

The University of Georgia
College of Agricultural and Environmental Sciences
Department of Crop and Soil Sciences, and
Savannah River Ecology Laboratory

Professional Vitae

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Executive Summary

Professor Adriano has a distinguished professional career over a period of 40 years in agricultural and environmental sciences. He has demonstrated academic excellence since he was a high school student at San Ildefonso College (Tanay, Rizal, Philippines) where he graduated valedictorian in 1957. He enrolled at Central Luzon State University (then Central Luzon Agricultural College, CLAC) in Nueva Ecija, Philippines in 1958 graduating at the top of his engineering class in 1961. Thereafter, he taught high school physics and geometry at CLAC before immigrating to the United States in 1963 on graduate fellowship in agronomy and soil science. He has academic stints at Kansas State University (M. S. and Ph. D. degrees), Michigan State University (Asst. Professor), University of California, Riverside (Postdoctoral Fellow), and the University of Georgia (Assoc. Professor, then Professor). He has also spent sabbatical leave at the University of California (1977-78), Universitat fur Bodenkultur in 1997 (Vienna, Austria) and Hasselt University in 1998 (Diepenbeek, Belgium). He was appointed Professor Emeritus in 2005 after teaching and conducting research at the University of Georgia for over 31 years.

He is a member of several professional and honorary societies and has been bestowed prestigious recognitions/awards by the American Society of Agronomy and the Soil Science Society of America. He is a fellow of both societies and has been presented the prestigious Environmental Quality Research Award in 1999 by the former society. He has been honored by his alma maters: Kansas State University with the Distinguished Service in Agriculture Award (1999), the Central Luzon State University (Golden Grain Award in Science & Technology, 2005) and San Ildefonso College (Most Outstanding Alumnus Award during its Golden Jubilee Celebration, 1997). He served as Head of the Division of Biogeochemical Ecology at the Savannah River Ecology Laboratory for over 14 years. He has also served in various capacities (Assoc. Editor, Division Chair, Sub-Commission Chair, etc) in several national and international professional societies and organizations including the International Union of Soil Science.

He is an internationally recognized expert in environmental soil chemistry and biogeochemistry, especially in areas of soil and water pollution with trace elements, heavy metals and metalloids and their remediation, in which he wrote a landmark textbook now in its second edition (published in 2001 by Springer, New York). Covering the biogeochemistry, bioavailability, and risks of trace elements, heavy metals and metalloids in soils and their potential impacts on the food chain, human health and sustainable development, this book has been widely used worldwide. According to Google "Scholar", it has been cited over 715 times in the literature since its publication rendering it as one of the most widely used references in agriculture, ecology and environmental science. In addition, he has published 63 book chapters, 28 comprehensive reviews, 125 peer reviewed journal articles, 35 peer reviewed proceedings articles, 12 scientific reports, and has edited/co-edited 15 books. His creativity in environmental research has resulted in the issuance of patents in the United States and Austria. He has been invited as a guest/keynote speaker in numerous seminars, conferences, and symposia on these topics in over 35 countries around the world and has mentored many international students and young professionals. He has also

collaborated with international scholars over three decades on research projects dealing with soil contamination and remediation, environmental health and sustainable development. He has been invited to teach a short course on trace elements in South Korea, Mexico, Austria, Brazil, Chile, Spain, Hungary and Belgium.

In 1990, he founded and served as principal organizer of the now popular International Conference on the Biogeochemistry of Trace Elements (ICOBTE), the first being held in Orlando, Florida. The succeeding conferences were held in Taiwan (1993), France (1995), California (1997), Austria (1999), Canada (2001), Sweden (2003), and Australia (2005); the next (9th of the series) is scheduled for 2007 in Beijing, China. He subsequently founded the International Society of Trace Element Biogeochemistry (ISTEB) in association with the ICOBTE and was elected its first president in 1999. The ICOBTE and ISTEB are the main forums for students, scientists and other professionals in trace elements, heavy metals and metalloids-----where cutting-edge research, emerging paradigms and technologies, and future issues on the topics are discussed in the open.

Professor Adriano has remained active in academia and will endeavor to sustain his mission in life: To passionately excel in life by upholding the high values of hard work, morality and compassion.

PRESENT RANK: Professor Emeritus of Environmental Soil Chemistry and Biogeochemist

DEPARTMENTS: Crop & Soil Sciences

Miller Plant Science Building
The University of Georgia
Athens, GA, USA 30605

Savannah River Ecology Laboratory
The University of Georgia
Drawer E, Aiken, South Carolina 29802

ACADEMIC RECORD:

Degrees: (Fields, Dates and Institutions)

B.S. Agric. Engr.	Agric. Engr.	1961	Central Luzon State University, Philippines
M.S. Agronomy	Soil Science	1967	Kansas State University Manhattan, KS
Ph.D. Agronomy	Soil Science	1970	Kansas State University Manhattan, KS

Positions Held:

Professor Emeritus	Dept. of Crop & Soil Sciences University of Georgia, Athens	2005-present
Guest Professor	Div. of Environmental Biology Limburgs Universitair Centrum (Diepenbeek, Belgium)	1999 (Dec.-March)
	Institute of Soil Science	1998 (April-Nov.)

	Universität für Bodenkultur Vienna, Austria	
Professor	Dept. of Crop & Soil Sciences University of Georgia, Athens	1990-present
Senior Biogeochemical Ecologist	Div. of Biogeochemical Ecology Savannah River Ecology Laboratory, Aiken, SC	1984-present
Senior Biogeochemical Ecologist & Head	Div. of Biogeochemical Ecology Savannah River Ecology Lab Aiken, SC	1984-98
Assoc. Biogeochemical Ecologist	Div. of Biogeochemical Ecology Savannah River Ecology Lab Aiken, SC	1977-84
Visiting Professor	Dept. of Soil & Environ. Sciences University of California, Riverside	1978-79
Asst. Biogeochemical Ecologist	Div. of Biogeochemical Ecology Savannah River Ecology Lab Aiken, SC	1975-77
Asst. Professor	Dept. of Crop & Soil Sciences Michigan State University East Lansing, MI	1972-74
Postdoctoral Fellow	Dept. of Soil & Environ. Sciences University of California Riverside, CA	1970-72
Graduate Research Associate	Dept. of Agronomy Kansas State University Manhattan, KS	1963-69

ACADEMIC AND PROFESSIONAL SOCIETY ACTIVITIES:

a. Professional meetings attended, papers given at meetings, and lectures given to professional group (partial list)

1. Phosphate fixation by fly and fly-ash-amended soils, 1980 American Society of Agronomy and Science Society of America
2. Co-recycling of sewage sludge and fly ash: heavy metal uptake by crop (**Invitational speaker**), 1981 *Symp. on Heavy Metals in the Environment*, Amsterdam
3. Soil factors affecting radionuclide uptake by the rice plant, 1983 *Department of Energy Workshop*, Savannah River Site
4. Environmental chemistry and cycling of trace elements (**Plenary speaker**), 1984 *Int'l. Symp. on Trace Elements*, Budapest, Hungary
5. Environmental chemistry of trace elements, 1984 University of Heidelberg, Institute of

- Biogeochemistry, Heidelberg, Federal Republic of Germany
6. Environmental chemistry and cycling of trace elements, 1984 Federal Agricultural Research Center, Braunschweig, Federal Republic of Germany
 7. Environmental chemistry of an organo-borate in the soil-plant system, 1984 *Intl. Symp. on Environmental Contamination*, London, UK
 8. Research opportunities in trace elements: A look into the future (**Invitational paper**), 1986 *Intl. Symp. on Trace Elements*, Budapest, Hungary
 9. Sources of trace element enrichment in agricultural soils (**Invitational speaker**), 1986 *Intl. Symp. on Trace Elements*, Jena, German Democratic Republic
 10. Potential utilization of coal fly ash in agriculture and silviculture, 1986 Power and Marketing Division, Tennessee Valley Authority, Chattanooga, TN
 11. Land application of municipal sewage sludge: guidelines -- trace elements (**Invitational paper**), 1988 *Intl. Conference on Environmental Life Elements and Health*, Beijing, China
 12. Phytoavailability of thallium, 1988 *Intl. Conference on Environmental Life Elements and Health*, Beijing, China
 13. New research frontiers on trace element research (**Invited seminar**), 1988 Chinese National Environmental Monitoring Center, Beijing, China
 14. New frontiers on trace element research (**Invited seminar**), 1988 National Institute for Agro-environmental Sciences, Tsukuba Science City, Japan
 15. Bioavailability of rare trace elements (**Invited seminar**), 1988 Department of Agricultural Chemistry, University of Tokyo, Tokyo, Japan
 16. Interaction of vanadium and calcium in beans, 1989 American Society of Agronomy and Soil Science Society of America
 17. Groundwater quality as influenced by coal-fired power plant, 1989 American Society of Agronomy and Soil Science Society of America
 18. Scientific tests of innovative root biobarrier (**Invited seminar**), 1989 Lilly Greenfield Labs, Greenfield, IN
 19. Efficacy of a root bio-barrier (**Invited seminar**), 1989 Lawrence Livermore National Lab, Livermore, CA
 20. Environmental research at the SRP (Seminar), 1989 University of Florida, Gainesville, FL
 21. Environmental research at the SRP (Seminar), 1989 Clemson University, Clemson, SC
 22. Biological and Environmental Effects of Metal (**Banquet talk**), 1990 Savannah Club of Sigma Xi, Savannah, GA
 23. Geochemical Research at SRS, 1990 Dept. of the Army, CRREL, Hanover, NH
 24. Persistence of selected trace metals in a soil-plant system, 1990 *Intl. Conference on Metals in Soils, Waters, Plants and Animals*, Orlando, FL
 25. Trace metals in the environment (Seminar), 1991 Savannah River Ecology Laboratory, University of Georgia
 26. Metals in the environment (**Invited lecture**), 1991 Kansas State Graduate Club, Manhattan, KS
 27. Environmental contamination by metals: nature and solutions to the problem -- global perspective (**Invited seminar**), 1991 National IGBP Committee of the Hungarian Academy of Sciences, Budapest, Hungary
 28. Application of coal combustion residues (**Invited seminar**), 1991 The Institute for Soil Science and Cultivation of Plants, Pulawy, Poland
 29. Overview of environmental contamination by metals (**Invited seminar**), 1991 Institute of Veterinary Science, Pulawy, Poland
 30. Global extent of environmental contamination by trace metals (**Invited seminar**), 1991 INRA Centre de Recherches de Bordeaux, Bordeaux, France
 31. An overview of global metal contamination (**Invited seminar**), 1992 U.S. Department of

