

## **Biography**

Alan Krupnick received his PhD in Economics from the University of Maryland in 1980. His research has focused on analyzing environmental issues, in particular, the benefits, costs, and design of air pollution policies, both in the United States and in developing countries. His recent research addresses the valuation of health and ecological improvements, risk prioritization, particularly in food safety, introducing uncertainty into benefit-cost analysis, and environmental policy design in developing countries.

Krupnick has served as a consultant to state governments, federal agencies, private corporations, the Canadian government, the European Union, the World Health Organization, and the World Bank. He co-chaired an federal advisory committee counseled the U.S. Environmental Protection Agency on new ozone and particulate standards. Krupnick also served as senior economist on the President's Council of Economic Advisers, advising the Clinton administration on environmental and natural resource policy issues. He is a regular member of expert committees from the National Academy of Sciences and has served on a Royal Society of Canada committee analyzing ambient air quality standard setting in Canada.

November 2006

*Resume of:* Alan J. Krupnick

*Education:*

University of Maryland, Ph.D., Economics, June 1980 (Dissertation Title: *The Optimal Control of Pollution with Endogenous Labor Supply*)

University of Maryland, M.A., Economics, 1972-1974

Columbia University, Graduate School of Business, International Business, 1969-1970

Pennsylvania State University, B.S., Finance, With Distinction, 1965-1969

*Professional Experience:*

1998-Present Director, Quality of the Environment Division, Resources for the Future

1990-Present Senior Fellow, Resources for the Future

1980-1990 Fellow, Resources for the Future

1993-1994 Senior Economist, Council of Economic Advisers; on leave from Resources for the Future

2005 Consultant: World Bank, USEPA

2004 Consultant: United Nations Compensation Committee, U.S. Environmental Protection Agency (EPA), European Union

2003 Consultant: U.S. EPA, Inter-American Development Bank, Environment Canada, Charles River Associates, OECD

2002 Consultant: U.S. EPA

2001 Consultant: U.S. EPA, Health Canada

2000 Consultant: European Community, Environment Directorate.

1999 Consultant: World Bank.

1998 Consultant: World Bank, Europe and Central Asia Division; PacifiCorp, Great Lakes Commission; Canadian Energy Research Institute.

1997 Consultant: World Health Organization; World Bank, Industry and Energy Division and Europe and Central Asia Division; Environment Canada; Industry Canada.

1996 Consultant: USAID; Harvard Institute for International Development; World Bank, Latin America Division; Environment Canada; Health Canada, Industry Canada

1995 Consultant: Ontario Hydro; World Bank, Latin America Division; American Petroleum Institute, Southern Appalachian Management Initiative

1993 Consultant: World Bank, Asia Division; Office of Technology Assessment

1990-1992 Consultant, World Bank Latin America Region, Public Economics Division (Country Department), World Development Report

1989-1990 Consultant, World Bank, Environment Department, Asia Region, Infrastructure and Urban Development Department; NERA; U.S. Department of Energy; Geomet, Inc.

- 1987-1988 Consultant, Office of Technology Assessment, U.S. Congress
- 1987-1988 Consultant, Viking Systems, Inc.; Exeter Assoc.
- 1980-1982 Consultant, University of Missouri, State of Maryland
- 1977-1980 Faculty Research Associate, Bureau of Business & Economic Research, University of Maryland
- 1976-1977 Instructor, University of Maryland: International Economics, Macroeconomics, and Microeconomics
- 1976-1976 Consultant, National Commission on Water Quality
- 1974-1976 Autonomous Teaching Assistant, University of Maryland
- 1972-1974 Research Assistant, Bureau of Business & Economic Research, University of Maryland
- 1970-1972 Research Assistant, The Federal Reserve Bank of Philadelphia
- 1970-1970 Research Analyst, City University of New York, Faculty Senate

#### PUBLICATIONS

“Are Decisionmakers at Home on the Range?” (with Richard Morgenstern and Peter Nelson) *Journal of Risk Research* (forthcoming).

“Supporting Questions in Stated Preference Surveys,” (with Vic Adamowicz) in *Valuing Environmental Amenities using Choice Experiments: A Common Sense Guide to Theory and Practice on Stated Preference Techniques*, Barbara Kaninen, ed. (Kluwer) (forthcoming).

“Managing Air Pollution,” *NERAM Colloquium Series IV. Conference Proceedings* (forthcoming).

"Economics of Pollution Trading for SO<sub>2</sub> and NO<sub>x</sub>," (with Dallas Burtraw, David A. Evans, Karen Palmer, and Russell Toth) *Annual Review of Environment and Resources* (forthcoming).

“Willingness to Pay for Mortality Risk Reductions from Electric Power Generation,” (with Kenshi Itaoka, Aya Saito, Wiktor Adamowicz, and Taketoshi Taniguchi) *Environment and Resource Economics* (forthcoming).

“Health, Environment, and Urban Air Quality,” in *Economic Development and Environmental Sustainability*, Michael A. Toman and Ramon Lopez, eds., Initiative for Policy Dialogue Series, Oxford University Press, Oxford, 2006.

“Willingness to Pay for Mortality Risk Reductions: Does Latency Matter?” (with Anna Alberini, Maureen Cropper and Nathalie Simon) *Journal of Risk and Uncertainty* **32**(3) (May).

“Valuation of Natural Resource Improvements in the Adirondacks” (with Spencer Banzhaf, Dallas Burtraw, David Evans) *Land Economics* **82**(3) 445-464 (August) 2006.

“The Ancillary Carbon Benefits of SO<sub>2</sub> reductions: A Small-Boiler Policy in Taiyuan, People’s Republic of China,” (with Richard Morgenstern and Xuehua Zhang) in *Small Firms and the Environment in Developing Countries: Collective Impacts and Collective Action*, Allen Blackman, Ed. (RFF Press, Washington DC) (2006).

“Economic Uncertainties in Valuing Reductions in Children's Environmental Health Risks” (with Sandra Hoffmann and Vic Adamowicz) in *Economic Valuation of Environmental Health Risks to Children* Pascale Scapecchi, ed. Organisation for Economic Cooperation and Development, Paris, 2006

“Demonstrating Emissions Trading in Taiyuan, China (with Robert Anderson, Ruth Bell, Alan Krupnick and Xuehua Zhang) in *The RFF Reader in Environmental and Resource Policy*, 2<sup>nd</sup> Edition, Wallace E. Oates, Editor, RFF Press (note: this is an updated version of an article that originally appeared in *Resources*).

“How Much Will People Pay for Longevity?” in *The RFF Reader in Environmental and Resource Policy*, 2<sup>nd</sup> Edition, Wallace E. Oates, Editor, RFF Press (note: this is an updated version of an article that originally appeared in *Resources*).

“The Interstate Transport of Air Pollution: A Regulatory Dilemma” (with Jhih-Shyang Shih) in *The RFF Reader in Environmental and Resource Policy*, 2<sup>nd</sup> Edition, Wallace E. Oates, Editor, RFF Press.

*Not a Sure Thing: Making Regulatory Choices under Uncertainty* (with Michael Batz, Dallas Burtraw, Michael McWilliams, Richard Morgenstern, Per-Kristian Nelson, Jhih-Shyang Shih,, RFF Report, 2005.

