorchak (9%) Robert W. Flick (3%) Ann L. Miracle (3%) NERL, Cincinnati, OH	Development of a Unique, Cost-Effective, and Highly Sensitive Molecular Technique for Detecting EDCs in Various Tissues at Low Concentrations
S5MM 0047	Multiresidue Method for N-Methyl Carbamates and Metabolite Pesticide Residues at the Parts-per-Billion Level in Selected Representative Commodities of Fruit and Vegetable Crop Groups. <i>Journal of AOAC International</i> , 87(5):1237-1251(2004)	Lynda V. Podhorniak (90%) Alexander Krynitsky (4%) Francis D. Griffith (1%) OPP, Fort Meade, MD	The Development of a New Sensitive Multiresidue Carbamate-Pesticide Method to Protect the Environment and Human Health
S5MM 0048	The Baffled Flask Test for Dispersant Effectiveness: A Round Robin Evaluation of Reproducibility and Repeatability. <i>Spill Science and Technology Bulletin</i> , 7(5-6):299-308 (2002)	Albert D. Venosa (80%) NRMRL, Cincinnati, OH	Development of an Improved, Reproducible Protocol for Testing the Effectiveness of Dispersants as an Oil-Spill Countermeasure

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5MM 0049	Preservation of As (III) and As (V) in Drinking Water Supply Samples from Across the United States Using EDTA and Acetic Acid as a Means of Minimizing Iron-Arsenic Coprecipitation. <i>Environmental Science and Technology</i> , 38(10):2919-2927 (2004)	John T. Creed (27%) Patricia A. Gallagher-Creed (27%) Carol A. Schwegel (27%) Larry Wymer (10%) NERL, Cincinnati, OH	Developing and Documenting the Application of EDTA as an Arsenic-Preservation Reagent for Drinking Waters Across the U.S.
S5MM 0050	Biodegradation of Crude Oil Contaminating Marine Shorelines and Freshwater Wetlands. <i>Spill Science and Technology Bulletin</i> , 8(2):163-178 (2003)	Albert D. Venosa (80%) NRMRL, Cincinnati, OH	Review Article on Biodegradation of Crude-Oil Contaminating Marine Shorelines and Freshwater Wetlands
S5MM 0052	Effects of pH and Competing Anions on the Speciation of Arsenic in Fixed Ionic Strength Solutions by Solid Phase Extraction Cartridges. <i>Water Research</i> , 38(5):1207-1214 (2004)	Christopher A. Impellitteri (100%) NRMRL, Cincinnati, OH	Research on a Simple and Affordable Arsenic-Speciation Methodology
S5MM 0053	Contamination of Fish in Streams of the Mid-Atlantic Region: An Approach to Regional Indicator Selection and Wildlife Assessment. <i>Environmental Toxicology and Chemistry</i> , 22(3):545-553 (2003)	James M. Lazorchak (30%) Tala R. Henry (30%) Frank H. McCormick (30%) NERL, Cincinnati, OH	Contributions To Understanding the Spatial Extent of Fish-Tissue Contamination in the Mid-Atlantic and a New Approach for Deriving Wildlife Risk Values
S5MM 0055	Watershed Landscape Indicators of Estuarine Benthic Condition. <i>Estuaries</i> , 27(2):283-295 (2004)	Stephen S. Hale (90%) John F. Paul (5%) NHEERL, Narragansett, RI	Research on Relationships Between Watersheds and Estuarine Benthic Communities, Useful in Sampling Estuaries at Risk
S5MM 0057	Evaluation of an Alternative IMS Dissociation Procedure for Use with Method 1622: Detection of "Cryptosporidium" in Water. <i>Journal of Microbiological Methods</i> , 55(3):575-583 (2003)	Michael W. Ware (50%) H.D. Alan Lindquist (20%) Frank W. Schaefer, III (20%) Larry J. Wymer (10%) NERL, Cincinnati, OH	Improving EPA Methods 1622 and 1623 in Order To Allow for Better Estimation of the "Cryptosporidium" Concentration
S5MM 0061	Polycyclic Aromatic Hydrocarbon Size Distributions in Aerosols from Appliances of Residential Wood Combustion as Determined by Direct Thermal Desorption-GC/MS. <i>Journal of Aerosol Science</i> , 34(8):1061-1084 (2003)	Michael D. Hays (55%) John Kinsey (25%) N. Dean Smith (10%) NRMRL, Research Triangle Park, NC	Development of a Clean Extraction Method for Determining the Organic Chemical-Based Size Distributions of Fine PM