- Agriculture, Beckley, WV
32. Metals in the environment (**Invited seminar**), 1992 Virginia Polytechnic Institute and State University, Blacksburg, VA
 33. Metals in the soil plant system from application of solid waste (**Invited seminar**), 1992 Department of Soil Science, National Chung-Shing University, Taichung, Taiwan
 34. Soil contamination by trace metals: a global perspective, 1992 *Workshop of the Effects of Agricultural Resources and Materials on the Environment*. National Taiwan University, Taipei, Taiwan
 35. Role of natural organic materials and pore water flow velocity on subsurface mobile colloid generation, 1992 American Society of Agronomy and Soil Science Society of America
 36. Soil remediation: a need for an integrated approach (**Invited seminar**), 1992 Research Institute of Soil Science & Agricultural Chemistry, Budapest, Hungary
 37. Soil remediation: a need for an integrated approach (**Invited seminar**), 1992 Technical University, Prague, Czech Republic
 38. Soil remediation: a need for an integrated approach (**Invited seminar**), 1992 University of Ljubljana, Slovenia
 39. Soil remediation: a need for an integrated approach, 1992 Institute of Soil Science, Universität für Bodenkultur, Vienna, Austria
 40. Soil remediation: science, technology, and applications, 1993 American Society of Agronomy and Soil Science Society of America
 42. Cadmium effects on soil pollution index plants chicory and dandelion, 1993 American Society of Agronomy and Soil Science Society of America
 43. The effects of potassium on the availability of ¹³⁷Cs to vegetable grown on a contaminated lake bed, 1993 *4th Intl. Conference on the Chemistry and Migration Behavior of Actinides and Fission Products in the Geosphere*, Charleston, SC
 44. Interactions of contaminants with soil components and environmental restoration (**Invitational speaker**), 1994 *15th Intl. Congress of Soil Science*, Acapulco, Mexico
 45. Agronomic approaches to remediate contaminated soils (**Invitational speaker**), 1994 *Modern Agriculture and the Environment*, Rehovot, Israel
 46. Scientific and technical aspects of soil remediation (**Invitational speaker**), 1994 UTEC-Absorga, Vienna, Austria
 47. Remediation of radionuclide contaminated soils, 1994 American Society of Agronomy and Soil Science Society of America
 48. Coal ash utilization of soil amendment to enhance water relations and turf growth, 1994 American Society of Agronomy and Soil Science Society of America
 49. Role of soil chemistry in soil remediation and sustaining ecosystem health (**Invitational speaker**), 1994 *"Soil Chemistry and Ecosystem Health" Workshop*, Soil Science Society of America
 50. Remediation of radionuclide contaminated soils, 1995 American Society of Agronomy and Soil Science Society of America
 51. High application rates of coal ash in sod farms may enhance soil-plant-water relations, 1995 American Society of Agronomy and Soil Science Society of America
 52. Influence of a by-product Fe-oxide on mobility and plant uptake of metals, 1995 American Society of Agronomy and Soil Science Society of America
 53. Environmental Technology in Developing Countries in the Tropics (**Invited speaker**), 1996 *1st Intl. Conference on Contaminants in Soil Environment in the Pacific Australasia Region*, Adelaide, Australia
 54. Remediation of Contaminated Soils (**Invited keynote speaker**), 1996 *1st Intl. Conference on the Remediation and Management of Degraded Lands*, Hong Kong
 55. Closing Remarks (**Invited**), 1996 *1st Intl. Conference on the Remediation and Management*

- of Degraded Lands*, Hong Kong
56. Metal-related environmental impacts from mining (**Invited lecturer**), 1996 *Special National Workshop on Restoration and Management of Mined Lands: Principles and Practices*, Guangzhou, China
 57. Cost/benefits in restoring degraded sites (**Invited lecturer**), 1996 *Special National Workshop on Restoration and Management of Mined Lands: Principles and Practice*, Guangzhou, China
 58. Soil contamination and remediation: A prerequisite for sustainable soil health (**Invited seminar**), 1996 Institute of Soil Science, Academia Sinica, Nanjing, China
 59. The chemical time bomb syndrome: a potential environmental warning system (**Invited keynote speech**), 1997 *1st Intl. Conference on Agriculture and Environment-Human Interactions*, Nanjing, China
 60. Global soil contamination - perspectives and the need for a global soil remediation network (**Invited lecture**), 1997 Department of Urban Ecology and Environmental Science, Peking University, Beijing, China
 61. Chemical time bomb: a potential tool in environmental conservation and management (**Invited keynote speech**), 1997 *XV Brazilian Soil Science Congress*, Rio de Janeiro, Brazil
 62. Applications of industrial ecology to food processing residues (**Invited seminar**), 1997 *Special workshop of the Embrapa Section on Food Science and Technology*, Rio de Janeiro, Brazil
 63. Importance of bioavailability and speciation in environmental contamination and risk assessment (**Invited opening remarks**), 1997 *Special Symposium on Bioavailability, Toxicity and Risk Relationships in Ecosystems. 4th Intl. Conference on Biogeochemistry of Toxic Elements*, Berkeley, CA
 64. Role of phytoremediation in the establishment of a global soil remediation network, (**Invited keynote speech**), 1997 *Intl. Seminar on Use of Plant for Environmental Remediation*, Tokyo, Japan
 65. **Inspirational speech** What it takes to succeed in this competitive world (**Invited**), 1997 during the *Golden Jubilee Homecoming*, San Idelfonso College, Tanay, Rizal, the Philippines
 66. Soil Contamination - can we predict soil-borne chemical time bombs? (**Invited keynote paper**), 1997 *Intl. Symposium on Soil System Behaviour in Time and Space*, Vienna, Austria
 67. Immobilization of arsenic in soil using natural minerals and waste by-products, 1997 *4th Intl. Symposium on Environmental Geochemistry*, Vail, CO
 68. Bioavailability of metals in the soil-plant environment and its potential role in risk assessment: an **overview**, 1997 *4th Intl. Conference on the Biogeochemistry of Trace Elements*, Berkeley, CA
 69. Soil-plant relationships from micro to macro scale, 1997 *4th Intl. Conference on the Biogeochemistry of Trace Elements*, Berkeley, CA
 70. Sources, biogeochemistry, and effects of metals in soils, (**Keynote paper**), 1998 during the *Italian workshop on Biosolids Use in Agriculture*, Cremona, Italy
 71. Biological, physical, and chemical aspects of soil remediation, (**Opening remark**), 1998 during the opening session of *Symp. # 38, 16th World Congress of Soil Science*, Montpellier, France
 72. *In-situ* stabilization of metals in soils, 1998 *16th World Congress of Soil Science*, Montpellier, France
 73. Industrial ecology: its role in waste minimization, recycling and soil protection, (**Keynote paper**), 1998 during the *Intl. Conference on Environmental contamination, Toxicology and Health*, Hong Kong