“Forever Wild, But Do We Care? How New Yorkers Value Natural Resource Improvement” (with H. Spencer Banzhaf, Dallas Burtraw, David Evans) *Resources* Summer 2005 (158)

“Best Things First: Rethinking Priority-Setting for Food Safety Policy,” (with Peter Nelson) in *Toward Safer Food: Perspectives on Risk and Priority-Setting*, Sandra A. Hoffmann and Michael R. Taylor, eds. (Resources for the Future, Washington, DC) 2005.

“Emissions Trading to Improve Air Quality in an Industrial City in the People’s Republic of China,” (with Richard D. Morgenstern, Piya Abeygunawardena, Robert Anderson, Ruth Greenspan Bell, and Jeremy Schreifels) in *China’s Environment: The Challenges of Sustainable Development*, Kris Day, ed., M.E. Sharpe, publisher, 2005.

“The Value Of Good Quality Drinking Water To Canadians And The Role Of Risk Perceptions: A Preliminary Analysis” Adamowicz, W., Dupont, D.P. and Krupnick, A. 2004. in *Journal of Toxicology and Environmental Health. Part A: Current Issues*. 67(20-22): 1825-1844.

Report of an Expert Panel to review the socio-economic models and related components supporting the development of Canada-Wide Standards (CWS) for particulate matter (PM) and ozone to the Royal Society of Canada. Adamowicz W., Dales R., Hale B.A., Hruddy S.E., Krupnick A., Lippman M., McConnell J., and P. Renzi. 2004. *Journal of Toxicology and Environmental Health – Part B – Critical Reviews*. 7 (3): 147-266.

“The Ancillary Carbon Benefits of SO<sub>2</sub> Reductions from a Small Boiler Policy in Taiyuan, PRC” (with Richard Morgenstern and Xuehua Zhang) *Journal of Environment and Development Economics*, 2004.

“Focus on Meeting the Fine Particulates Standard,” in *New Approaches on Energy and the Environment: Policy Advice for the President*, Richard D. Morgenstern and Paul R. Portney, eds. (Resources for the Future, Washington, DC) 2004.

“Regional Air Quality Management,” (with Jhih-Shyang Shih) in *New Approaches on Energy and the Environment: Policy Advice for the President*, Richard D. Morgenstern and Paul R. Portney, eds. (Resources for the Future, Washington, DC) 2004.

“Performance Standards for Food Safety,” (with Sandra Hoffmann) in *New Approaches on Energy and the Environment: Policy Advice for the President*, Richard D. Morgenstern and Paul R. Portney, eds. (Resources for the Future, Washington, DC) 2004.

*Valuing Health Outcomes: Policy Choices and Technical Issues*, RFF Report, March 2004.

“Valuing Risk to Health: Children Are Not Little Adults,” (with Sandra Hoffmann) *Resources* 154, Summer 2004.

“Does the Value of Statistical Life Vary with Age and Health Status? Evidence from the U.S. and Canada,” (with Anna Alberini, Maureen Cropper and Nathalie Simon) *Journal of Environmental Economics and Management* **48** (1), pp. 769-792, 2004.

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“Valuing Risks to Life and Health: Alternative Approaches to Valuing the Health Benefits of New Government Regulations,” *Resources* 150, Spring 2003.

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“The Value of Reducing Risk of Death: A Policy Perspective,” *Journal of Policy Analysis and Management* **21** (2) pp. 275-278, 2002.

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“Location Efficient Mortgages: Is the Rationale Sound?” *Journal of Policy Analysis and Management* (with Allen Blackman) **20** (4), pp. 633-650, 2001.

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“The Social Costs of Chronic Heart and Lung Disease,” (with Maureen Cropper) in *Valuing Environmental Benefits: Selected Essays of Maureen Cropper*, Maureen Cropper, ed. (Edward Elgar; United Kingdom) 2000.

“Cost of Illness and WTP Estimates of the Benefits of Improved Air Quality in Taiwan,” (with Anna Alberini) *Land Economics* **76** (1) February 2000.

“Dilemma Downwind: Ozone Blows Across State Lines Creating A Tangle of Regulatory Issues,” *Resources* **137**, Fall 1999.

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- “Economic Analysis and the Clean Air Act,” *Pace Environmental Law Review* **16** (1), pp. 69-80 (Winter) 1998.
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- “Intel’s XL Agreement: Who Benefits?” (with James Boyd and Jan Mazurek) *Semiconductor Fabtech*, May 1998.
- “Valuing Health Effects of Air Pollution in Developing Countries: The Case of Taiwan,” (with Maureen Cropper and Anna Alberini) *Journal of Environmental Economics and Management*, December 1997.
- “Air Pollution and Acute Respiratory Illness; Evidence from Taiwan and Los Angeles,” (with Anna Alberini) *American Journal of Agricultural Economics* **79**, December 1997.
- “Cost-Benefit Analysis and Regulatory Reform,” (with Raymond Kopp and Michael A. Toman) *Human Ecological Risk Assessment* **3** (5), November 1997.
- “Urban Air Pollution in Developing Countries: Problems and Policies,” in *The Environment and Emerging Development Issues*, P. Dasgupta and K.G. Maler, eds. (Clarendon Press, Oxford) 1997.
- “Second-Best Adjustments to Externality Estimates in Electricity Planning with Competition,” (with Dallas Burtraw and Karen Palmer) *Land Economics* **73** (2), pp. 224-239, May 1997.
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- “The Second Best Use of Social Cost Estimates,” (with Dallas Burtraw) *Resources and Energy* **18**, pp. 467-489, December 1996.
- “What is the Value of Reduced Morbidity in Taiwan?” (with Maureen Cropper, Anna Alberini, Tsu-Tan Fu, Jin-Tan Liu, Daigee Shaw and Winston Harrington) in *The Economics of Pollution Control in Asian Pacific*, Robert Mendelsohn and Daigee Shaw, eds., (Edgar Elgar Publishing Ltd.) 1996.
- “Revising the Ozone Standard,” (with John Anderson) *Resources* **125**, Fall 1996.
- “Determinants of Diarrheal Disease in Jakarta,” (with Anna Alberini, Gunnar Eskeland, and Gordon McGranahan) *Water Resources Research*, vol 32, no. 7, pp. 2259-2269, July 1996. Also RFF Discussion paper 95-23 and World Bank Policy Research Working Paper 1568, January 1996.
- “Air Quality and Electricity: What Competition May Mean,” (with Dallas Burtraw and Karen Palmer) *Resources* **123**, Spring 1996.
- A Shock to the System: Restructuring America’s Electricity Industry* (with Timothy Brennan, Karen Palmer, Raymond Kopp, Vito Stagliano, Dallas Burtraw) (Resources for the Future, Washington, DC) 1996.
- “The Value of Health Benefits From Ambient Air Quality Improvements in Central and Eastern Europe: An Exercise in Benefits Transfer,” (with Kenneth W. Harrison, Eric J. Nickell, and Michael A. Toman) *Environmental and Resource Economics*, vol. 7, pp. 307-332, 1996. See also “Estimating the Health

Benefits of Improved Air Quality in Central and Eastern Europe," in *Pollution Abatement Strategies in Central and Eastern Europe*, Michael A. Toman, ed., pp. 15-24 (Resources for the Future, Washington, DC)1994,

*The External Costs and Benefits of Fuel Cycles* (with Russell Lee, Dallas Burtraw, and others) A Study by the U.S. Department of Energy and the Commission of the European Communities, prepared by Oak Ridge National Laboratory and Resources for the Future (McGraw-Hill, Utility Data Institute, New Jersey) December 1995.