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5MM 0062	a) Effects of Hydrogeomorphic Region, Watershed Storage and Mature Forest on Baseflow and Snowmelt Stream Water Quality in Second-Order Lake Superior Basin Tributaries. <i>Freshwater Biology</i> , 48(5):911-27 (2003) b) Region, Landscape, and Scale Effects on Lake Superior Tributary Water Quality. <i>Journal of the American Water Resources Association</i> , 40(3):705-20 (2004)	Naomi Detenbeck (25%) Colleen Elonen (15%) Debra Taylor (15%) Leroy Anderson (15%) Terri Jicha (15%) Sharon Batterman (15%) NHEERL, Duluth, MN	Evaluation of a Watershed-Classification Monitoring Framework To Assess Landscape Thresholds
S5MM 0064	Determination of the Vapor Pressures of Select Polychlorinated Dibenzop-Dioxins and Dibenzofurans at 75-275C. <i>Chemical Engineering Science</i> , 60(3):787-796 (2004)	Shawn P. Ryan (60%) Brian K. Gullett (20%) Dennis Tabor (10%) NRMRL, Research Triangle Park, NC	Determination of Vapor Pressures of PCDDs/Fs at Temperatures Consistent With Their Formation and Control
S5RM 0081	a) PM2.5 Episodes as Observed in the Speciation Trends Network. <i>Atmospheric Environment</i> , 38(31):5237-5246 (2004) b) PM Data Analysis - A Comparison of Two Urban Areas: Fresno and Atlanta. <i>Atmospheric Environment</i> ,	Shao-Hang Chu (88%) OAQPS, Research Triangle Park, NC	Providing a Critical Linkage Between Research and Cost-Effective Multipollutant Control-Strategy Development
S5TF 0089	a) Prediction of the Solubility, Activity Coefficient and Liquid/Liquid Partition Coefficient of Organic Compounds. <i>QSAR and Combinatorial Science</i> , 23(9):709-720 (2004) b) Estimation of Carboxylic Acid Ester Hydrolysis Rate Constants. <i>QSAR and Combinatorial Science</i> , 22(10):917-925 (2004)	Said Hilal (70%) Samuel W. Karickhoff (10%) NERL, Athens, GA	Development and Application of Mathematical Models for Predicting Environmental Fate of Chemicals Using SPARC
S5TF 0092	Lake Michigan 1994 - 1996 Surficial Sediment Mercury. <i>Journal Great Lakes Research</i> , 28(1):65-76 (2002)	Ronald Rossmann (100%) NHEERL, Duluth, MN	Describing the Distribution of Mercury in Lake Michigan Surficial Sediments and for Defining the Relative Importance of Mercury Sources to the Bay
S5TF 0094	Estimation of Microbial Reductive Transformation Rates for Chlorinated Benzenes and Phenols Using a Quantitative Structure-Activity Relationship Approach. <i>Environmental Toxicology and Chemistry</i> , 23(7):1600-1609 (2004)	Caroline T. Stevens (80%) W. Jack Jones (20%) NERL, Athens, GA	Advancing the Development of Predictive Tools for Microbial Reductive Transformation Rates

Nom.	Titles and Citations of Submitted Papers	Eligible Authors* and Nominating Organization	Suggested Citation from Nominating Organization
S5TF 0096	a) Significance of Iron (II, III) Hydroxycarbonate Green Rust in Arsenic Remediation Using Zerovalent Iron in Laboratory Column Tests. <i>Environmental Science and Technology, 38(19):5224-5231 (2004)</i> b) Nitrate Reduction by Zerovalent Iron: Effects of Formate, Oxalate, Citrate, Chloride, Sulfate, Borate, and Phosphate. <i>Environmental Science and Technology, 38(9):2715-2720 (2004)</i>	Chunming Su (75%) Robert W. Puls (25%) NRMRL, Ada, OK	Leading-Edge Science on the Mechanisms of Removal of Arsenic and Nitrate From Groundwater Using Zerovalent Iron in Permeable Reactive Barriers
<i>*Note: The percentages given after name represent the current percent of the total level of effort as documented in the EPA nomination</i>			

