

JERALD L. SCHNOOR – BRIEF C.V.

Allen S. Henry Chair in Engineering; Professor in Civil and Environmental Engineering; Professor in Occupational and Environmental Health; and Co-Director, Center for Global and Regional Environmental Research
The University of Iowa, Iowa City USA

EDUCATION/TRAINING

Institution and location	DEGREE	YEAR(s)	FIELD OF STUDY
Iowa State University, Ames, IA	B.S.	1972	Chemical Engineering
University of Texas, Austin, TX	MS	1974	Environmental Health Engineering
University of Texas, Austin, TX	Ph.D.	1975	Civil Engineering (Environ.)
Manhattan College, New York, NY		1976	NSF Post-Doctoral Associate

Personal narrative: Dr. Jerald L. Schnoor, Ph.D., P.E., BCEE, Allen S. Henry Chair in Engineering; Professor, Civil & Environmental Engineering, College of Engineering; Professor, Occupational and Environmental Health, College of Public Health; and Co-Director, Center for Global and Regional Environmental Research; The University of Iowa, Iowa City, Iowa USA. Dr. Schnoor is a registered professional engineer and a member of the National Academy of Engineering (elected in 1999) for his pioneering work using mathematical models in science policy decisions for environmental protection. He testified several times before Congress on the environmental effects of acid deposition and the importance of passing the 1990 Clean Air Act. Professor Schnoor was the Chair of the Iowa Climate Change Advisory Council, 2007-2009, appointed by Governor Chester J. Culver. In addition, Schnoor serves as a Core Director of the Iowa Superfund Research Program and leads the W.M. Keck Phytotechnology Laboratory, which specializes in using plants to help clean and protect the environment, while reducing chemical exposures to humans.

Serving as Editor-in-Chief of *Environmental Science and Technology* 2002-2014, Jerry guided the leading journal in both environmental science and environmental engineering (*ISI Web of Science*, Thomson-Reuters). His editorial writings on environmental protection have been widely accessed by the international community. Professor Schnoor has published (as author, co-author, or editor) seven books and 200 research articles in archival journals. Dr. Schnoor chaired the Board of Scientific Counselors for the U.S. Environmental Protection Agency, Office of Research and Development from 2000-2004 and was a councilor on the National Advisory Environmental Health Sciences Council to the National Institute of Environmental Health Science (NIEHS). Recently, he served as Chair of the National Research Council (NRC) Committee on *Science for Environmental Protection in the 21st Century*. He was also Chair of the 2008 National Research Council report on *The Water Implications of Biofuels in the U.S.*

Dr. Schnoor and his students pioneered phytoremediation, the use of plants to help clean the environment which is widely used at full-scale installations now. Schnoor's publications cover a wide range of topics including water sustainability, water quality modeling, phytoremediation, and climate

change. Jerry won the 2010 Clarke Prize from the National Water Research Institute for his work on water sustainability. In 2013, he was honored as an Einstein Professor by the Chinese Academy of Sciences and lectured widely on water and climate change. An engaging and beloved teacher as well as a top researcher, Jerry received the teaching and mentorship award from the graduating class of Civil and Environmental Engineering students at the University of Iowa this year. A major honor from his peers came in 2015 when Jerry received the Perry L. McCarty AEESP Founders Award for excellence in environmental engineering education, research and practice from the Association of Environmental Engineering and Science Professors.

Employment and Experience:

5/72 – 8/73	Process Engineer	Procter & Gamble Co., Cincinnati, Ohio
5/74 – 8/74	Chemical Engineer	U.S. Environmental Protection Agency, Dallas, Texas
1/77 – 7/80	Assistant Professor	University of Iowa, Environmental Engineering
8/80 – 7/83	Associate Professor	University of Iowa, Environmental Engineering
8/83 –	Professor	University of Iowa, Civil & Environmental Engineering
7/88 –	Professor	University of Iowa, Occupational and Environmental Health
7/85 - 6/90	Chair	Department of Civil & Environmental Engineering, U. Iowa
7/91-present	Co-Director	Center for Global and Regional Environmental Research, U. Iowa
1/02- present	Allen S. Henry Chair	College of Engineering, University of Iowa

Selected Honors and Awards:

2015	Perry L. McCarty AEESP Founders Award, Assoc. Env. Engr. and Science Professors
2015	International Delegate to the Chemical Sciences and Society Summit, Leipzig
2013	Einstein Distinguished Professorship, Chinese Academy of Sciences (CAS)
2013	Elected to inaugural Iowa State University Chemical Engineering Hall of Fame
2010	Clarke Water Prize, National Water Research Institute (NWRI)
2010	Simon W. Freeze Award and Lecture, American Society of Civil Engineers (ASCE)
2000	Hancher Finkbine Medallion, University of Iowa (highest honor)
1999-	National Academy of Engineering, elected member (highest honor)
1999	Sigma Xi, Distinguished Lecturer
1998	Association Environmental Engineering & Science Professors, Distinguished Lecturer
1996	Rudolf Hering Medal, American Society of Civil Engineers
1996	Distinguished Fellow, Iowa Academy of Science (highest honor)
1985	Walter L. Huber Research Prize, American Society of Civil Engineers