"Optimal Adders for Environmental Damage by Public Utilities," (with Dallas Burtraw, Winston Harrington, and A. Myrick Freeman III) *Journal of Environmental Economics and Management*, vol. 29, no. 1, July 1995.

"Social Costing of Electricity in Maryland: Effects on Pollution, Investment and Prices," (with Karen Palmer, Hadi Dowlatabadi and Stuart Siegel) *The Energy Journal* , 16, pp. 1- 26, (1995).

"The Social Costing Debate: Issues and Resolutions," (with Dallas Burtraw, A. Myrick Freeman III, and Winston Harrington) in *Social Costs of Energy*, O. Hohmeyer and R. Ottinger, eds., Springer-Verlag, 1994.

"The Evaluation of External Costs from Energy Sources: The EC-US Fuel Cycle Study," (with A. Markandya, R. Lee, and P. Valette) in *Power Generation Choices: Costs, Risks and Externalities*, Nuclear Energy Agency Organisation for Economic Co-operation and Development, Paris, France, 1994.

"The External Costs of Nuclear Power: Ex Ante Damages and Lay Risks," (with A. Markandya and E. Nickell) *American Journal of Agricultural Economics*, vol. 75, 1993, pp. 1273-1279.

"Global Warming and Urban Smog: The Cost-Effectiveness of CAFE Standards and Alternative Fuels," (with Margaret Walls and Carol T. Collins) *The Energy Journal*, October 1993.

"Controlling Urban Air Pollution: A Benefit-Cost Assessment," (with Paul R. Portney) in *Economics of the Environment: Selected Readings*, Third Edition, Robert Dorfman and Nancy S. Dorfman, eds., W.W. Norton & Company, Inc., New York, N.Y., 1993, pp. 421-437.

"Air Pollution and Respiratory Morbidity among Adults in Southern California," (with Bart D. Ostro, Michael J. Lipsett, Jennifer K. Mann, and Winston Harrington) *American Journal of Epidemiology*, vol. 137, no. 7 (April 1, 1993), pp. 691-700.

*Measuring the Effects of Urban Transportation Policies on the Environment: A Survey of Models*, Policy Research Working Paper WPS-1030, Country Economics Department, The World Bank, November 1992.

"The Economic Losses of a Waterborne Disease Outbreak," (with Winston Harrington, and Walter O. Spofford, Jr.) in *The Economics of the Environment*, Wallace E. Oates, ed., Edward Elgar Publishing Company, Aldershot, Hants, England, and Brookfield, Vt., 1992, pp. 411-432.

"Weighing Environmental Externalities: How to Do It Right," (with A. Myrick Freeman III, Dallas Burtraw, and Winston Harrington) *The Electricity Journal*, vol. 5, no. 7 (August/September 1992), pp. 18-25.

"Externality Adders: A Response to Joskow," (with A. Myrick Freeman III) *The Electricity Journal*, vol. 5, no. 7 (August/September 1992), pp. 61-63.

"Electric Vehicles and the Air Pollution in Los Angeles," (with A. Ted Russell and Hadi Dowlatabadi) *Energy and Environment*, vol. 3, no. 2, 1992.

- "Vehicle Emissions, Urban Smog, and Clean Air Policy," in Richard Gilbert, ed., *The Economics of Oil*, Kluwer-Nijhoff, The Netherlands, 1992.
- "Cost-Effectiveness of Methanol for Reducing Vehicle Emissions and Urban Ozone," (with Margaret Walls) *Journal of Policy Analysis and Management*, vol. 11, no. 3, Summer 1992, pp. 373-376.
- "Using Cost-Benefit Analysis to Prioritize Environmental Problems in Developing Countries," in Joel Darmstadter, ed., *Global Development and the Environment*, Resources for the Future, Washington, DC, 1992.
- "The Effect of Information on Health Risk Valuation," (with Maureen Cropper) *Journal of Risk and Uncertainty*, vol. 5, pp. 29-48, 1992.
- "Controlling Urban Air Pollution: A Benefit Cost Assessment," (with Paul R. Portney) *Science*, vol. 252, April 26, pp. 522-28, 1991.
- "Transportation and Urban Air Pollution in Developed and Developing Countries," *Transportation Research Record*, p. 1312, *Energy and Environmental Issues*, 1991.
- The Economics of a Waterborne Disease Outbreak* (with Walter O. Spofford, Jr. and Winston Harrington) Resources for the Future, Washington, DC, 1991.
- "The Benefits of Curbing Acid Rain," (with Winston Harrington and Sari Radin) in Richard Ottinger, ed., *Environmental Costs of Electricity*, Oceana Publications, New York, 1990.
- "Ambient Ozone and Acute Health Effects: Evidence from Daily Data" (with Winston Harrington and Bart Ostro) *Journal of Environmental Economics and Management* 18, 1990, pp. 1-18.
- "To Live and Breathe in L.A." (with Paul Portney, David Harrison, and Hadi Dowlatabadi) *Issues in Science & Technology*, vol. 4, no. 4, 1989.
- "The Benefits and Costs of Superfund Cleanups: An Information Assessment," Project IV (with Paul Portney) in *Coalition on Superfund Research Report*, for Coalition on Superfund and Center for Hazardous Waste Management, Chicago, Ill., September 1989.
- "The Economic Losses from a Waterborne Disease Outbreak" (with Walter O. Spofford, Jr. and Winston Harrington) *Journal of Urban Economics*, vol. 25, no. 1, January 1989.
- "Social Costs of Chronic Heart and Lung Disease" (with Maureen Cropper) *Resources*, no. 97, Fall 1989.
- "The Acute Health Benefits of Ambient Ozone Control," *Appendix to Catching Our Breath: Next Step for Reducing Urban Ozone*, Office of Technology Assessment, U.S. Congress, July 1989.
- "Reducing Bay Nutrients: An Economic Perspective," *Maryland Law Review*, vol. 47, no. 2, Winter 1988.
- "Economics and the Ambient Ozone Standard," *Resources*, no. 92, Summer 1988.
- "Agricultural Policy and the Benefits of Ozone Control" (with Raymond Kopp) *Journal of the American Agricultural Economics Association*, vol. 69, no. 5, December 1987.
- "Costs of Alternative Policies for the Control of Nitrogen Dioxide in Baltimore," *Journal of Environmental Economics and Management* 13 (2) (June 1986): 189-97
- "Sources of Uncertainty in Economic Analyses of Management Strategies for Controlling Groundwater Contamination" (with Walter O. Spofford, Jr.) *Journal of the American Agricultural Economics Association, Proceedings*, December 1986, pp. 1234-1239.

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"Synergistic Effects on Rat Lungs of Mixtures of Oxidant Pollutants and Respirable Aerosols: A Comment" (with Robert Frank) *American Review of Respiratory Disease* 129, May 1984.

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"Revealed Rules for Regulatory Decisions: An Empirical Analysis of EPA Rulemaking Behavior" (with Wesley Magat and Winston Harrington) in *International Comparisons in Implementing Laws*, Paul Downing and Kenneth Hanf, eds., Kluwer-Nijhoff, 1983.

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UNDER PEER REVIEW

“Are Decisionmakers at Home on the Range? Communicating Uncertainties in Regulatory Impact Analyses” (with Richard Morgenstern and Per-Kristian Nelson) submitted to *Journal of Risk Research*.

“Eliciting Information on Uncertainty from Heterogeneous Expert Panels: Improving Risk-Based Decisionmaking in the U.S.” (with Sandra Hoffmann) Submitted to *Decision Analysis*.