Key to Acronyms used in the above Table

NERL	National Exposure Research Laboratory
NHEERL	National Health and Environmental Effects Laboratory
NRMRL	National Risk Management Research Laboratory
OAQPS	Office of Air Quality Planning and Standards
OPP	Office of Pesticide Programs
ORIA	Office of Radiation and Indoor Air
OSCP	Office of Science Coordination and Policy
OSW	Office of Solid Waste

Appendix B - Biosketches (in alphabetical order)

Dr. Timothy J. Buckley is an Assistant Professor of Environmental Health Sciences and Epidemiology at the Johns Hopkins Bloomberg School of Public Health. Dr. Buckley joined the Hopkins faculty in 1996 after five years with the U.S. EPA's National Exposure Research Lab. His research has focused on assessing total human environmental exposure through measurements in multiple environmental media and biomarkers. Over his research career, Dr. Buckley has been responsible for the concept, design, implementation, and management of several major studies involving human exposure to PAHs, metals, VOCs, pesticides, and PCBs through multiple environmental media. These large-scale projects complement laboratory-based studies where controlled exposures are used to more fully investigate relationships between exposure, body burden, and effects.

Dr. Buckley's current research includes community-based exposure assessment, evaluation of chemical treatment to reduce lead bioavailability, the role of exposure to indoor air pollution and allergens in asthma among inner-city children, exposure and effects from mobile source related air pollution, improving methods to assess dermal exposure, and the development and evaluation of exposure biomarkers. While with the U.S. EPA, Dr. Buckley received awards for his role and efforts in the National Human Exposure Assessment Survey (NHEXAS) and the Lower Rio Grande Environmental Exposure Study. His published research was recognized in 1996 with a U.S. EPA Scientific and Technology Achievement Award and again in 1999 by the Walter G. Berl Award given the Johns Hopkins Applied Physics Laboratory. Dr. Buckley is a certified industrial hygienist and has been elected to leadership positions among his professional associations including chair of the American Industrial Hygiene Association's Biological Monitoring Committee and Academic Counselor of the International Society of Exposure Analysis. Dr. Buckley received his Ph.D. in Environmental Science from Rutgers University and a Masters of Health Science in Industrial Hygiene from the Johns Hopkins Bloomberg School of Public Health.

Dr. Calvin C. Chien is currently a Senior Environmental Fellow with DuPont Company, the highest ranking technical environmental professional with the company. He has been the leader of DuPont's Environmental Remediation Technology Development team focused on Environmental Modeling and Subsurface Containment/Treatment Barrier Technologies. Besides the work in the technology area, he also has the responsibility for technical environmental support and oversight for DuPont's operations in the Asia-Pacific Region. Since 1987, Dr. Chien has been collaborating with a number of universities in the U.S. and Canada on the research in the area of environmental remediation. He is currently working with seven universities, four in the U.S./Canada and three in China.

Dr. Chien served as technical reviewer for papers submitted to Hydraulic Journal of ASCE (Am. Soc. of Civil Engrs.) in late 1970s and early 1980s. He is currently serving a 3-year term on the Science Advisory Committee for EPA Rocky Mountain Regional Hazardous Substance Research Center. The responsibilities, among others, include the review of research proposals submitted to the center for funding.

Among many awards and honors Dr. Chien has received in his career, he was the recipient of SUNY's 1997 Engineering Achievement Award, university's highest honor for engineering. He was the first winner who was an Asian and also an alumnus in the Award's 20 years of history.

Dr. Chien also has received several Awards from DuPont, including three Major Contribution Awards, with significant amount of cash and an Invention Award from Westinghouse Company.