Professional Activities:

2003-2014	Editor-in-Chief, <i>Environmental Science & Technology</i> ; & Assoc. Editor 1991-2000
2013-2014	Editor-in-Chief, <i>Environmental Science & Technology Letters</i> (founding editor)
2014-	Selection Committee, Clarke Prize, National Water Research Institute
2013	Chair, Review of Res Center Eco-Environ Sciences, Chinese Academy of Sciences

2013	Institute of Medicine (IOM) Roundtable on Biofuels and Health, Member
2011-2013	National Research Council, Committee Chair, <i>Science for Environmental Protection</i>
2008-2011	National Advisory Environmental Health Sciences Council, NAEHS (NIEHS)
1992-2009	Co-Editor, Wiley Interscience Series of Texts and Monographs in Env Science
2007-2008	National Research Council, Committee Chair, <i>Water Implications of Biofuel Production in the U.S.</i>
2007-2009	Iowa Climate Change Advisory Council (ICCAC), Chair
2006-2011	U.S. Environmental Protection Agency, Science Advisory Board
2008-2010	National Academy of Engineering, Civil Engineering Peer Committee
2000-2005	National Research Council (NRC), Water Science and Technology Board
2005	Institute of Medicine (IOM) Roundtable on Health & Environment in Rural America
1996-2004	Board of Scientific Counselors (BOSC), EPA-ORD, 2000-04 Chair; 1996–2000 Member
1988, 2000, 2015 1/82 –	Guest Professor, Swiss Federal Institute of Technology, Eawag, Switzerland Professional Engineer, Iowa, PE License #9702

Selected Publications: (200+ journal articles, 1 book authored, 6 books edited)

Schnoor, J. L., Ed., *Water Quality and Sustainability*, Volume 4, Academic Press, Elsevier Publishers Inc., London, UK, 2013, 20 chapters. In: *Comprehensive Water Quality and Purification*, Satinder Ahuja, Series Editor. ISBN-9780123821829.

Schnoor, J.L., Ed., *Fate of Pesticides and Chemicals in the Environment*, Wiley Interscience, New York, NY, 1992, 436 pp.

Schnoor, J.L., *Environmental Modeling: Fate of Chemicals in Water, Air and Soil*, Wiley, NY, 1996, 682pp. McCutcheon, S.M., **Schnoor, J.L.**, Eds., *Phytoremediation: Transformation and Control of Contaminants*, John Wiley & Sons, New York, 2003, 987 pp.

Schnoor, J.L., Licht, L.S., McCutcheon, S.C., Wolfe, N.L., Carreira, L. H. (1995). Phytoremediation of Organic and Nutrient Contaminants, *Environ. Sci. Technol.*, 29, 318A-323A.

Liu, JY, **Schnoor, JL.** (2008). Uptake and translocation of lesser-chlorinated polychlorinated biphenyls (PCBs) in whole hybrid poplar plants after hydroponic exposure, *Chemosphere*, 73(10):1608-1616, DOI: 10.1016/j.chemosphere.2008.08.009, NIHMS: 79417.

Zhai, G.; Hu, D.; Lehmler, H.-J.; **Schnoor, J. L.** (2011). Enantioselective Biotransformation of Chiral PCBs in Whole Poplar Plants. *Environmental Science & Technology* 45(6), 2308-2316, DOI: 10.1021/es1033662.

Card, M.L.; **Schnoor, J.L.**; Chin, Y.-P. (2012). Uptake of natural and synthetic estrogens by maize seedlings. *J. Ag. Food Chem.* 60(34), 8264-8271, doi: 10.1021/jf3014074.

Zhai, G.S.; Lehmler, H.J.; **Schnoor, J.L.** (2013). Sulfate metabolites of 4-monochlorobiphenyl in whole poplar plants. *Environ. Sci. Technol.* 47, 557-562, doi: 10.1021/es303807f (PMCID).

Meggo, R.E.; **Schnoor, J.L.**; Hu, D. (2013). Dechlorination of PCBs in the rhizosphere of switchgrass and poplar. *Environmental Pollution*, 178, 312-321, doi:10.1016/j.envpol.2013.02.035.