“Age, Health, and the Willingness to Pay for Mortality Risk Reductions: A Contingent Valuation Survey in Japan” (with Kenshi Itaoka, Aya Saito, Makoto Akai, Maureen Cropper, Anna Alberini, and Nathalie Simon) Revise and resubmit, *Japan Journal of Economics*.

#### CONFERENCE PAPERS

“Willingness to Pay to Reduce Community Health Risks from Municipal Drinking Water: A Stated Preference Study,” for presentation at the 3<sup>rd</sup> World Congress of Environmental and Resource Economics (with Diane Dupont and Victor Adamowicz), Kyoto, Japan, July 2006.

“Is There Altruism in the Values of Drinking Water Risk Reductions?” for presentation at the 3<sup>rd</sup> World Congress of Environmental and Resource Economics (with Jing Zhang, Victor Adamowicz, and Diane Dupont) Kyoto, Japan, July 2006.

“Mortality Risk Valuation in Six Countries: Exploring Benefit Transfer Approaches,” for presentation at the 3<sup>rd</sup> World Congress of Environmental and Resource Economics (with Soma Battacharya, Anna Alberini, Marcella Veronesi) Kyoto, Japan, July 2006.

“Morbidity Valuation with Cessation Lag: Choice Experiments for Public and Private goods in Japan,” for presentation at the 3<sup>rd</sup> World Congress of Environmental and Resource Economics (with Kenshi Itaoka, Aya Saito, Makoto Akai, and Wiktor Adamowicz) Kyoto, Japan, July 2006.

“Parental Decision-Making and Children’s Health,” Conference: US EPA NCER/NCEE Workshop Morbidity and Mortality: How Do We Value the Risk of Illness and Death? (with Sandra Hoffman) US EPA NCER/NCEE, Washington, DC, 2005.

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“Economic Uncertainties in Valuing Reductions in Children’s Environmental Health Risks,” (with Sandra Hoffmann, and Victor Adamowicz) Paper presented at the annual meeting of the American Agricultural Economics Association (AAEA), Montreal, Canada, July 27-30, 2003.

“Effects of Urban Density on Vehicle Use and Ownership,” (with Margaret Walls and Winston Harrington) Paper presented at the ASSA Annual Meeting, Atlanta, GA, January 5-7, 2002.

“Mortality Risk Valuation: A Survey of U.S. Residents,” (with Anna Alberini) Paper prepared for presentation to the CORILA Conference on Economic Valuation of Environmental Goods, Venice, May 11, 2001.

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*Benefits Transfer and the Value of Food Safety*, presentation at Valuing the Health Benefits of Food Safety, sponsored by USDA, CDC, FDA, FSIS, EPA, University of Maryland, September 14, 2000.

*The Ancillary Benefits and Costs of Climate Change: A Conceptual Framework* (with Dallas Burtraw and Anil Markandya) at the ICC/RFF/OECD Expert Workshop on the Ancillary Benefits and Costs of Greenhouse Gas Mitigation Strategies, Resources for the Future, Washington, DC, March 27-29, 2000.

*The Ancillary Health Benefits and Costs of GHG Mitigation: Scope, Scale and Credibility* (with Devra Davis and George Thurston) at the ICC/RFF/OECD Expert Workshop on the Ancillary Benefits and Costs of Greenhouse Gas Mitigation Strategies, Resources for the Future, Washington, DC, March 27-29, 2000.

*What Are Older People Willing to Pay to Reduce Their Mortality Risks?* (with Maureen Cropper, Anna Alberini, and Nathalie Simon) Paper presented at the ASSA Annual Meeting, Boston, MA, January 7-9, 2000. Also presented at Harvard School of Public Health, University of Pennsylvania, and the North Carolina State Economics Seminar Series, Raleigh, NC.

*Incentives to Reduce NOx Emissions with Joint Benefits*, (with Virginia McConnell) Paper given at the AERE Economics Incentive Workshop, Cambridge, MA, July 19-20, 1999.

“Mortality Risk Valuation: Evidence from a Contingent Valuation Survey,” (forthcoming) (with Maureen Cropper, Anna Alberini, Nathalie Simon, Kenshi Itaoka) Proceedings of an Expert Workshop on Mortality Risk Valuation, U.S. EPA, March, 1999.

"A New Paradigm for Mortality Valuation," (with Maureen Cropper, Anna Alberini, Bob Belli, and Nathalie Simon) Paper presented at the International Conference on Probabilistic Safety Assessment and Management PSAM IV, Grand Hyatt Hotel, New York City, September 13-18, 1998. Paper also presented at the World Congress of Environmental and Resource Economists, Venice, Italy, June 1998.

"Mortality and Stated Preference Methods: An Exploratory Study," (with Maureen Cropper, Anna Alberini, Bob Belli, and Nathalie Simon) Paper presented at the Southern Economics Association Annual Meeting, Atlanta, GA, November 1997.

"The Costs and Benefits of Title IV: An Integrated Assessment with the Total Analysis Framework," (with Dallas Burtraw) Paper presented at the Air and Waste Management Specialty Conference: Acid Rain and Electric Utilities II, Phoenix, AZ, January 1997.

"Mobile Sources and Air Pollution Policy: International Experience and Recommendations for Bogota, Colombia," (with Virginia McConnell and Eduardo Uribe Utero) presented at Environmental and Natural Resource Issues in Colombia, Hosted by the Colombian Department of State Planning, Bogota, September 1996.

"The Social Costs of Electricity: Do the Numbers Add Up?" (with Dallas Burtraw) presented at the ASSA Annual Meeting, San Francisco, CA, January 1996.

"The Social Benefits of Social Costing Research," (with Dallas Burtraw and Karen Palmer) presented at the Workshop on the External Costs of Energy, sponsored by the European Commission and the OECD, Brussels, January 30-31, 1995.

"Valuing Health Effects of Air Pollution in Developing Countries: The Case of Taiwan," (with Anna Alberini and Maureen Cropper) presented at the ASSA Annual Meeting, Washington, DC, January 1995.

"Air Quality and the Value of Health in Taiwan," (with Anna Alberini, Maureen Cropper, and Winston Harrington) presented at a meeting of the Eastern Economics Association, Boston, MA, March 1994.

"Airborne Health Damages and Environmental Priority Setting in Central and Eastern Europe," (with Kenneth Harrison, Eric Nickell, and Michael A. Toman) presented at the ASSA Annual Meeting, Boston, MA, January 1994.

"Electric Utility Planning in the Presence of Externalities," (with Dallas Burtraw and Karen Palmer) presented at the Conference on Market Approaches to Environmental Protection, sponsored by Stanford University, December 1993.

"Social Costing of a Mid-Atlantic Electric Utility: Implications for Electricity Supply, Energy Demand, and Air Emissions," (with Karen Palmer, Hadi Dowlatabadi, and Stuart Siegel) presented at the Southern Economics Association Annual Meeting, New Orleans, LA, November 1993.

"Toward an Integrated Theory of International Trade and Environmental Policies," (with Arvind Panagariya, Karen Palmer, and Wallace E. Oates) presented at the ASSA Annual Meeting, Anaheim, CA, January 5-7, 1993. Also issued as RFF Discussion Paper QE93-07, "Toward an Integrated Theory of Open Economy Environmental and Trade Policy," Washington, DC, June 1993.