74. Soil contamination: sources, risk assessment and remediation, 1998 Lecture during a **Special Workshop on Environmental Contamination**, Hong Kong Baptist University, Hong Kong
75. New soil quality parameters beyond production agriculture, 1999 *5th Intl. Conference on Biogeochemistry of Trace Elements*, Vienna, Austria
76. **Opening remarks**, 1999 *5th Intl. Conference on Biogeochemistry of Trace Elements*, Vienna, Austria
77. Soil quality beyond production agriculture, (**Invited paper**), 1999 during *Special Symposium on Diversity: a source of strength for the tri-societies*. American Society of Agronomy and Soil Science Society of America, Salt Lake City, UT
78. Innovative soil quality indexes post remediation (**Invited seminar**), 1999 Department of Agronomy, Kansas State University, Manhattan, KS
79. **Invited participant**, 1998 *Special Workshop on Phytoremediation*, Argonne National Lab Chicago, IL
80. Advancing soil quality into the 21st century (**Invited seminar**), 1999 Department of Land Resource Science, University of Guelph, Ontario, Canada
81. Potential alternate strategies in waste management (**Keynote paper**), 2000 presented during a *Regional Workshop on Towards a Better Management of Wastes and Contaminated Sites in the Australasia Pacific Region*, CSIRO, Adelaide, Australia
82. Industrial chemistry, industrial ecology, and waste management: where they merge and diverge (**Invited seminar**), 2000 presented at the Institute of Industrial Chemistry, Universita di Bologna, Bologna, Italy
83. Waste minimization and recycling of beneficial industrial and municipal by-products (**Invited seminar**), 2000 presented at the Institute of Agricultural Chemistry, Catholic University of Sacred Heart, Piacenza, Italy
84. Basic processes and mechanisms regulating the acidity associated with pyrite oxidation, 2000 Presented during an ER meeting to discuss the revegetation of 488-D Area Ash Basin, Savannah River Site
85. Potential solutions to abate the generation of acidic effluents in the 488-D Area Ash Basin, 2000 Presented during the Tom Heenan ER Quarterly Report, Aiken, SC
86. Selective extraction as potential indicator of soil quality, 2000 Presented during the Annual Meeting of the American Society of Agronomy and Soil Science Society of America, Minneapolis, MN
87. Changing paradigms in phytoremediation research, 2000 Presented during the *12th TIE Workshop* sponsored by US-DOE-SRS, Augusta, GA
88. Changing paradigms in trace metal research (**Invited seminar**), 2000 hosted by the Environmental Science Program and Department of Plant and Soil Sciences, Oklahoma State University, Stillwater, OK
89. Biological and chemical indices to evaluate (bio)availability or natural remediation of metals in soils (**Invited**), 2001 *Joint meeting of the Czech Society of Soil Science and Soil Science Society of America*, Czech University of Agriculture, Prague, Czech Republic
90. Natural remediation-phytoremediation of chemical contaminants in soils, 2001 *20th Annual Conference of the Philippine-American Academy of Science and Engineering*, University of California, Berkeley, CA
91. **Invited** to present a 2-part seminar *Changing paradigms in trace metal research*, 2001 SREL, Aiken, SC
92. Inorganic contaminants: general overview and applications (**Keynote speaker**), 2001 *A Special Workshop on Natural Remediation Processes*, SREL Conference Center
93. Changing paradigms in trace metal research (**Keynote speaker and coordinator**), 2001 *A Special Workshop during the 15th Intl. Symposium on Environmental Biogeochemistry*,

- Wroclaw, Poland
94. **Welcoming/opening address**—2001 During the Opening Session of the 6th Intl. Conference on the Biogeochemistry of Trace Elements, University of Guelph, Ontario, Canada
 95. Bioavailable indices in contaminated soils” (**Invited lead speaker**), Special Symposium Phyto-, microbial and chemical remediation tool for metal contaminated soils and groundwaters, 2001 6th Intl. Conference on Biogeochemistry of Trace Elements, University of Guelph, Ontario, Canada
 96. Natural attenuation-bioavailability interactions of metals in contaminated systems (**Keynote address**), 2002 Workshop on Natural Attenuation of Metals along the Tisza River-Floodplain-Wetlands Continuum. Budapest Tisza Region, Budapest, Hungary
 97. Bioavailability-natural relationships in metal-contaminated sites (**Lead address**), 2002 In: Special Symposium on Techniques for Remediation of Contaminated Soils. 17th Congress of Intl. Union of Soil Science, Bangkok, Thailand
 98. **Invited seminars**. Part 1: Role of metals in environmental and human health (50 min); Part 2: Natural attenuation-bioavailability interactions (50 min), 2002 Korea University, Seoul, South Korea
 99. **Invited seminars**. Part 1: Role of metals in our society: from the earth...to the environment...to humans (50 min); Part 2: Biogeochemical processes regulating the bioavailability of metals in soils (50 min), 2002 Gwangju Institute of Science and Technology, Gwangju, South Korea
 100. **Invited lectureship** on Condensed Course on Trace Elements: Taught a condensed course on “Trace Elements in the Terrestrial Environment” to upper undergraduate and graduate students from Seoul National University, Yonsei University and Gwangju Institute of Science and Technology (27 total students), 2002 Coordinated by Prof. Hyo Taek Chon, Chairman of Dept of Civil, Urban and Geosystem Engineering, College of Engineering, Seoul National University
 101. **Keynote** on Bioavailability – natural remediation interactions: concepts and applications during a Special Symposium on Bioavailability – Natural Remediation Interactions, 2003 7th ICOBTE, Uppsala, Sweden
 102. **Guest lecturer** on three topics: (1) Role of trace elements in environmental health and quality, (2) Basic biogeochemical processes regulating remediation of contaminated soils, and (3) New frontiers in trace elements research, 2003 during a special symposium on Remediation of Trace Element Contaminated Soils Using Chemical and Biological Techniques at Colegio de Postgraduados, Texcoco, Mexico
 103. **Keynote** speaker on Biogeochemical processes and abiotic factors controlling bioavailability, 2003 during Second International Workshop on Bioavailability of Soil Pollutant and Risk Assessment. Monte Verita, Ascona, Switzerland
 104. **Guest Speaker** on two topics: (1) Biogeochemical processes regulating bioavailability of contaminants in soils, and (2) Role of phytoremediation in environmental cleanup, 2004 during the XXIX Brazilian Congress of Soil Science, Riberão Preto, Brazil
 105. Invited seminar on Trace metal bioavailability, risk assessment and remediation in contaminated soils, 2005, Dept. of Environmental and Earth Sciences, Massey University, Palmerston North, New Zealand
 106. Invited Roundtable speaker on Chemically-induced in-situ stabilization and phytoremediation of metal-contaminated sites, November 2005 during the XVI Congreso Chileno de Ingeniería Química, Universidad de la Frontera, Pucón, Chile

b. Membership in professional and honorary societies.

1. American Society of Agronomy (ASA)
2. Soil Science Society of America (SSSA)
3. International Union of Soil Science (IUSS, formerly ISSS)
4. The Society for Environmental Geochemistry and Health (SEGH)
5. Sigma Xi
6. Gamma Sigma Delta
7. Phi Beta Delta
8. Philippine-American Academy of Science and Engineering (PAASE)

c. International, national and/or regional offices held and committee assignments, including special assignments.

1. **Organizer and Coordinator**, Intl. Symposium on "Environmental Chemistry and Cycling Processes" sponsored by U. S. Energy Research and Development Administration, Augusta, GA, 1976.
2. **Associate Editor**, Journal of Environmental Quality, 1980-1985.
3. **Co-chairman**, Symposium on Selenium in Irrigated Agriculture, American Society of Agronomy and Soil Science Society of America, New Orleans, LA, 1986.
4. **Editor and Founder**, Advances in Environmental Science, Science Reviews, Northwood, England, 1989-present.
5. **Director and Organizer**, Intl. Conference on Metals in Soils, Waters, Plants and Animals, Orlando, FL, 1990.
6. **Chair**—Div. S-2 (Soil Chemistry), Soil Science Society of America, 1990.
7. Soil Chemistry Newsletter **Editor**, Soil Science Society of America, 1990-1991.
8. **Chair**, Executive Committee, Intl. Conference on Biogeochemistry of Trace Elements Series, Vienna, Austria, 1990-2001.
9. **Member**, Soil Science Society of America Nomination Committee, 1991-1992.
10. **Chair**, Editorial Committee, Bioremediation of Contaminated Soils, American Society of Agronomy Monograph no. 37 (Appointed by the ASA Monograph Committee Chair), 1993-1997.
11. **Editor-in-Chief and Founder**, Advances in Trace Substances Research, Lewis Publishers (CRC), Boca Raton, FL, 1993-97.
12. **Chairman**, Organizing Committee, 2nd Intl. Conference on the Biogeochemistry of Trace Elements, Taipei, Taiwan, 1993.
13. **Chair**, Intl. Soil Remediation Center Feasibility Study Committee, Vienna, Austria, 1993.
14. **Liaison** between the American Society of Agronomy and the National Institutes of Environment, 1993-1995.
15. **Chair**, Steering Committee for the Global Soil Remediation Network, 1995-present.
16. **Chair-elect**. Sub-commission in Soil Remediation, 16th Intl. Congress of Soil Science, Acapulco, Mexico, 1994-1998.
17. **Member**, Editorial Board, Soil Chemistry and Ecosystem Health, Soil Science Society of America Monograph, Madison, WI, 1995-1996.
18. **Member**, Ad Hoc Committee on Soil Quality, Soil Science Society of America (Appointed by SSSA President), 1995-1996.
19. **Member**, Steering Committee, WASTECH, Annapolis, MD (Appointed by SSSA President L. Wilding), 1995.
20. **Member**, Intl. Advisory Committee, Intl. Conference on the Remediation and Management of Degraded Lands, Hong Kong, 1996.
21. **Advisor** to the Intl. Organizing Committee, Intl. Conference on the Contaminants in the Soil Environment in the Australasia-Pacific Region, Adelaide, Australia, 1996.
22. **Chairman**, Intl. Organizing Committee, 4th Intl. Conference on Biogeochemistry of Trace