Dr. Chien served on the ASCE Groundwater Management Committee as secretary, then vice president, between 1996 and 1999. He served on the Groundwater Modeling Group of the Chemical Manufacturing Association (CMA, now American Chemistry Council) as a member from 1986 to 1989 and chaired the group from 1989 to 1992. In 1994, Dr. Chien was appointed a member with the Environmental Engineering Committee (EEC) of the Science Advisory Board (SAB). He served three terms and left the board in 2000. In 1994, he served on a U.S. Department of Energy's (DOE) Outside Technical Peer Review Panel to review the department's modeling strategy and development. He was invited twice by the National Science Foundation to serve on the technical review panel for the research proposals submitted to the foundation for funding in the area of environmental science and technology. He has published several technical articles in the leading peer-reviewed journals and authored many DuPont internal technical research reports. He holds a U.S. patent on well field design technology.

Dr. Chien has served as chair, co-chair, section chair, invited speaker in many conferences and panels dealing with the issues that fall in his area of expertise, mainly, groundwater hydrology, contaminant fate and transport, environmental modeling, soil and groundwater remediation technology, and in-situ solution mining. He has organized and chaired/co-chaired a number of international technical expert workshop and conferences, including the first International Containment Expert Workshop (1995) and Conference (1997), the International Environmental Modeling Expert Workshop (2000) and a Containment Expert Workshop (2002) focusing on the Long-term Performance Prediction and Verification for Containment/treatment Barriers. Dr. Chien was the planner for the well-known book prepared from the 1995 Containment Workshop and the principal editor of book for the 2000 Modeling Workshop. He was the lead editor for the 2002 Containment book, scheduled for publication this summer.

Dr. Chien earned an M.S. E. and a Ph.D. in hydrology and environmental modeling from the State University of New York (SUNY) at Buffalo in 1970 and 1974, respectively. He received his B.S.E. in Hydraulic Engineering from the National Cheng-Kung University in Taiwan.

Dr. Deborah Cory-Slechta received her Ph.D. degree from the University of Minnesota in 1977 and worked as a junior staff fellow of the National Center for Toxicological Research beginning in 1979. She was appointed to the faculty of the University of Rochester Medical School in 1982 and rose through the ranks. In 1998, she was appointed Chair of the Department of Environmental Medicine and Director of the NIEHS Environmental Health Sciences Center at the University of Rochester. From July 2000- July 2002, she was the Dean for Research and Director of the AAB Institute for Biomedical Sciences, a newly established post at the University and as such, became the first female dean in the history of the Medical School. Dr. Cory-Slechta has served on numerous national research review and advisory panels, including committees of the National Institutes of Health, the National Institute of Environmental Health Sciences, the Food and Drug Administration, the National Center for Toxicological Research, the Environmental Protection Agency, the National Academy of Sciences, the Institute of Medicine, and the Agency for Toxic Substances and Disease Registry, Centers for Disease Control. In addition, Dr. Cory-Slechta has served on the editorial boards of several journals including Neurotoxicology, Toxicology, Toxicological Sciences, Fundamental and Applied Toxicology, Neurotoxicology and Teratology, and American Journal of Mental Retardation. She has held the elected positions of President of the Neurotoxicology Specialty Section of the

Society of Toxicology, President of the Behavioral Toxicology Society, and been named a Fellow of the American Psychological Association. Her research has focused largely on environmental neurotoxicants as risk factors for behavioral disorders and neurodegenerative disease. Specifically this has included work on the impact of lead on learning and attention and associated neurochemical mechanisms, and, more recently on the role of pesticides as risk factors for Parkinson's Disease. Currently she has also begun to examine mixtures of neurotoxic chemicals and risk modifiers for effects of neurotoxicants as well. These research efforts have resulted in over 100 papers and book chapters to date.