"The Social Costs of Fuel Cycles: Lessons Learned," presented at the AERE Sessions of the annual meeting of the ASSA, Anaheim, CA, January 5-7, 1993. Resources for the Future Discussion Paper QE93-04, Washington, DC, January 1993.

"Benefit Transfer and Social Costing," in Benefit Transfer: Procedures, Problems, and Research Needs, Proceedings of the 1992 AERE Workshop, Snowbird, UT, June 3-5, 1992.

"Incentive Policies for Industrial Pollution Control in China," presented at the annual meeting of the ASSA, New Orleans, LA, January 2-5, 1992.

Annual Conference of the National Association of Regulatory Utility Commissions, Williamsburg, VA, December 1991. Resources for the Future Discussion Paper QE92-15 (with Dallas Burtraw), Washington, DC, April 1992.

"Transportation and Air Pollution in Urban Areas of Developed and Developing Countries," presented at the 70th Annual Meeting of the Transportation Research Board, Washington, DC, January 13-17, 1991.

"Air Pollution in Urban Areas of Developing Countries: Problems and Solutions," presented at Environment and Development, a United Nations University Conference, Helsinki, Finland, September 3-7, 1990. Resources for the Future Discussion Paper QE91-14, Washington, DC, October 1991.

"The Cost-effectiveness of Methanol Vehicles" (with Margaret Walls) presented at the ASSA annual meeting, Washington, DC, December 26-28, 1990.

"The Effect of Information on Health Risk Valuations" (with Maureen Cropper) presented at the annual meeting of the Allied Social Science Associations, Atlanta, GA, December 28-30, 1989; Resources for the Future Discussion Paper QE90-13.

"The Social Costs of Chronic Heart and Lung Disease" (with Maureen Cropper) presented at AERE Workshop, May 1989; Resources for the Future Discussion Paper QE89-16.

"Tradable Nutrient Permits and the Chesapeake Bay Compact," presented at the annual meeting of the Allied Social Science Associations, New York, NY, December 28-30, 1988; Resources for the Future Discussion Paper QE89-07.

"Uncertainties in Estimates of the Cost and Benefits of Groundwater Remediation: Results of a Cost-Benefit Analysis" (with Walter O. Spofford, Jr. and Eric F. Wood) presented at the Water Resources Research Conference, December 1988; Resources for the Future Discussion Paper QE89-15.

"Economics and Nutrient Management in the Chesapeake Bay," presented at the Annual Conference on the Economics of Chesapeake Bay Management, Baltimore, MD, May 23-25, 1988.

"The Temporal and Spatial Control of Ambient Ozone," presented at the Annual Meeting of the Air Pollution Control Association, Dallas, TX, June 20-24, 1988.

"Reducing Bay Nutrients: An Economic Perspective," presented at the Symposium on the Chesapeake Bay, Maryland School Of Law, Baltimore, MD, October 14, 1987.

"Agricultural Policy and the Benefits of Ozone Control," presented at the Annual Meeting of the American Agricultural Economics Association, East Lansing, MI, August 2-5, 1987.

"Air Pollution and Environmental Policy: The Case of the National Ambient Air Quality Standards for Photochemical Oxidants," presented at the American Economics Association Conference, New Orleans, LA, December 28-30, 1986.

"Air Pollution and Acute Health Effects: New Evidence," (with Winston Harrington) presented at the Environmental Law Institute-Environmental Protection Agency Joint Seminar Series, November 20, 1986.

"Estimating the Uncertainties in the Benefits of Management Strategies for Controlling Groundwater Contamination," presented at the Annual Meeting of the Society for Risk Analysis, Boston, MA, November 10, 1986.

"Lung Function as a Risk Factor for Acute Respiratory Disease: An Epidemiological Study," (with Winston Harrington) presented at the Air Pollution Control Association Conference, Detroit, MI, June 1985.

"Managing the Chesapeake Bay Clean-Up: A Modeling Approach," presented at the Eighth Biennial International Estuarine Research Conference, Durham, NH, July 1985.

"Air Pollution and Acute Respiratory Disease in Children: A Micro-epidemiological Analysis," (with Winston Harrington) presented at the annual meeting of the Allied Social Science Associations, Dallas, TX, December 1984.

"What Makes EPA Run? An Empirical Analysis of EPA Rulemaking Behavior," presented to the Conference on Implementation of Environmental Regulation: International Comparisons, Berlin, Germany, October 1981.

"Equity and Efficiency in the Promulgation of Federal Regulations: The Case of EPA's Effluent Discharge Standards" (with Winston Harrington) presented at the American Economic Association Conference, Denver, CO, September 1980.

"On the Design of a Market for Air Pollution Rights: The Spatial Problem" (with Wallace Oates) presented at the Western Economics Association Conference, San Diego, CA, June 1980.

"Regulatory Rulemaking in Theory and Practice: The Case of EPA's Effluent Guidelines" (with Wesley A. Magat and Winston Harrington) presented at Western Economic Association Conference, San Diego, CA, June 1980.

"An Economic-Environmental Planning Manual for Counties, States, and Metropolitan Areas" (with J.H. Cumberland) BBER Working Paper #1, presented at the Regional Science Association Meetings, November 11, 1977.

#### *RECENT TESTIMONY*

Testimony on the Performance of the Clean Air Act, before the House Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, May 1, 2002.

Testimony on the Proposed NAAQS for Ozone and PM (Panel I), before the Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety, Senate Committee on Environment and Public Works, April 24, 1997.

Testimony on Implementation of the Proposed NAAQS for Ozone and PM (Panel II), before the Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety, Senate Committee on Environment and Public Works, April 24, 1997.

Testimony on Implementation and Enforcement of the Clean Air Act, before the Subcommittee on Health and the Environment and the Subcommittee on Oversight, House Commerce Committee, November 9, 1995.

Testimony on Regulatory Reform bills in Congress, provided to the U.S. Senate Governmental Affairs Committee, March 8, 1995.

*RECENT PRESENTATIONS*

“Ecosystem Services and Monetary Valuation,” RFF Workshop on Ecosystem Services, RFF, Washington, DC, February 2006.

“The Generational Divide in Environmental Policy: Should Seniors’ Lives be Discounted?” Forum on Science, Ethics and Policy, University of Washington, Seattle, Washington, April, 2006.

“Are Decisionmakers at Home on the Range?” Conference on Cost-Benefit Analysis, University of Washington, Seattle, Washington, April, 2006.

“Comments on Proposed OMB Risk Assessment Bulletin Conference: National Academy of Sciences NAS, Washington, DC, April, 2006.

”Using Expert Elicitation to Attribute Pathogen-specific Foodborne Illness to Food Consumption in the U.S.” Poster Session at Priority setting of foodborne and zoonotic pathogens, European Union MED-VET-NET Network of Excellence and the US Food Safety Research Consortium, Berlin, July 2006.

“Valuing Food Safety,” Priority setting of foodborne and zoonotic pathogens, European Union MED-VET-NET Network of Excellence and the US Food Safety Research Consortium, Berlin, July 2006.

”Mortality and Morbidity Benefits of Drinking Water Improvements,” U.S. EPA NCER/NCEE Workshop Morbidity and Mortality: How Do We Value the Risk of Illness and Death? USEPA, L’Enfant Plaza, Washington, D.C., May, 2006.

”Parental Decision-Making and Children’s Health” U.S. EPA NCER/NCEE Workshop Morbidity and Mortality: How Do We Value the Risk of Illness and Death? U.S. EPA, Washington, DC (with Sandra Hoffmann), May 2006.