- Elements, University of California, Berkeley, CA, June 23-26, 1997.
23. **Member**, Intl. Organizing Committee, 16th World Congress in Soil Science, Montpellier, France, August 20-26, 1998.
 24. **Chair**, Intl. Organizing Committee, 3rd Intl. Conference on the Biogeochemistry of Trace Elements, Paris, France, May 1995.
 25. **Past Chair**, Commission on Soil Remediation, 17th Congress Intl. Union of Soil Science, Montpellier, France, August 1998.
 26. **Co-organizer/Co-chair** of Special Symposium # 38, Biological, Physical and Chemical Process in Soil Remediation. 17th Soil Science World Congress, Montpellier, France, August 1998.
 27. **Member**, Advisory Committee, 2nd Intl. Conference on Trace Elements and Food Chain. Wuhan, China. November 12-15, 1998.
 28. **Technical Advisor** for the Soil Remediation Research Center, Administered by ERDA for the Office of AMSTBD, SROO, Savannah River Site (1997-2000).
 29. **Member**, Environmental Quality Research Award Committee (A-477 ASA), American Society of Agronomy, Madison, WI, 2001-2002.
 30. **President**, Intl. Society for Trace Element Biogeochemistry, Vienna, Austria, 1999-2001.
 31. **Consulting Editor and Member**, Advisory Board of the Journal of Pedosphere, 2001-present.
 32. **General Counsel** to the Organizing Committee, 6th Intl. Conference on Biogeochemistry of Trace Elements, University of Guelph, Ontario, Canada, July 29-August 2, 2001.
 33. **Chairman and Founder**, Intl. Society for Trace Element Biogeochemistry, Vienna, Austria, 2002 – present.
 34. **Vice-secretary** of Div. 4 (Soils and the Environment) of the Intl. Union of Soil Science, Philadelphia, PA, 2002-2006.
 35. **Member**, Editorial Board of Journal of Environmental Geochemistry and Health, 1999-present.
 36. **Member**, Hosting Committee for the International Society of Trace Element Biogeochemistry (ISTEB), Vienna, Austria, 2003-present.
 37. **Honorary President** of the International Society of Trace Element Biogeochemistry, Vienna, Austria, 2003-present.
 38. **Advisor** to the International Committee of the ISTEB, Vienna, Austria, 1999-present.
 39. **Member**, Scholarship Committee for the International Society of Trace Element Biogeochemistry, Vienna, Austria, 2004-present.

d. Invited Seminars and Lectures in Graduate Enrichment Programs and Advanced Research.

(Unless stated, only once)

1. University of California (Riverside, CA) (several)
2. Virginia Tech (Blackburg, VA)
3. University of Florida (Gainesville, FL)
4. Kansas State University (Manhattan, KS) (twice)
5. University of Wyoming (Laramie, WY)
6. Universität für Bodenkultur (Vienna, Austria) (several)
7. University of Heidelberg (Heidelberg, Germany)
8. University of Georgia (Athens, GA) (several)
9. University of (Ghent, Belgium)
10. State Agricultural University (Wageningen, The Netherlands)
11. Technical University of Denmark (Copenhagen, Denmark)
12. University of Philippines (Los Banos, Laguna, The Philippines)
13. National Taiwan University (Taipei, Taiwan) (several)

14. Massey University (Palmerston North, New Zealand)
15. International Rice Research Institute (Manila, The Philippines)
16. Institute of Soil Science and Plant Cultivation (Pulawy, Poland)
17. University of Horticulture and Food Science (Budapest, Hungary)
18. Institute of Soil Science and Agricultural Chemistry (Budapest, Hungary)
19. University of Ljubljana (Ljubljana, Slovenia)
20. Technical University of Hamburg Harburg (Hamburg, Germany)
21. Institute of Soil Science, Academia Sinica, (Nanjing, China)
22. Zhongshan University (Guangzhou, China)
23. Hong Kong Baptist University (Kowloon, Hong Kong) (twice)
24. University of Tokyo (Tokyo Campus, Japan)
25. National Agricultural University (Beijing, China)
26. National Chang-Shing University (Taichung, Taiwan)
27. Alabama A&M University (Normal, AL) (several)
28. Clemson University (Clemson, SC) (several)
29. Institute of Soil Fertility (Haren, The Netherlands)
30. INRA-Science du Sol (Bordeaux, France)
31. Federal Agricultural Research Center (Braunschweig, Germany)
32. Hebrew University of Jerusalem (Rehovot, Israel)
33. Macaulay Land Use Research Institute (Aberdeen, Scotland)
34. Thai Ministry of Agriculture (Bangkok, Thailand)
35. Polish Ministry of Agriculture and Forestry (Warsaw, Poland)
36. Japan Ministry of Agriculture and Fishery (Tokyo, Japan)
37. U. S. Dept. of Agriculture - Agricultural Research Service (Beltsville, MD)
38. University of Helsinki (Helsinki, Finland)
39. Moscow State University (Moscow, Russia)
40. Dokuchaev Institute of Soil Science (Moscow, Russia)
41. Japan Atomic Energy Research Institute (Ibaraki, Japan)
42. Institute of Geography, Academia Sinica (Beijing, China)
43. National Institute for Agro-environmental Sciences (Tsukuba, Japan)
44. Czech Technical University (Prague, Czech Republic)
45. Faculty of Agronomy, U.E.R. Biologie Vegetale (GEMBLoux, Belgium)
46. Rothamsted Agricultural Experiment Station (Harpenden, England)
47. USDA-Agricultural Research Service (Beckley, WV)
48. Czech University of Agriculture (Prague, Czech Republic) (twice)
49. Research Institute for Soil and Water Conservation (Zabovreska, Czech Republic)
50. National Public Health Institute (Helsinki, Finland)
51. Finnish Agricultural Research Center (Jokionen, Finland)
52. Michigan State University (East Lansing, MI)
53. Oklahoma State University (Stillwater, OK) (twice)
54. South Carolina State University (Orangeburg, SC)
55. Savannah State University (Savannah, GA) (twice)
56. Savannah River Ecology Laboratory (Aiken, SC) (several)
57. University of California (Berkeley, CA)
58. E.I. du Pont Center for Environmental Biotechnology (Wilmington, DL)
59. University of Agriculture (Godollo, Hungary) (twice)
60. University of Horticulture (Budapest, Hungary) (twice)
61. Peking University (Beijing, China)
62. Tokyo Agricultural University (Tokyo, Japan)
63. Limburgs Universitair Centrum (Diepenbeek, Belgium) (several)

64. Brazilian Institute of Food Science (Rio de Janeiro, Brazil)
65. University of Guelph (Ontario, Canada)
66. Università di Bologna (Bologna, Italy) (several)
67. Catholic University of the Sacred Heart (Piacenza, Italy) (twice)
68. University of South Carolina (Columbia, SC) (several)
69. Research Institute of Soil Science and Agricultural Chemistry (RISSAC), Hungarian Academy of Science (Budapest, Hungary) (several)
70. Debrecen University (Debrecen, Hungary)
71. INRA—Science du Sol (Montpellier, France)
72. INRA—Science du Sol (Versailles, France)
73. Ege University (Izmir, Turkey)
74. Seoul National University (Seoul, South Korea) (several)
75. Korea Institute of Science and Technology (Gwangju, South Korea)
76. Korea University (Seoul, South Korea)
77. Yonsei University (Seoul, South Korea)
78. Colegio de Postgraduados (Montecillo, Mexico)
79. National Science Foundation (Arlington, VA)
80. Office of Biological and Environmental Research (U. S. Dept. of Energy, Washington, D. C.)
81. Argonne National Laboratory (Argonne, IL)
82. Los Alamos National Laboratory (Los Alamos, NM)
83. Lawrence Livermore National Laboratory (Livermore, CA)
84. Commonwealth Scientific and Industrial Research Organization (CSIRO) (Adelaide, Australia)
85. Wollongong University (Melbourne, Australia)
86. Murcia University (Murcia, Spain)
87. Swiss Federal Institute of Technology (ETH) (Monte Verita, Ascona, Switzerland)
88. Ohio State University (Columbus, OH)
89. Georgia Institute of Technology (GA Tech) (Atlanta, GA)
90. University of California (Davis, CA)
91. Swedish Agricultural University (Uppsala, Sweden)
92. University of South Australia (Adelaide, Australia)
93. Universidade Estadual Paulista (UNESP) (Jaboticabal, Brazil)
94. Universidade de Sao Paulo (ESALQ) (Piracicaba, Brazil)
95. Stockholm University (Stockholm, Sweden)
96. Universidad de Santiago (Santiago, Chile)
97. Universidad Catolica de Chile (Santiago, Chile)
98. Universidad El Bosque (Bogota, Colombia)
99. Universidad de la Frontera (Temuco, Chile)
100. Nyiregyhaza College (Nyiregyhaza, Hungary)
101. Debrecen University (Debrecen, Hungary)
102. Hungarian Academy of Science (Budapest, Hungary)

e. Short Courses at other Universities

<u>University</u>	<u>Course Length</u>	<u>Course Topic</u>
Limburgs Universitair Centrum (Belgium)	5	Biogeochemistry, bioavailability, and risks of metals
Universität für Bodenkultur, thrice (Austria)	20	Metals in the Environment
Beijing University (China)	2	Metal Biogeochemistry
Alabama A&M University (Alabama)	2	Soil Contamination/Soil Quality