Zhai, G.S.; Lehmler, H.J.; **Schnoor, J.L.** (2013). Inhibition of cytochromes P450 and the hydroxylation of 4-monochlorobiphenyl in whole poplar. *Environ. Sci. Technol.* 47(13), 6829-6835, doi: 10.1021/es304298m

Henry, HF.; Burken, JG.; Maier, RM.; Newman, LA.; Rock, S.; **Schnoor, JL**; Suk, WA. (2013). Phytotechnologies Preventing Exposures, Improving Public Health. *International Journal of Phytoremediation* 15(9), 889-899, doi: 10.1080/15226514.2012.760521.

Research Programs

- Water Quality Modeling. Professor Schnoor's model for pesticide transport and bioconcentration was used by the Food and Drug Administration to reopen a \$400,000 per year fishery in Iowa in 1981. Results were reported in *Science* and the *New York Times*, and he was awarded the Huber Research Prize by ASCE for the work in 1985. A post-audit study of the fishery eight years later showed the model to be accurate to within measurement error. The major scientific contribution was the use of the bioconcentration factor normalized to fish lipid content, which is now standard practice. The major engineering accomplishment was the use of a numerical model with field verification for environmental management decisions. It was a pioneering modeling effort and is reflected in his book, *Environmental Modeling—Fate and Transport of Pollutants in Water, Air and Soil*, Wiley Interscience, 1996, which has been translated into Korean, Greek, and Spanish.

- Acid Deposition and the Clean Air Act. Schnoor developed the Trickle-Down model for acid precipitation assessments beginning with a paper in 1982 in later in the Journal *Naturwissenschaften* by Stumm, Morgan, and Schnoor in 1983. A subsequent version of the model, developed with students James Lin, Nikolaos Nikolaidis and Sijin Lee, was one of only three models chosen for use in the National Acid Precipitation Assessment, 1985-1990. Through personal meetings with William D. Ruckelshaus (EPA Administrator), testimony before Congress, and service on a key National Research Council Panel on Lake Acidification, Schnoor's work had major impact on the 1990 Clean Air Act Amendments, Title IV.

- Climate Change and Sustainability. Schnoor participated in the 1992 Rio Earth Summit as a delegate of the United Nations Association, Iowa Division. Following the Earth Summit, he published his viewpoint in

Environmental Science and Technology and lectured widely on global poverty and the importance of controlling greenhouse gases (Sigma Xi Distinguished Lectures, Association of Environmental Engineering Professors Distinguished Lectures). The simple model by Kwon and Schnoor of global carbon dioxide concentrations in the biosphere, oceans, and atmosphere (Kwon and Schnoor, *Global Biogeochemical Cycles*, 1994) has been used as a workshop tool by EPA. For his research and teaching, he was elected to the National Academy of Engineering in 1999 for “model development and contributions to global environmental decision making.” Ten years after the Earth Summit, Jerry Schnoor and students attended the World Summit on Sustainable Development in Johannesburg, South Africa, and reported that while some progress has been made, there is still much to be done (“Examining the World Summit on Sustainable Development,” *Environ. Sci. Technol.* 36: 429A–430A, 2002). The students have gone on to start green companies, inspire a core course 53:107 Sustainable Systems, and create a major initiative for sustainability on campus. Schnoor was Chair of the first Energy Advisory Council at UI, 2003-2007, a predecessor of the Office of Sustainability. At the upcoming COP21 Paris climate talks, Jerry is an official media representing Chemical & Engineering News of the American Chemical Society. He and his students will be reporting daily on their impressions of the climate summit.

•*Phytoremediation and Natural Treatment Systems*. Jerry Schnoor and his students have pioneered the development of phytoremediation, i.e. the use of plants to help clean the environment. In 1995, a Feature Article appeared in *Environmental Science and Technology* by Schnoor et al. that describes the crucial role of plant enzymes in the uptake and transformation of toxic organic chemicals. Burken and Schnoor received the Rudolf Hering Medal from the American Society of Civil Engineers in 1998 for phyto-research. Schnoor has published two technology evaluation summaries on phytoremediation for the Ground Water Research Technology Assessment Center (<http://www.gwrtac.org>), and co-edited the comprehensive book, *Phytoremediation: Transformation and Control of Contaminants* (Wiley Interscience, New York, 987 pp., 2003) with S. C. McCutcheon. Demonstrations. Full-scale applications have grown from the results of this research including treatment of chlorinated solvents, petrochemicals, and ammunition wastes. In 2003, the team was awarded a grant from the W.M. Keck Foundation to fund the W. M. Keck PhytoTechnologies Laboratory at the University of Iowa, and in 2007 Schnoor was named the inaugural Milton Gordon Distinguished Lecturer by the International Phytotechnologies Society, the highest award given by the IPS Society.