”Experience with Web-Based Surveys,” U.S. EPA NCER/NCEE Workshop Morbidity and Mortality: How Do We Value the Risk of Illness and Death? U.S. EPA, L-Enfant Plaza, Washington, DC, May 2006.

“Social Science Integration into CLEANER (NSF Observatory),” CLEANER All-Hands Meeting Arlington, VA, March 2006.

:Mortality Risk valuation in China: Results from a Stated Preference Survey ,” First Joint Seminar of the Economics Department and China Department, World Bank, Washington, DC, March 2006 (with Sandra Hoffmann)

“Using Expert Elicitation to Attribute Foodborne Illness to Specific Foods,” Society for Risk Analysis 2005 Annual Meeting (given by Sandra Hoffmann) Tampa, Florida, November 2005.

“What’s Uncertainty Have to Do With It? NRC Committee on Models in the Regulatory Decision Process National Research Council, Washington, D.C., November 2005 (with Dallas Burtraw and Richard Morgenstern)

“Performance Standards For Food Quality: What can be Learned from EPA?” USDA Meeting, USDA,

Washington, D.C. November 2005. (with Sandra Hoffmann).

“Urban Air Pollution, Health and Policy Instruments,” plenary session presentation at *Energy Week 2005*, World Bank, Washington, DC.

“Emissions Trading in Taiyuan, China,” presentation to NERAM IV, Mexico City, February 2005.

“Challenges for Air Pollution Control in Developing Countries,” presentation to NERAM IV, Mexico City, February 2005.

“Air Pollution and Cost-Benefit Analysis,” presentation to staff of the U.S. House of Representatives, December 2004.

“Valuation of Improvements to the Adirondacks Ecosystem,” Resources for the Future Seminar Series, April, 2004. Also, NCEE Seminar Series, May 2004. Also, presentation for U.S. EPA, March 2004 (with Dallas Burtraw, Spencer Banzhaf and David Evans).

“Economics at the Council of Economic Advisors,” at the annual meeting of the Allied Social Science Associations, San Diego, CA, January 2004.

“Health, Environment, and Urban Air Quality,” workshop on Environment and Development Economics, Institute for Policy Dialogue. Columbia University, December 2003.

“Can Experience with Environmental Performance Standards Inform Food Safety Regulation?” (with Sandra Hoffmann) at a USDA Workshop, December 2003.

“The Senior Discount,” at the RTI Research Fellows Seminar Series, Research Triangle Park, NC, November 2003.

“Cost-Benefit Analysis and Health Valuation,” seminar at the George Washington University School of Public Health, November 2003.

“Regulatory Impact Analyses and Health Valuation.” (with Richard Morgenstern) seminar to members of a delegation from South Korea hosted by U.S. AID, October 2003.

“Market-Based Innovations” at a conference Clearing the Path to Clean Air: Strategic and Technological Innovations for Ozone SIP Development, March 12 – 14, 2003, Arlington, VA.

Use of Short-Term and Long-Term Mortality Risk Studies in Policy Analysis, Health Effects Institute Annual Conference in Boulder, CO., May 2003.

“Use of Cost-Benefit Analysis,” to workshop hosted by Swedish EPA, Stockholm, Sweden. 2003.

“Children’s Health Valuation” (with Sandra Hoffmann and Vic Adamowicz) at the EPA, NCEE Workshop on Children’s Health Valuation, 2003.

“State of the Art in Estimating the Value of Statistical Life” and “An Evaluation of the Cost-benefit Analysis Performed by the Canadian Government in Support of Their National Ambient Air Quality Standards for Ozone and PM<sub>2.5</sub>,” at the International Conference on Health, Environment, and Economics, sponsored by the Air and Waste Management Association, Ottawa, Ontario, Canada, November 18-20, 2002.

The WTP for Delayed Mortality Risk Reductions (with Maureen Cropper, Anna Alberini, and Nathalie Simon) for presentation to the Second World Congress of Environmental and Natural Resource Economists, Monterey, CA, June 29, 2002.

Ancillary Carbon Reductions from SO<sub>2</sub> Reductions in China: Results of a Survey (with Richard Morgenstern) prepared for the US EPA, June 2002, for presentation to the Second World Congress of Environmental and Natural Resource Economists, Monterey, CA, June 29, 2002.

Source-Receptor Relationships for Ozone and PM<sub>2.5</sub> in the Eastern U.S. (with Ted Russell, Michelle Bergin and Jihh-Shyang Shih) for presentation to the Second World Congress of Environmental and Natural Resource Economists, Monterey, CA, June 29, 2002.

“The Effect of Risk and Individual Characteristics on the Willingness to Pay for Mortality Risk Reductions,” presented at Economic Valuation of Health for Environmental Policy: Assessing Alternative Approaches, University of Central Florida, March 18-19, 2002. Sponsored by the U.S. EPA.

“Power Plants and Clean Air: Proposed Reforms of the Clean Air Act,” SAIS Energy/Environment Seminar Series, Washington, DC, March 2002.

“Approaches to Estimating the Value of Statistical Life,” Department of Transportation Briefing, February 21, 2002.

“Factors Affecting the Willingness to Pay for Mortality Risk Reductions,” presented at an EPA-sponsored conference on the Valuation of Mortality Risks, Silver Spring, Maryland, November 2001.

Gave RFF Wednesday Seminar Series talk: Mortality Risk Valuation in the Context of Air Pollution, March 2001 (with Anna Alberini).

“Age, Health and the Willingness to Pay for Mortality Risk Reductions,” (With Maureen L. Cropper) presented at Harvard School of Public Health (February, 2001).

“Age, Health and the Willingness to Pay for Mortality Risk Reductions,” presented at The Measurement and Economic Valuation of the Health Effects of Air Pollution, A symposium sponsored by the UK Department of the Environment, Transportation, and Regions, London, February 19-20, 2001.

“Age, Health and the Willingness to Pay for Mortality Risk Reductions,” invited paper presented to the MacMaster University School of Public Health, Ontario, Canada, December 2000.

“Age, Health and the Willingness to Pay for Mortality Risk Reductions,” Workshop on the Value of Mortality and Morbidity, Brussels, Belgium, November 13, 2000.

“The Ancillary Benefits and Costs of Climate Change Mitigation,” given at the Fifth Annual Global Climate Change Research Seminar, Electric Power Research Institute, Wyndham City Center Hotel, Washington, DC, May 17-18, 2000.

“Methods for estimating ancillary benefits of climate change mitigation,” given at *Methods Development for Estimating Ancillary Benefits of Climate Mitigation*, sponsored by various Canadian government agencies: Calgary, Canada, May 3-4, 1999.

“Mortality risk valuation in adults,” at *EPA-NSF Health Valuation Workshop*, Arlington, VA, March 15-16, 1999.

“Environmental Effects of Electric Vehicles Charged at Night,” at Transportation Research Board *Annual Conference*, Washington, DC, January 1999.

“Health Risks and Valuation in Ukraine,” to World Bank staff and Ukrainian visitors, November 1998.

“Assumptions for Estimating Ancillary Benefits of Climate Policy,” presented at Climate Change Economic Analysis Forum’s Workshop: *Critical Assumptions: What Matters... What Doesn’t*, Chateau Cartier Hotel, Aylmer, Quebec, Canada, October 1998.

“Incentives for Mobile Source Pollution Control,” presented before the National Advisory Council on Environmental Policy and Technology, of the EPA Office of Reinvention, Sheraton Hotel, Washington, DC, September, 1998.