Savannah State University (Georgia)	3	Soil Contamination
Universita di Bologna (Italy)	5	Metals in the Environment
Seoul Natl. University (South Korea)	12 ½	Trace Elements in the Terrestrial Environment
Universidade Estadual Paulista (Brazil)	10	Heavy metal: Agriculture & Environment
Universidad de la Frontera (Chile)	7	Trace Elements in the Environment
Debrecen University (Hungary)	7	Trace Elements in the Environment

f. Visiting Scientists

<u>Name</u>	<u>Institution</u>	<u>Months at UGA</u>	<u>Purpose</u>
Dr. A. L. Page	University of California, Riverside	8	Beneficial uses of solid wastes
Dr. Joe Rule	Old Dominion University	3	Biogeochemistry of metals
Dr. Walter Wenzel	Universität für Bodenkultur	1	Trace metal chemistry
Dr. Michael Dosskey	Oregon State University	24	Root biobarrier
Dr. Ken Sajwan	Colorado State University	30	Trace element biogeochemistry
Dr. Harris Martin	University of Florida	24	Trace element biogeochemistry
Dr. Jody Shann	North Carolina State University	24	Plant nutrition of trace elements
Dr. Lazslo Simon	College of Agriculture, Faculty of Godollo (Hungary)	6	Plant nutrition/plant indicators
Dr. Gian Singh Ghuman	Savannah State University	3	Radiochemistry
Dr. M. Elrashidi	University of Alexandria, Egypt	28	Metal equilibria
Dr. Anna Chlopecka	Inst. of Soil Science and Plant Cultivation (Poland)	48	Metal biogeochemistry
Dr. Tracy Punshon	Liverpool Johns Moore University (England)	30	Phytoremediation
Dr. Bon-Jun Koo	University of California (Riverside)	30	Rhizosphere biogeochemistry
Dr. N.S. Bolan	Massey University, New Zealand	9	Environmental soil chemistry
Dr. Santiago Mahimaraija	Massey University, New Zealand	4	Metal biogeochemistry

ACADEMIC AND PROFESSIONAL HONORS AND RECOGNITIONS:

<u>Year</u>	<u>Honor or Recognition</u>	<u>Awarded by</u>
1957	Graduated H. S. Valedictorian	San Ildefonso College (Phil.)
1956-57	Corp (H. S. PMT) Commander	San Ildefonso College (Phil.)
1961	Graduated First Rank (BSAEn)	Central Luzon State Univ. Nueva Ecija, Phil.
1961	Most Reliable Engr. Student	Central Luzon State Univ.

	Award	Nueva Ecija, Phil.
1963-69	Graduate Research Fellowship	Kansas State University Manhattan, KS
1970-72	Postdoctoral Fellowship	University of California Riverside, CA
1977	Visiting Scientist/scholar	Dept. of Science & Technol. The Philippines
1979	Technical Communication Merit Award	U. S. Department of Energy Washington, D. C.
1978-79	Visiting Professorship	University of California Riverside, CA
1980	Outstanding Filipino-American Overseas (One of 10)	Late President Marcos of the Philippines (Manila)
1987	Fellow	Soil Science Society of America Atlanta, GA
1987	Fellow	American Society of Agronomy Atlanta, GA
1997	Most Outstanding Alumnus Award	San Ildefonso College (Phil.) During Golden Jubilee of SIC
1998	Certified Professional Soil Scientist (# 24749)	Federation of Certifying Boards in Agriculture, Biology, Earth and Environmental Sciences
1998	Guest Professor	Universitat für Bodenkultur (Vienna, Austria)
1998	Elected Chair	Sub-Commission on Soil Remediation, 16th World Congress of Soil Science, Montpellier, France
1999	Guest Professor	Limburgs Universitair (Diepenbeek, Belgium)
1999	Environmental Quality Research Award	American Society of Agronomy Salt Lake City, UT
1999	Distinguished Service in Agriculture Award	Kansas State University Manhattan, KS

1999-01	President, Intl. Society of Trace Element Biogeochemistry	Society headquarter (Vienna, Austria)
2000	Distinguished Guest Lecturer	Universita di Bologna Bologna, Italy
2001	Honored as Founder of Intl. Conf. on Biogeochemistry of Trace Elements (ICOBTE) and Intl. Society of Trace Element Biogeochemistry (ISTEB)	University of Guelph Ontario, Canada
2001	Recognized his paper "Utilization and disposal of fly ash and other coal residues in terrestrial ecosystems: a review, <i>J. Environ. Qual.</i> 9: 333-344" as one of top six ever published by the SREL (total ~ 2,827)	The Univ. of Georgia (SREL)
2002	Invited Special Lecturer	Seoul National Univ. College of Engineering Seoul, South Korea
2001-present	Honorary President, Executive Board, Intl. Society of Trace Element Biogeochemistry	Vienna, Austria
2003	Leader, Investigative Task Force	Joint U. S. – Hungarian Tisza River Basin Pollution
2005	"Gintong Butil" Award in Science and Technology	Central Luzon State Univ. Alumni Association (Phil.)
2005	International Guest Lecturer	Universidade Estadual Paulista, February (Brazil), and Universidad de la Frontera, November (Chile)
2006	Nominated for the International Soil Science Award of the Soil Science Society of America	

INSTRUCTION ACTIVITIES:

a. Resident Teaching:

Taught *Metals in the Environment* course. Crop and Soil Sciences, University of Georgia. Athens, GA 30602. April 1992.

Taught *Metals in the Environment* course. Crop and Soil Sciences, University of Georgia. Athens, GA 30602. Winter 1994.

International Teaching:

Taught an advanced course on Trace Elements in the Environment at Universitat fur Bodenkultur

(BOKU) thrice (once in 1986 and twice in 1989---Vienna, Austria), Hasselt University (1990---Diepenbeek, Belgium), Universita di Bologna (2000---Bologna, Italy), Seoul National University (2002---Seoul, South Korea), Colegio de Postgraduados (2003---Texcoco, Mexico), Universidade Estadual Paulista (Feb. 2005---Jaboticabal, Brazil), Universidad de la Frontera (Nov. 2005---Temuco, Chile) and Debrecen University (May 2006---Debrecen, Hungary)

b. Undergraduate Advising

Over 20 participants to U. S. Dept. of Energy Undergraduate Education Program

c. Graduate Advising

	<u>Year</u>	<u>DEGREE M.S./Ph.D.</u>	<u>MAJOR PROFESSOR</u>	<u>INSTITUTION</u>
Pauline Lindo	1988	M.S.	Co-advisor w/ R. Taylor	Alabama A&M Univ.
He Xiu	1988	M.S.	Co-advisor w/ R. Taylor	Alabama A&M Univ.
G. Weeks	1992	M.S.	Com. Member	Univ. of Georgia
Dan Kaplan	1993	Ph.D.	Co-advisor w/ M. Sumner	Univ. of Georgia
Robert Pearce	1993	Ph.D.	Co-advisor w/ M. Sumner	Univ. of Georgia
C. Ishak	1993	Ph.D.	Com. Member	Univ. of Georgia
Joseph Albright	1994	M.S.	Co-advisor w/ W. Miller	Univ. of Georgia
Wouter Geebelen	2001	Ph.D.	Co-advisor w/ J. Vangronsveld	Limburgs Univ. (Belgium)
Gian Pao'lo Aspetti	2001	Ph.D.	Co-advisor w/ E. Capri	Catholic Univ. (Italy)
Judith Unterkofler	2001	Ph.D.	Co-advisor w/ W. Wenzel	BOKU (Vienna, Austria)
Alcides A. Cintra	2005	Ph.D.	Co-advisor w/ W. Melo	Universidade Estadual Paulista (Brazil)

Theses and dissertations, for which I was major/co-major professor, in proper literature citation format:

Kaplan, D. 1994. "Subsurface mobile colloids: Their surface characterization, mineralogy, and role in contaminant transport in a coastal plain aquifer". Ph.D., University of Georgia, Athens, GA.

Pearce, R. L. 1994. "Investigation of salt sorption behavior by acid sub-soils and synthetic goethite". Ph. D., University of Georgia, Athens, GA.

Geebelen, W. 2002. "Remediation of Pb contaminated soils by phytoextraction and amendment induced immobilization: biological aspects". Ph. D., Limburgs Universtair Centrum, Diepenbeek, Belgium.

Cintra, A. 2005.

OUTREACH ACTIVITIES:

N/A

SERVICE ACTIVITIES:

N/A

PUBLICATIONS AND OTHER CREATIVE ACTIVITIES:

a. Intellectual Property

1. Mason, J. and **D. C. Adriano**. September 2001. Coal ash as soil amendment to enhance water balance, growth, and harvesting of turf grasses. Patent no. 6,287,358 B1, U. S.

- Patent and Trademark Office, Washington, D.C.
2. Wenzel, W. W. and **D. C. Adriano**. August 2002. Phytoextraktion und integrierte (physiko) chemische Fixierung. Patent no. A1525. Wien (Anmelder), Austrian Patent Office, Vienna, Austria.
 3. Wenzel, W. W. and **D. C. Adriano**. September 2004. Integrated phytoextraction and physicochemical immobilization (Patent no. 6719822), U. S. Patent and Trademark Office, Washington, D.C.