Dr. Richard O. Gilbert received his Ph.D in Biomathematics from the University of Washington, Seattle, Washington. He is a Staff Scientist in the Statistical and Quantitative Sciences Group at Battelle, Pacific Northwest Division in Richland, Washington. Dr. Gilbert is currently located at the Battelle Washington Office in Washington D.C. He has 32 years experience at Battelle in the statistical design and analysis of environmental studies to assess radionuclide and chemical contamination and cleanup in environmental media, with emphasis on the Nevada Test Site and other Department of Energy sites. He is perhaps most well known for his often-cited reference book *Statistical Methods for Environmental Pollution Monitoring* published in 1987. Dr. Gilbert's recent activities include contributing to the development of EPA guidance documents and teaching short courses on the Data Quality Objectives planning process and environmental statistical design and analysis methods, developing statistical designs for the detection of unexploded ordnance at Department of Defense sites, and assisting with the development of the Visual Sample Plan software that helps environmental professionals determine the right number and location of environmental samples. Dr. Gilbert has also managed and conducted Monte Carlo uncertainty and sensitivity analyses of environmental models, with particular emphasis on reconstructing doses received by the public from Iodine-131 emissions from the Hanford Site in Washington State in the 1945-1963 time period. Dr. Gilbert has served as a consultant to the EPA Science Advisory Board (SAB) on the Drinking Water Committee, the Statistical Consultation Subcommittee of the Environmental Engineering Committee, and Surface Impoundments Subcommittee of the Environmental Engineering Committee. He has also served as a member of the Health Physics Society's N13.31 Working Group that is writing the American National Standards Institute (ANSI) Standard Assessment of Radiation Doses Resulting from Plutonium and Americium from Soil. Dr. Gilbert is a Fellow of the American Statistical Association (ASA) and an elected member of the International Statistics Institute. He was also elected Chair of the Environmental Statistics Section of the ASA in 1995 and was awarded the Distinguished Achievement Award from the Section.

Dr. Stanley Grant is currently a Professor of Environmental Engineering, and Chairman of the Department of Chemical Engineering and Materials Science, University of California - Irvine (UCI). Dr. Grant received his B.S. with distinction, in Geology from Stanford University in 1985; and his M.S. and Ph.D. in Environmental Engineering and Science in 1990 and 1992, respectively, from California Institute of Technology. Dr. Grant was Assistant Professor of Environmental Engineering at UCI from 1991-96, Associate Professor of Environmental Engineering at UCI from 1996-2001, Professor of Environmental Engineering at UCI from 2001 to present, and Department Chairman from 2002 to present. His professional interests include environmental engineering, coastal water quality, coagulation and filtration of colloidal contaminants and environmental microbiology. Dr. Grant professional service has included 1) membership on the National Water Research Institute Blue Ribbon Review Panel (2000), 2) US EPA Drinking Water Proposal Review Panel (2000), 3) UC Water Resources Center Advisory Board (1999 to 2002), 4) Orange County Coast Watch Board of Directors (2000), 5) Water Environment Research Foundation Proposal Review Panel (1999-2000) and 6) NSF-EPA Water

and Watersheds Proposal Review Panel (1996). He is a member of the American Chemical Society, American Association for the Advancement of Science and the American Society of Civil Engineers. Research funds for Dr. Grant's research come from federal (National Science Foundation, Environmental Protection Agency), private (National Water Research Institute), State (State Water Resources Control Board), and local (Orange County and the cities of Huntington Beach, Fountain Valley, Costa Mesa and Santa Ana) sources.