“Research Needs for Cost-Benefit Analysis of Air Quality Standards,” presented at the Annual Meeting of the American Association of Agricultural Economics, Salt Lake City, UT, August 3, 1998.

“Environmental Economics,” lectures given at the World Bank’s Environmental Economics for Development Policy Course, July 8, 1998.

“Chesapeake Bay and Control of NO<sub>x</sub> Emissions: A Policy Analysis,” presented at the Duke-RTI Environmental and Resource Economics Seminar Series, RTI, NC, June 4, 1998.

“Research Needs for Better Cost-Benefit Analyses,” presented at the North Carolina State Economics Seminar Series, Raleigh, NC, June 3, 1998.

“Mortality Risk Valuation,” presented at the Executive Branch Economics Interagency Work Group, Old Executive Office Building, April 7, 1998.

“Mortality Risk Valuation,” at EPA/NSF Partnership Conference, RFR Conservation Center, April 2-3, 1998.

“Economic and Legal Issues Associated with the Ambient Air Quality Standards for Ozone and Particulates,” presented at Pace University Law School Colloquium: *Science and Public Policy: New Ambient Air Quality Standards Under the Clean Air Act*, White Plains, New York, February 27, 1998.

“Estimating the Benefits of Environmental Improvements,” presented to MITI, Tokyo, Japan, January 22, 1998

“The Social Costs of Transportation,” presentation at the Annual Meeting of the Transportation research Board, Washington, DC, January 15, 1998.

“The Economics of Environmental Health Improvements: Background Document,” for the World Health Organization Workshop, London, June 15, 1997.

“The Costs and Benefits of the Proposed Air Quality Standards,” Air Pollution Policy: Symposium on EPA’s Proposed Standards for Ozone and Particulates, Resources for the future, February 10, 1997.

“Cost-Benefit Analysis and the Proposed Standards for Ozone and PM,” Kennedy School of Government, Continuing Education Program, Harvard University, Cambridge, Mass, March, 1997.

“The Proposed Ozone and PM Standards: Economic Issues,” Massachusetts Institute of Technology, March, 1997.

“Reforming Superfund: Risk Assessment, Cost-effectiveness, and Cost-benefit Analysis,” given at the Cost-Benefit Analysis Workshop, OSWER, EPA, Washington, DC, March 22, 1995.

“Risk Tradeoffs in Superfund Policy,” given at a symposium: Weighing the Risks, Washington, DC, March 30-31, 1995.

“Environmental Policy and the Contract with America,” presentation for the LaFollette Institute of Public Affairs, Madison, WI, April 20, 1995.

“The Future of Environmental Policy,” presentation for the Energy Forum, New York, NY, May 17, 1995.

“The Air Pollution Costs of Transportation: Literature Review and Issues,” presented at the DOT Workshop on the Social Costs of Transportation, Irvine, California. July 5-7, 1995.

#### *REPORTS/DISCUSSION PAPERS*

Eliciting Information on Uncertainty from Heterogeneous Expert Panels: Attributing U.S. Foodborne Pathogen Illness to Food Consumption (DP 06-17), June, 2006 (with Paul Fischbeck, Sandra Hoffmann, and Michael McWilliams).

Prioritizing Opportunities to Reduce the Risk of Foodborne Illness: A Conceptual Framework (FSRC-DP-03) (with Michael Batz and Sandra Hoffmann). June 2006.

The Willingness to Pay for Mortality Risk Reductions in Shanghai and Chongqing, China, for The World Bank (with Sandra Hoffmann), May 2006.

Mortality Risk Valuation in Six Countries: Evidence from a Contingent Valuation Survey, to National Center For Environmental Economics, USEPA (with Soma Battacharya, Anna Alberini and Marcella Veronesi) June 2006.

“Economic Uncertainties in Valuing Reductions in Children’s Environmental Health Risks,” (with W. Adamowicz and Sandra Hoffmann) RFF Discussion Paper 05-27.

“Age, Health, and the Willingness to Pay for Mortality Risk Reductions: A Contingent Valuation Survey in Japan” (with Kenshi Itaoka, Makoto Akai, Anna Alberini, Maureen Cropper, and Nathalie B. Simon RFF Discussion Paper 05-34 August 2005

“Willingness to Pay to Reduce Community Health Risks from Municipal Drinking Water: A Stated Preference Study” (with Adamowicz, V.; Dupont, D.P.). 2005. Report written for the US Environmental Protection Agency. October 2005. 62 pp.

“Uncertainty in Benefit-Cost Analysis: What’s Uncertainty Got To Do With It?” (with Richard Morgenstern, Dallas Burtraw, Peter Nelson, Michael Batz, Michael McWilliams). Report to the US Environmental Protection Agency, September 2005.

Economics of Pollution Trading for SO<sub>2</sub> and NO<sub>x</sub>, (with Dallas Burtraw, David A. Evans, Karen L. Palmer, and Russell Toth) Resource for the Future (RFF) Discussion Paper 05-05, March 2005.

Valuation of Natural Resource Improvements in the Adirondacks, (with Spencer Banzhaf, Dallas Burtraw, and David Evans) RFF Discussion Paper, June 2004.

Willingness to Pay for Mortality Risk Reductions: Does Latency Matter? (with Maureen Cropper, Anna Alberini, and Nathalie Simon) FEEM Discussion Paper, 2004; RFF Discussion Paper 04-13; and NCEE Working paper #2004-01.

WTP for Mortality Risk Reduction of Electric Power Generation Systems and Influences of Risk Characteristics on WTP. (with Kenshi Itaoka, Aya Saito, Taketoshi Taniguchi and Vic Adamowicz) Fuji International Discussion Paper, 2004.

Identifying the Most Significant Microbiological Foodborne Risks to Public Health: A New Risk-Ranking Model (with Michael B. Batz, Sandra A. Hoffmann, J. Glenn Morris, Diane M. Sherman, Michael R. Taylor, Jody S. Tick) RFF Discussion Paper, 2004.

Source-Receptor Relationships for Ozone and Fine Particulates in the Eastern United States (with Jhih-Shyang Shih, Michelle S. Bergin and Armistead G. Russell) RFF Discussion Paper 04-25, 2004.

Valuation of Improvements in the Adirondacks ecosystem, Final Report to the U.S. EPA (EPA CX 826562-01-2), February, 2004.

Controlling Ozone and Fine Particulates: Cost Benefit Analysis with Meteorological Variability (with Jhih-Shyang Shih, Ted Russell and Michelle Bergin) RFF Discussion Paper 03-55, 2003.

Air Pollution Control Policy Options for Metro Manila. (with Richard Morgenstern, Carolyn Fischer, Kevin Rolfe, Jose Logarta and Bing Rufo) RFF Discussion Paper , June, 2003.

Ancillary Carbon reductions from SO<sub>2</sub> Reductions in China: Results of a Survey (with Richard Morgenstern) prepared for the U.S. EPA, June 2002.

Costs and Benefits of Fish Consumption Advisory for Mercury in the Chesapeake Bay, June 2002 (with Paul Jakus and Megan McGuinness) for Maryland Department of Natural Resources.