b. Books Authored

1. **Adriano, D. C.** 1986. Trace Elements in the Terrestrial Environments. Springer-Verlag, New York. 533 pages
2. **Adriano, D. C.** 2001. 2nd edition. Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals. Springer, New York, 866 pages

c. Books Edited

1. **Adriano, D. C.** and I. L. Brisbin, editors. 1978. Environmental Chemistry and Cycling Processes. U. S. Department of Energy CONF-760-429, NTIS, U. S. Department of Commerce, Springfield, VA. 911 pages
2. **Adriano, D. C.** and A. Johnson, editors. 1989. Vol. 2--Biological and Ecological Effects of Acidic Precipitation: Acidic Precipitation. *In: Advances in Environmental Science.* Springer-Verlag, New York, 368 pages
3. **Adriano, D. C.** and M. Havas, editors. 1989. Vol. 1--Case Studies on Acidic Precipitation: Acidic Precipitation. *In: Advances in Environmental Science.* Springer-Verlag, New York, 338 pages
4. **Adriano, D. C.**, editor. 1991. Metals in Soils, Waters, Plants, and Animals. *In: Proceedings of Intl. Conference on Metals in Soils, Waters, Plants and Animals. Water, Air and Soil Pollution, Spec. Volumes 57 and 58.* 930 pages
5. **Adriano, D. C.**, editor. 1992. Biogeochemistry of Trace Metals. Lewis Publishers, Chelsea, MI. 513 pages
6. **Adriano, D.C.**, I. K. Iskandar and I. P. Murarka, editors. 1994. Contamination of Groundwaters. *Advances in Environmental Science. Science Reviews.* Northwood, England. 525 pages
7. **Adriano, D. C.**, Z. S. Chen, S. S. Yang and I. K. Iskandar, editors. 1997. Biogeochemistry of Trace Metals. *Science Reviews, Northwood, England.* 432 pages
8. Iskandar, I. K. and **D. C. Adriano**, editors. 1997. Remediation of Soils Contaminated with Metals. *Science Reviews, Northwood, England.* 255 pages
9. Huang, P. M., **D. C. Adriano**, T. J. Logan and R. Chechai, editors. 1998. Soil Chemistry and Ecosystem Health. *Soil Sci. Soc. Am. Spec. Publ. # 52, Madison, WI.*
10. **Adriano, D. C.**, J. M. Bollag, W. Frankenberger and R. Sims, editors. 1999. Bioremediation of Contaminated Soils. *Am. Soc. Agron. Monog. No. 37, Madison, WI.*
11. Wenzel, W. W., **D. C. Adriano**, B. Alloway, H. Doner, C. Keller, N. W. Lepp, M. Mench, R. Naidu and G. M. Pierzynski, editors. 1999. Proceedings of Extended Abstracts, Vol. 1, 5th Intl. Conference on the Biogeochemistry of Trace Elements (Vienna, Austria, July 11-15, 1999). 644 pages
12. Wenzel, W. W., **D. C. Adriano**, B. Alloway, H. Doner, C. Keller, N. W. Lepp, M. Mench, R. Naidu and G. M. Pierzynski, editors. 1999. Proceedings of Extended Abstracts, Vol. 2, 5th Intl. Conference on the Biogeochemistry of Trace Elements (Vienna, Austria, July 11-15, 1999). 590 pages
13. Naidu, R., V. Gupta, S. Rogers, R. Kookana, N. S. Bolan and **D.C. Adriano**, editors. 2003.

Bioavailability, Toxicity and Risk Relationships in Ecosystems. Science Publishers, Plymouth, United Kingdom. 344 pages

14. **Adriano, D.C.**, T. Nemeth and Z. Gyori, editors. 2003. Natural attenuation of metals along the Tisza River – floodplain – wetlands continuum. Licism – Art Ltd., Debrecen, Hungary. 207 pages (ISBN 963 472 7263)
15. Gobran, G. R., N. Lepp, D. C. Adriano, E. Lombi, S. McGrath, M. Selim, O. Selinus and W. Wenzel, editors. 2003. Proceedings of Extended Abstracts in 5 volumes, 7th Intl. Conference on the Biogeochemistry of Trace Elements (Uppsala, Sweden, June 15-19, 2003).

d. Book Chapters

1. **Adriano, D. C.**, J. C. Corey and R. C. Dahlman. 1980. Plutonium contents of field crops in the southeastern United States, p. 381-402. *In:* W. C. Hanson (ed.), Transuranic Elements in the Environment. U. S. Department of Energy TIC 22-800, NTIS, U. S. Department of Commerce, Springfield, VA.
2. **Adriano, D. C.**, A. Wallace and E. M. Romney. 1980. Uptake of transuranium nuclides from soils by plants grown under controlled environmental conditions, p. 336-360. *In:* W. C. Hanson (ed.), Transuranic Elements in the Environment. U. S. Department of Energy TIC 22-800, NTIS, U. S. Department of Commerce, Springfield, VA.
3. **Adriano, D. C.** and H. Doner. 1982. Bromine, Chlorine, and Fluorine. p. 449-483. *In:* A. L. Page, R. H. Miller and D. R. Keeney (eds.), Methods of Soil Analysis, ASA Monog. No. 9, Revised Edition, Am. Soc. Agron., Madison, WI.
4. **Adriano, D. C.** 1986. p.1-45. Introduction. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
5. **Adriano, D. C.** 1986. Arsenic. p. 46-72. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
6. **Adriano, D. C.** 1986. Boron. p. 73-105. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
7. **Adriano, D. C.** 1986. Cadmium. p. 106- 155. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, .NY.
8. **Adriano, D. C.** 1986. Chromium. p. 156-180. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
9. **Adriano, D. C.** 1986. Copper. p. 181-218. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
10. **Adriano, D. C.** 1986. Lead. p. 219-262. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
11. **Adriano, D. C.** 1986. Manganese. p. 263-297. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
12. **Adriano, D. C.** 1986. Mercury. p. 298-328. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
13. **Adriano, D. C.** 1986. Molybdenum. p. 329-361. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
14. **Adriano, D. C.** 1986. Nickel. p. 362-389. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
15. **Adriano, D. C.** 1986. Selenium. p. 390-420. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
16. **Adriano, D. C.** 1986. Zinc. p. 421-469. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.
17. **Adriano, D. C.** 1986. Other trace elements (antimony, barium, beryllium, cobalt, fluorine, silver, thallium, tin, titanium, vanadium). p. 470-501. *In:* Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY.

18. Page, A. L., A. C. Chang and **D. C. Adriano**. 1990. Deficiencies and toxicities of trace elements. p. 138-160. *In: Agricultural Salinity Assessment and Management* ASCE Manual No. 71. Am. Soc. Civil Eng., New York, NY.
19. Kabata-Pendias, A. and **D. C. Adriano**. 1995. Trace Metals in Agriculture. *In: J. Rechcigl (ed.) Environmental Aspects of Soil Amendments and Pesticides*. Lewis Publishers, CRC, Boca Raton, FL.
20. Frankenberger, W. T., M. A. Tabatabai, **D. C. Adriano** and H. E. Doner. 1996. Bromine, Chlorine and fluorine. p. 833-867. *In: D.L. Sparks, et al. (eds.). Methods of Soil Analysis, Part 3 --- Chemical Methods 3rd ed., Soil Sci. Soc. Am., Madison, WI.*
21. **Adriano, D. C.**, J. Albright, F. W. Whicker and I. K. Iskandar. 1997. Remediation of metal- and radionuclide-contaminated soil. p. 27-45. *In: Iskandar, I. K. and D. C. Adriano (eds.). Remediation of Soils Contaminated with Metals*. Science Reviews, Northwood, England.
22. Iskandar, I. K. and **D. C. Adriano**. 1997. Remediation of soils contaminated with metals: a review of current practices. p. 1-26. *In: Iskandar, I. K. and D. C. Adriano (eds.). Remediation of Soils Contaminated with Metals*. Science Reviews, Northwood, England.
23. **Adriano, D. C.**, A. Chlopecka, D. I. Kaplan, H. Clijsters and J. Vangronsveld. 1998. Soil contamination and remediation: philosophy, science and technology applications. *In: R. Prost (ed.). Contaminated Soils*. INRA, Paris, France.
24. **Adriano, D. C.**, A. Chlopecka and D. I. Kaplan. 1998. Role of soil chemistry in soil remediation and ecosystem conservation. *In: P. M. Huang, D. C. Adriano, T. J. Logan, and R. Chechai (eds.). Soil Chemistry and Ecosystem Health*. Soil Sci. Soc. Am. Spec. Public. no. 52, Madison, WI.
25. Chlopecka, A., A. P. Gamberdinger, **D. C. Adriano** and D. I. Kaplan. 1999. Sources and practices contributing to soil contamination. *In: D. C. Adriano et al. (eds.). Bioremediation of Contaminated Soils*. Monog. no.37, Am. Soc. of Agron., Madison, WI.
26. Wenzel, W., D. Salt, R. Smith and **D. C. Adriano**. 1999. Phytoremediation: a plant-microbe decontamination system. *In: D. C. Adriano et al. (eds.). Bioremediation of Contaminated Soils*. Monog. no. 37, Am. Soc. of Agron., Madison, WI.
27. **Adriano, D. C.**, W. W. Wenzel and E. Lombi. 1999. Origine, comportamento e rischio potenziale degli elementi in tracce negli ecosistemi agrari. p. 9-24. *In: E. Capri, R. Boccelli, S. Loffi and E. Lombi, (eds.). Impatto ambientale di metallici pesanti ed elementi in tracce*. Quaderni di Tecniche di Protezione Ambientale 63, Pitagora Editrice, Bologna.
28. Brandstetter, A., E. Lombi, W. W. Wenzel and **D. C. Adriano**. 2000. Arsenic contaminated soils: I. Risk assessment: p. 715-737. *In: D. L. Wise, D. J. Trantolo, E. J. Cichon, H. I. Inyang and U. Stottmeister, (eds.). Remediation Engineering of Contaminated Soils*, Marcel Dekker, NY.
29. Lombi, E., W. W. Wenzel and **D. C. Adriano**. 2000. Arsenic-contaminated soils: II. Remedial action. p. 739-758. *In: D. L. Wise, D. J. Trantolo, E. J. Cichon, H.I. Inyang and U. Stottmeister, (eds.). Remediation Engineering of Contaminated Soils*, Marcel Dekker, NY.
30. Dick, W. A., Y. L. Hao, R. C. Stehouwer, J. M. Bigham, W. E. Wolfe, **D. C. Adriano**, J. Beeghly and R. J. Haefner. 2000. Beneficial uses of FGD by-products: Examples and case studies of land application. p. 505-536. *In: Land Application of Agricultural, Industrial, and Municipal By-products*. Soil Sci. Soc. Am. Spec. Public. no. 6, Madison, WI.
31. Punshon, T., A. S. Knox, **D. C. Adriano**, J. C. Seaman and J. T. Weber. 1999. Flue gas desulfurization (FGD) residue: potential applications and environmental issues. p. 7-28. *In: Biogeochemistry of Trace Elements in Coal and Coal Combustion By-products*. Kluwer, Dordrecht, The Netherlands.
32. Knox, A. S., J. Seaman, **D. C. Adriano** and G. Pierzynski. 2000. Chemophytostabilization