Dr. Joseph R. Landolph is currently Associate Professor of Molecular Microbiology and Immunology and Pathology and a Member of the USC/Norris Comprehensive Cancer Center, in the Keck School of Medicine and Associate Professor of Molecular Pharmacology and Toxicology, in the School of Pharmacy, with tenure, at the University of Southern California (USC) in Los Angeles, California. Dr. Landolph received a B. S. degree in Chemistry from Drexel University in 1971 and a Ph. D. in Chemistry from the University of California at Berkeley in 1976, under the guidance of the late Professor Melvin Calvin, where he studied the metabolism of the chemical carcinogen, benzo(a)pyrene, and its ability to induce cytotoxicity in cultured mouse liver epithelial cells and morphological transformation in Balb/c 3T3 mouse fibroblasts. Dr. Landolph performed postdoctoral study in chemical carcinogenesis and chemically induced morphological and neoplastic cell transformation and mutagenesis at the USC/Norris Comprehensive Cancer Center at the University of Southern California under the late Professor Charles Heidelberger from 1977-1980. Dr. Landolph was appointed Assistant Professor of Pathology in 1980, and Associate Professor of Microbiology, Pathology, and Toxicology at USC in 1987. Dr. Landolph has served as a grant reviewer for the U. S. EPA. Health Effects Panel, for special RFAs for the NIEHS, and as an ad hoc member for the Chemical Pathology Study Section and the AI-Tox-4 Study Section of the NIH. Dr. Landolph has also been a member of the Carcinogen Identification Committee reporting to the Scientific Advisory Committee of the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency from 1994-2002. He is the recipient of numerous awards, including the Merck Award in Chemistry and the Superior Cadet Award in ROTC from Drexel University in 1971, the Edmundson Teaching Award in the Dept. of Pathology at USC in 1985, a Traveling Lectureship Award from the U. S. Society of Toxicology in 1990, and a competitive American Cancer Society Postdoctoral Fellowship from 1977-1979. Dr. Landolph's research interests and activities include studies of the genetic toxicology and carcinogenicity of carcinogenic insoluble nickel compounds, carcinogenic chromium compounds, carcinogenic arsenic compounds, and carcinogenic polycyclic aromatic hydrocarbons. His laboratory is focused on studying the ability of these carcinogens to induce morphological and neoplastic transformation of C3H/10T1/2 mouse embryo cells and the cellular and molecular biology of the transformation process. His laboratory is currently studying the ability of carcinogenic nickel compounds to induce activation of expression of oncogenes and inactivation of expression of tumor suppressor genes in cells transformed by insoluble carcinogenic nickel compounds, such as nickel subsulfide, crystalline nickel monosulfide, and green (high temperature) and black (low temperature) nickel oxides. His laboratory is also studying the molecular biology of chromium compound-induced cell transformation and the role of valence in cell transformation by various chromium-containing compounds. Dr. Landolph is an expert in chemically induced morphological and neoplastic transformation and chemically induced mutation in murine and human fibroblasts. He is the author of 32 peer-reviewed scientific publications, 21 book chapters/review articles, and has held peer-reviewed research grant support from the U. S. EPA, the U. S. National Cancer Institute, and the U. S. Institute of Environmental Health Sciences.

Dr. Guy R. Lanza has been involved in research, teaching, curriculum development, and consulting in several areas of the environmental sciences including ecotoxicology, environmental impact assessment, applied and environmental microbiology, aquatic ecology,

and water quality for more than 35 years. At the Merck Institute for Therapeutic research, Dr. Lanza developed several new microbial screening assays to help characterize and test antimicrobial and antiparasitic drugs including Cambenzadole and Ivermectin. Later, he completed research on the ecology of waterborne diseases in the Mekong River ecosystem in Thailand, Laos, Cambodia and Vietnam with the Smithsonian Institution.

At New York University, the University of Texas at Dallas, and the University of Massachusetts at Amherst, Dr. Lanza developed novel methods for measuring and monitoring the ecotoxicological effects of contaminants and thermal stress in soil, water, and sediments. He designed and directed several research projects on bioremediation and phytoremediation strategies suitable for treating hazardous waste sites. Dr. Lanza also serves as a technical advisor to the International Rivers Network (Berkeley) where he actively participates in several environmental impact assessments of major hydroelectric dam projects in Asia and Africa.

Dr. Lanza has a B.S. in Biology from Fairleigh Dickinson University, an M.S. in Zoology from the University of Kentucky, and a Ph.D. in Biology (Environmental Microbiology) from Virginia Polytechnic Institute and State University. He has served as a consultant and expert witness to industry, international agencies, various government organizations, and is active on several editorial peer review boards and committees in microbiology and the environmental sciences. Dr. Lanza served as the Rapporteur for the Expert Group on Air, Water, and Land Pollution for OECD from 1980-82, and as an expert witness for the US Department of Justice for the remediation of the Everglades National Park and the Loxahatchee National Wildlife Refuge from 1990-95.

Dr. Lanza has been involved in several initiatives to develop innovative curricula in the environmental sciences. He served on the Advanced Placement Environmental Sciences Committee for the College Board, and helped to develop new curriculum in environmental biology for Mahidol University and Burapha University in Thailand, and the Hanoi School of Public Health in Vietnam. He also served as Founding Editor/Editor-in-Chief/ Senior Science Editor for the International Journal of Phytoremediation published by Taylor Francis/ CRC Press, and is currently an Editor with Ethics in Science and Environmental Politics.

Dr. Lanza has served as a consultant to the Environmental Engineering Committee and on the review panel of the Scientific and Technical Achievements Awards Committee of the E.P.A. Science Advisory Board. He was elected a Fellow of the American Academy of Microbiology in 2000. Dr. Lanza is currently Professor of Microbiology, Director of the Environmental Sciences Program, and Coordinator of the Graduate Program in Environmental Toxicology and Risk Assessment at the University of Massachusetts at Amherst.

Dr. John P. Maney received his Ph.D. in Analytical Chemistry from the University of Rhode Island, Kingston, Rhode Island. Dr. Maney has over 30 years experience in analytical chemistry and over 20 years experience in environmental sampling, environmental analysis and data quality issues. He has directed and founded environmental testing laboratories, managed numerous government contracts and subcontracts, which have addressed among other issues, analytical method development, analytical method validation, hazardous waste sampling, and authoring of guidance. Dr. Maney has chaired and participated in the consensus standard process for USEPA/ASTM accelerated standards regarding sampling, subsampling and data quality. For the last 11 years he has been president of Environmental Measurements Assessment (EMA), a consulting company that focuses on sampling, analytical and quality issues.

Dr. Michael C. Newman received degrees in zoology from the University of Connecticut (B.A., M.S.) and environmental sciences from Rutgers University (M.S., Ph.D.). After his postdoctoral studies, he was a research ecologist at the University of Georgia's Savannah River Ecology laboratory. He now holds a Professor of Marine Science position at the College of William and Mary's School of Marine Science after ending a three-year term as Dean of Graduate Studies of the School of Marine Science. His research emphasizes quantitative methods in ecotoxicology with topics of interest ranging from chemical measurement statistics to QSAR-like models for predicting metal ion effects to contaminant effects on population genetics to methods of predicting community level effects. He has authored approximately 100 publications on these topics including four books, *Quantitative Methods in Aquatic Ecotoxicology*, *Fundamentals of Ecotoxicology*, *Population Ecotoxicology and Community Ecotoxicology*. He also edited several books, *Metal Ecotoxicology*, *Hierarchical Ecotoxicology*, *Risk Assessment: Logic and Measurement*, *Coastal and Estuarine Risk Assessment*, and *Risk Assessment with Time-to-Event Models*. Dr. Newman is active in advisory service. He served on OECD, EPA, DOE, NAS, and state environmental regulatory and risk assessment committees and panels. He was one of two U.S. members of an OECD team charged with assessing statistical methods for analyzing toxicity data. Work with DOE involved complex-wide consideration of data quality objectives for risk assessment activities, and various site-specific advisory services to the Savannah River and Hanford sites. He has been a member of numerous EPA teams including the FIFRA ECOFRAM working group, two FIFRA science advisory panels, the Chesapeake Bay Office science advisory board, a FQPA scientific review board, and a joint U.S. EPA-Israeli Water Agency working group. He has reviewed numerous risk assessment documents for EPA and was a consultant to the NAS (Everglades Ecosystem Assessment). He continues to work actively with various Virginia Department of Environmental Quality teams and panels.

Dr. Gary A. Toranzos is a professor of microbiology at the Department of Biology, University of Puerto Rico, Rio Piedras Campus. He completed his Ph.D. at the University of Arizona in 1985. He is best known for his work on the microbiological quality of waters, the ecology of waterborne pathogens and the development of indicators of risk. He has worked on the development and implementation of molecular methods in environmental microbiology with a strong emphasis on quality control. He worked as a Program Director for the National Science Foundation, Division of Molecular and Cellular Biosciences. He is an elected member of the American Academy of Microbiology, A fellow of the American Association for the Advancement of Science and is currently a Research Council member of the Water Environment Research Foundation. Dr. Toranzos has published extensively on the microbiology of drinking and recreational waters. He also served as a member of the EPA Science Advisory Board, Drinking Water Committee from 1997 through 2003.