- of metals in contaminated soils. p. 811-836. *In*: D. L. Wise, D. J. Trantolo, E. J. Cichon, H. I. Inyang and U. Stottmeister, (eds.). *Bioremediation of Contaminated Soils*. Marcel Dekker, NY.
33. Lombi, E., W. W. Wenzel, G. R. Gobran and **D. C. Adriano**. 2000. Dependency of phytoavailability of metals on indigenous and induced rhizosphere processes: a review. p. 3-24. *In*: G. R. Gobran, W. W. Wenzel and E. Lombi, (eds). *Trace Elements in the Rhizosphere*. CRC Press, Boca Raton, FL.
 34. **Adriano, D. C.** 2001. Chapter 1. Introduction. p. 1-27 *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 35. **Adriano, D. C.** 2001. Chapter 2. Biogeochemical Processes and Factors Regulating Metal Behavior. p. 29-59. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 36. **Adriano, D. C.** 2001. Chapter 3. Bioavailability of Trace Metals. p. 61-89. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 37. **Adriano, D. C.** 2001. Chapter 4. Environmental Contamination and Regulation. p. 91-131. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 38. **Adriano, D. C.** 2001. Chapter 5. Ecological and Health Risks of Metals. p. 133-165. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 39. **Adriano, D. C.** 2001. Chapter 6. Risk Assessment and Management in Metal-Contaminated Sites. p. 167-217. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 40. **Adriano, D. C.** 2001. Chapter 7. Arsenic. p. 219-261. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 41. **Adriano, D. C.** 2001. Chapter 8. Cadmium. p. 263-314. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 42. **Adriano, D. C.** 2001. Chapter 9. Chromium. p. 315-348. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 43. **Adriano, D. C.** 2001. Chapter 10. Lead. p. 349-410. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 44. **Adriano, D. C.** 2001. Chapter 11. Mercury. p. 411-458. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 45. **Adriano, D. C.** 2001. Chapter 12. Boron. p. 459-497. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 46. **Adriano, D. C.** 2001. Chapter 13. Copper. p. 499-546. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 47. **Adriano, D. C.** 2001. Chapter 14. Manganese. p. 547-586. *In*: *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risks of Metals*. Springer – New York, NY. 866 p.
 48. **Adriano, D. C.** 2001. Chapter 15. Molybdenum. p. 587-624. *In*: *Trace Elements in*

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 56. **Adriano, D. C.** 1993. Soil remediation: Science, technology, and applications. Agron. Abstr. p. 25.
 57. Simon, L., H. W. Martin and **D. C. Adriano**. 1993. Cadmium effects on soil pollution index plants chicory and dandelion. Agron. Abstr. p. 49.
 58. Kaplan, D. I., P. M. Bertsch and **D. C. Adriano**. 1993. Chemical processes responsible for the enhanced transport of metals through an acidified aquifer. Agron. Abstr. p. 228.
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 80. Chlopecka A. and **D. C. Adriano**. 1996. Mimicked *in situ* stabilization of important environmental metals in a cropping system. Intl. Conference on Contaminants in the Soil Environment in the Australasia-Pacific Region, Adelaide, Australia. February 1996, (Abstract).
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 82. **Adriano, D. C.** Soil contamination - can we predict soil-borne chemical time bombs? Intl. Symposium on Soil System Behavior in Time and Space. Vienna, Austria. November 19-21, 1997. (Abstract).
 83. Chlopecka, A. and **D. C. Adriano**. Inactivation of metals in polluted soils using natural zeolite and apatite. 4th Intl. Conference on the Biogeochemistry of Trace Elements. Berkeley, CA. June 1997, (Abstract).
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 85. Chlopecka, A. and **D. C. Adriano**. Zinc uptake by plants on amended polluted soils. XIII Intl. Plant Nutrition Colloquium. Tokyo, Japan. September 1997, (Abstract).
 86. Chlopecka, A. and **D. C. Adriano**. Immobilization of arsenic in soil using natural minerals and waste by-products. 4th Intl. Symposium on Environmental Geochemistry. Vail, CO. October 1997, (Abstract).
 87. Chlopecka, A. and **D. C. Adriano**. Physico-chemical characterization of heavily contaminated soils. SSSA Annual Meetings, Anaheim, CA. October 1997, (Abstract).
 88. Bujtas, K., A. Chlopecka, I. Kadar and **D. C. Adriano**. Plant-soil relationships from micro to macro scale. 4th Intl. Conference on the Biogeochemistry of Trace Elements. Berkeley, CA. June 1997. (Abstract).
 89. Chlopecka, A. and **D. C. Adriano**. Cadmium stabilization in amended polluted soils. 90th Annual Meeting of Am. Soc. Agron., Baltimore, MD. October 18-22, 1998, (Abstract).
 90. **Adriano, D. C.** and J. T. Weber. Land utilization of dry FGD. 90th Ann. Meeting of the Am. Soc. Agron., Baltimore, MD. October 18-22, 1998 (Abstract).
 91. Taylor, R. W., P. V. Lindo and **D. C. Adriano**. Availability to crops of residual P from a sludge-treated soil. 90th Ann. Meeting of the Am. Soc. Agron., Baltimore, MD. October 18-22, 1998, (Abstract).
 92. **Adriano, D. C.** Soil quality beyond production agriculture. Special Symp. on Diversity: a source of strength for the tri-societies. 91st Ann. Meeting of the Am. Soc. Agron., Salt Lake City, UT. October 31-November 4, 1999, (Abstract).
 93. Taylor, R. W., P. V. Lindo and **D. C. Adriano**. Fractionation of residual P in a highly weathered sludge-treated soil. 91st Ann. Meeting of the Am. Soc. Agron., Salt Lake City, UT. October 31-November 4, 1999, (Abstract).
 94. Knox, A. and **D. C. Adriano**. Cadmium availability in remediated soil: availability indices. 11th Intl. Conference on Heavy Metals in the Environment. Univ. of Michigan, Ann Arbor, MI. August 6-10, 2000, (Abstract).

95. Punshon, T., **D. C. Adriano** and J. T. Weber. The use of flue gas desulfurization residue as a soil amendment results of a two-year mesocosm study. Ann. Meetings of the Am. Soc. Agron./Soil Sci. Soc. Am., Minneapolis, MN. November 5-9, 2000, (Abstract).
96. Han, F. X., W. L. Kingery, H. M. Selim and **D. C. Adriano**. Bioavailability of trace elements in animal waste-amended soils with varying histories of application. Ann. Meetings of the Am. Soc. Agron./Soil Sci. Soc. Am., Minneapolis, MN. November 5-9, 2000, (Abstract).
97. Geebelen, W., **D. C. Adriano**, J. Vangronsveld and H. Clijsters. Evaluation of remediated Pb contaminated soils by means of availability indices. 11th Intl. Conference on Heavy Metals in the Environment. Univ. of Michigan, Ann Arbor, MI. August 6-10, 2000, (Abstract).
98. Punshon, T. and **D. C. Adriano**. Remediation of a SRS site contaminated with Cs-137 for the purpose of crop production. 4th Intl. Chernobyl Conference, Slavutyck, Ukraine. September 27-28, 2000, (Abstract).
99. Bolan, N. S., R. Natesan, **D. C. Adriano** and B. J. Koo. Sequestration and bioavailability of hexavalent chromium in soils. Special workshop on Natural Remediation Processes, SREL Conference Center, October 4, 2001.
100. Danker, R, **D. C. Adriano**, C. Barton and T. Punshon. Revegetation of a coal fly ash-reject landfill. Paper no. SP 114, p. 381. Proceedings of 6th Intl. Conference on Biogeochemistry of Trace Elements, University of Guelph, Guelph, Ontario, Canada. July 29-August 2, 2001.
101. Unterkofler, J., W. W. Wenzel, **D. C. Adriano**, G. Wieshammer, P. Sommer and W. Fitz. Integrated phytoextraction and (physico-) chemical immobilization – a new approach to remediate contaminated soils. Paper no. GP 130, p. 411. Proceedings of the 6th Intl. Conference on Biogeochemistry of Trace Elements. University of Guelph, Guelph, Ontario, Canada. July 29-August 2, 2001.
102. **Adriano, D. C.** Trace metals and human health. 20th Annual Conference of the Philippine-American Academy of Science and Engineering, University of California, Berkeley, CA. July 5-8, 2001.
103. Chen, J., G. Zhang, **D. C. Adriano** and A. Chlopecka. Reduction capacity of soils for Cr(VI) as influenced by selected electron donors. Paper no GO 308, p. 222. Proceedings of 6th Intl. Conference of Biogeochemistry of Trace Elements, University of Guelph, Ontario, Canada. July 29-August 2, 2001.
104. Punshon, T., G. Mills and **D. C. Adriano**. Natural attenuation of vinyl chloride from the plume of C-Area burning rubble pits by natime trees. Groundwater Update meeting, Room 152, Bldg. 730-B, Savannah River Site, September 6, 2001.
105. Bolan, N. S. R. Natesan, **D. C. Adriano** and B. J. Koo. Sequestration and bioavailability of hexavalent chromium in soils. Special workshop on Natural Remediation Processes, SREL Conference Center. October 4, 2001.
106. **Adriano, D. C. (Workshop coordinator)**: Principal coordinator of workshop held in Hungary, (September 15-19, 2001) (Part A): Oral presentations (September 16). (Part B): Roundtable discussions (September 17-19) along the route of the Tisza River Basin.
107. **Adriano, D. C. (Invited seminars)**. Natural attenuation-bioavailability relationships as a tool in risk assessment of metal-contaminated sites. INRA, Versailles, France. September 13, 2002.
108. **Adriano, D. C. (Invited seminars)**. Part 1: Role of metals in ecological and human health (50 min); Part 2: Biogeochemical processes and environmental factors regulating metal bioavailability in soils and sediments (50 min). Ege University (faculty and students of College of Agriculture attending) Izmir, Turkey. September 30, 2002.
109. Knox, A. S. and **D. C. Adriano**. 2002. Evaluation of sequestering agents for Cd

- contaminated soils. *In: National Conference on Environmental Science and Technology, Greensboro, NC. September 8-10, 2002.*
110. **Adriano, D.C.**, M. Guerin, S. Deng, et al. "Regulation of metal bioavailability in floodplain continuum by C and S cycling". Annual Workshop for the NSF, Arlington, VA, September 2003.

SELECTED KEYNOTE SPEECHES TO INTERNATIONAL AUDIENCES

- Remediation of metal- and radionuclide-contaminated soils, 1993, 2nd *Intl. Conference on the Biogeochemistry of Trace Elements*, Taipei, Taiwan
- Agronomic approaches to remediate contaminated soils, 1994, *Intl. Conference on Modern Agriculture and the Environment*, Rehovot, Israel
- "Soil remediation: application of ecologically-friendly approaches", 1995, 3rd *Intl. Conference on Biogeochemistry of Trace Elements*, Paris, France
- Scientific and technical aspects of soil remediation, 1994, *Intl. Workshop on Sustainable Soil Quality*, Vienna, Austria
- 1996 Intl. Conference on *Contaminants in Soil Environment in Australasia-Pacific Region*, Adelaide, Australia
- 1996 Intl. Workshop on *Restoration and Management of Mined Lands: Principles and Practices*, Guangzhou, China
- Remediation of contaminated soils, 1996, *Intl. Conference. on Remediation and Management of Degraded Lands*, Hong Kong
- The chemical time bomb syndrome: a potential environmental warning system, 1997, *Intl. Conference on Agriculture and Environment-Human Interactions*, Nanjing, China
- Chemical time bomb: a potential tool in environmental conservation and management, 1997, *Brazilian Soil Science Congress*, Rio de Janeiro, Brazil
- Role of phytoremediation in the establishment of a global soil remediation network, 1997, *Intl. Seminar on Use of Plant for Environmental Remediation*, Tokyo, Japan
- Soil contamination – can we predict soil-borne chemical time bombs?, 1997, *Intl. Symposium on Soil System Behavior in Time and Space*, Vienna, Austria
- Sources, biogeochemistry, and effects of metals in soils, 1998, *Italian Workshop on Biosolids Use in Agriculture*, Cremona, Italy
- Industrial ecology: its role in waste minimization, recycling and soil protection, 1998, *Intl. Conference on Environmental Contamination, Toxicology and Health*, Hong Kong
- "Trace metals: ecological and environmental health aspects", 2001, *Joint meeting of Czech Society of Soil Science and Soil Science Society of America*, Czech University of Agriculture, Prague, Czech Republic

- Changing paradigms in trace element research, 2001, 15th *Intl. Symposium on Environmental Biogeochemistry*, Wroclaw, Poland
- Natural attenuation – bioavailability interactions of metals in contaminated systems, 2002, Workshop on Natural Attenuation of Heavy Metals, Budapest, Hungary
- Bioavailability – natural remediation interactions: Concepts and applications, 2003, 7th Intl. Conference on Biogeochemistry of Trace Elements, Uppsala, Sweden
- Biogeochemical processes and abiotic factors controlling bioavailability, 2003, 2nd *Intl. Workshop on Bioavailability of Pollutants and Risk Assessment*, Monte Verita, Ascona, Switzerland
- Biogeochemical processes regulating contaminant bioavailability in soils, 2004, XXIX *Brazilian Soil Science Congress*, Riberao Preto, Brazil
- Chemically-induced in-situ stabilization and phytoremediation of metal contaminated sites, 2005, XVI Congreso Chileno de Ingeniera Quimica, Pucon, Chile
- Contamination and remediation of polluted soils: Implications on environmental quality and sustainability, 2005, VIII International Seminar on Environmental Quality and Sustainable Development, Universidad El Bosque, Bogota, Colombia
- Remediation of metal-contaminated sites: Concepts and applications, 2006, The International Symposium of Trace Elements in the Food Chain, Hungarian Academy of Science, Budapest, Hungary

COMMITTEE MEMBERSHIPS AND OFFICES HELD

a. International/National

1. **Associate Editor**, Journal of Environmental Quality, 1980-1985.
2. **Editor and Founder**, Advances in Environmental Science, Science Reviews, Northwood, England, 1989-present.
3. **Chair**—Division S-2 (Soil Chemistry), Soil Science Society of America, 1990.
4. **Chair**, Executive Committee, Intl. Conference on Biogeochemistry of Trace Elements Series (Vienna, Austria), 1990-2001.
5. **Member**, Soil Science Society of America Nomination Committee, 1991-1992.
6. **Chair**, Editorial Committee, Bioremediation of Contaminated Soils, American Society of Agronomy, Monog. no. 37 (Appointed by the Am. Soc. Agron. Monograph Committee Chair), 1993-1997.
7. **Editor-in-Chief and Founder**, Advances in Trace Substances Research, Lewis Publishers (CRC), Boca Raton, FL, 1993-1997.
8. **Chairman**, Organizing Committee, 2nd Intl. Conference on the Biogeochemistry of Trace Elements, Taipei, Taiwan, September 5-10, 1993.
9. **Chair**, Intl. Soil Remediation Center Feasibility Study Committee, Vienna, Austria, 1993.
10. **Chair**, Steering Committee for the Global Soil Remediation Network, 1995-present.
11. **Member**, Editorial Board, Soil Chemistry and Ecosystem Health, Soil Science Society of America Monograph Series, Madison, WI, 1995-1997.
12. **Member**, Ad Hoc Committee on Soil Quality, Soil Science Society of America (Appointed by Soil Sci. Soc. Am. President), 1995-1996.

13. **Chairman**, Intl. Organizing Committee, 4th Intl. Conference on Biogeochemistry of Trace Elements, University of California, Berkeley, CA, June 23-26, 1997.
14. **Member**, Intl. Organizing Committee, 16th World Congress in Soil Science, Montpellier, France, August 20-26, 1998.
15. **Chair**, Intl. Organizing Committee, 3rd Intl. Conference on the Biogeochemistry of Trace Elements, Paris, France, May 1995.
16. **Technical Advisor Designate** - Soil Remediation Research Center, Administered By ERDA for the Office of AMSTBD, SROO, Savannah River Site, 1997-2001.
17. **Co-organizer and Co-chair**, Special Symposium on Bioavailability, Toxicity and Risk Relationship in Ecosystems. 4th Intl. Conference on the Biogeochemistry of Trace Elements, Berkeley, CA, 1997.
18. **Chair**, Sub-Commission on Soil Remediation, 15th Soil Science World Congress, Acapulco, Mexico, July 1994.
19. **Past Chair**, Sub-Commission on Soil Remediation, 16th Soil Science World Congress, Montpellier, France, August 1998.
20. **President**, Intl. Society of Trace Element Biogeochemistry, Vienna, Austria (1999-2003).
21. **Organized** a Special Symposium on Advancing Soil Quality into the 21st Century, during the joint Annual Meetings of the Am. Soc. Agron. & Soil Sci. Soc. Am. in Minneapolis, MN. (November 5-9, 2000).
22. **Corporate Chairman**, Intl. Society for Trace Element Biogeochemistry, Vienna, Austria, 2002-present.
23. **General Counsel** to the Organizing Committee, 7th Intl. Conference on Biogeochemistry of Trace Elements, Uppsala, Sweden, 2001-2003.
24. **Vice Secretary** of Division 4 (Soils and the Environment) of the Intl. Union of Soil Science, Philadelphia, PA, 2002-2006.
25. **Member** of Sponsorship Committee, Intl. Society of Trace Element Biogeochemistry, Vienna, Austria, 2002-present.
26. **Member**—Editorial Board of Journal of Environmental Geochemistry and Health, 1999-present.
27. **US-EPA Expert Panel Member** - to review and discuss grant proposals for small business (SBIR) on "Recycling of industrial and municipal solid wastes" Washington, D.C., August 28–29, 2001.
28. **US-EPA Expert Panel Member** - to review and discuss grant proposals for small business (SBIR) on "Recycling of industrial and municipal solid wastes" Washington, D.C., August 1–2, 2002.
29. **Honorary President** of the Intl. Society of Trace Element Biogeochemistry, Vienna, Austria, 2003-present.
30. **Member**, Advisory Board of the Journal Pedosphere, 2001-present
31. **Member**, Scholarship Committee of Intl. Society of Trace Element Biogeochemistry, Vienna, Austria, 2004-present.