Mortality Risk Valuation In the U.S. and Canada, (forthcoming Discussion Paper) (with Maureen Cropper, Nathalie Simon, Anna Alberini, Joseph Cook). (3282)

A Review of the Socio-Economic Models and Related Components Supporting the Development of Canada-Wide Standards (CWS) for Particulate Matter (PM) and Ozone, 2001, An Expert Panel Report prepared at the request of The Royal Society of Canada (with eight other experts) (June). (3013)

Draft Inception Report, Shanxi Air Quality Development Project, 2001 (with Morgenstern, Zhang, others) submitted to the Asian Development Bank (June). (3953)

“Best Things First: Setting Solutions-Based Priorities and EPA,” RFF Discussion Paper (with Peter Nelson and J. Clarence Davies)

*Cost-Effective NO<sub>x</sub> Control in the Eastern United States*, RFF Discussion Paper DP-00-18 (with Virginia McConnell, 2000 (submitted to *JEEM*)

"RAINS-ASIA: A Critique and Guide to Future Research," (with Dallas Burtraw) Technical Paper for the World Bank, November 3, 1999

“Summary of the Science of Acidification in the Adirondack Park,” (with Joe Cook, Anthony Paul, Terrell Stoessell, and Dallas Burtraw) 2000.

*Location Efficiency and Mortgage Default*, RFF Discussion Paper DP-99-49REV (with Allen Blackman) 2000.

Cost-Effective Pollution Control With Joint Benefits: NO<sub>x</sub> Emissions and the Chesapeake Bay, to be submitted to *Water Resources Research* (with Virginia McConnell) 2000.

*Mortality Risk Valuation: Survey Approach*, Alan Krupnick, Maureen Cropper, Bernie O'Brian, Ronald Goree, Nathalie Simon, Liz Futo, Martin Heintzelman for Health Canada, Ontario, Canada, March 31, 1999.

"The Benefits of Air Pollutant Emissions Reductions in Maryland: Results from the Maryland Externalities Screening and Valuation Model," (with David Austin, Dallas Burtraw, and Terrell Stoessell) October 1998, RFF Discussion Paper 99-05. (Submitted to *Land Economics*).

Mortality Risk Valuation and Contingent Valuation Methods: A Pilot Survey in Japan (with Kenshi Itaoka, Okubo Satomi, Takashi Fujii, Makoto Akai, Noboru Nomura, Alan Krupnick, and Nathalie Simon (in English and Japanese) June 1998.

"The Chesapeake Bay and NO<sub>x</sub> Control: A Policy Analysis," (with Ginny McConnell, David Austin, Matt Cannon, Terrell Stoessell, and Brian Morton) prepared for the U.S. EPA and the Chesapeake Bay Program, June 1998. RFF Discussion Paper 98-46

"Evaluation of CMAQ Projects," (with Farrell and Harrington) RFF Discussion Paper 98-18.

"Intel's XL Permit: A Framework for Evaluation," (with James Boyd and Janice Mazurek) RFF Discussion Paper 98-11

"Public Support for Congestion Fee Policies for Motor Vehicles: Survey Results," working paper (with Winston Harrington and Anna Alberini) RFF Discussion Paper 98-27.

"Energy, Transportation and Environment: Policy Options for Environmental Improvements," (with Winston Harrington) paper for the World Bank.

"Mobile Sources and Air Pollution Policy: International Experience and Recommendations for Bogota, Colombia," (with Virginia McConnell and Eduardo Uribe Utero).

"Examining the Relationships Between Urban Density, Transit Availability, and Vehicle Travel: Results from a Nested Logit Model of Vehicle Choice," (with Winston Harrington and Margaret Walls) Paper presented at the Australian Economics Association, September 1998.

"The Competitive Implications of Facility-specific Environmental Agreements: The Intel Corporation's Project XL," (with James Boyd and Janice Mazurek) submitted for inclusion in *Environmental Regulation and Market Structure*, Edward Elgar.

Health and Environmental Impacts assessment Panel Report, Sulphur in Fuels Study. For the Government Working Group, chaired by Environment Canada.

"The Economics of Environmental Health Improvements: Background Document," for the World Health Organization, June 15, 1997

"Cost-Benefit Analysis and Regulatory Reform: An Assessment of the Science and the Art," (with Raymond Kopp and Michael A. Toman) in *Risk Assessment and Risk Management in Regulatory Decision-Making*, the Presidential Commission on Risk Assessment and Risk Management, Washington, DC, June 1997.

"The Health Benefits of Reducing Ozone and Particulate Matter Concentrations in the Dallas-Fort Worth Area," (with Deirdre Farrell) prepared for the Environmental Defense Fund, Austin, TX, June 2, 1997.

“Summary of the Literature Review on Environmental Externalities from Electricity Generation in Maryland,” (with Gar Ragland, David Austin, Dallas Burtraw, Deirdre Farrell, and Erin Mansur) prepared for the Maryland Power Plant Research Program, State of Maryland, Annapolis, MD, January 1997.

“Public Support for Congestion and Pollution Fee Policies for Motor Vehicles: Survey Results,” (with Winston Harrington) Report to REACH (Reduce Emissions And Congestion on Highways) Task Force, Southern California Association of Governments, October 1996.

“Air Quality and Episodes of Acute Respiratory Illness in Taiwan Cities: Evidence from Survey Data,” (with Anna Alberini) Department of Economics, University of Colorado Discussion Paper 96-30; submitted to *Journal of Urban Economics*, October 1996.

“Six Steps to a Healthier Ozone Policy,” (with Deirdre Farrell) RFF Discussion Paper 96-2.

“Environment and Transportation Issues in Bangkok, Thailand,” for Asia Division, World Bank. 1995.

“Benefit-Cost Analysis and Nuclear Waste Site Cleanups: The Historical and Ethical Context,” (with Allen Kneese) RFF Discussion Paper 95-22, 1995.

*Social Costing of Electricity in Maryland: Implications for Electricity Supply Energy Demand and Air Emissions*, report to the Maryland Department of Natural Resources Power Plant Research Program (September 1994) (with Hadi Dowlatabadi and Stuart Siegel).

“An Analysis of Alternative Approaches to Implementing Social Costing of Electricity in Maryland,” (with Hadi Dowlatabadi, Karen Palmer, and Stuart Siegel) RFF Discussion Paper 94-39, July 1994.

“Estimating the Demand for Vehicle-Miles-Traveled Using Household Survey Data: Results from the 1990 Nationwide Personal Transportation Survey,” (with Margaret Walls and Carter Hood) RFF Discussion Paper ENR 93-25, September 1993.

“The Distributional and Environmental Implications of an Increase in the Federal Gasoline Tax,” (with Margaret Walls) RFF Discussion Paper ENR93-24, September 1993.

“The External Costs of Nuclear Power: Ex Ante Damages and Lay Risks,” (with Anil Markandya and Eric Nickell) RFF Discussion Paper QE93-28, September 1993.

“Bridging the Gap between State and Federal Social Costing,” (with Dallas Burtraw) RFF Discussion Paper QE93-19, September 1993.

“Some Simple Analytics of Social Costing in a Regulated Industry,” (with Dallas Burtraw, Winston Harrington, and A. Myrick Freeman III) RFF Discussion Paper QE93-13, April 1993; revised November 1993.

“Benefit Transfer and Social Costing,” RFF Discussion Paper QE92-21, September 1992.

“The Social Costs of Electricity: How Much of the Camel to Let into the Tent?” (with Dallas Burtraw) RFF Discussion Paper QE92-15, April 1992.

“Accounting for Environmental Costs in Electric Utility Resource Supply Planning,” (with A. Myrick Freeman III, Dallas Burtraw, and Winston Harrington) RFF Discussion Paper QE92-14, April 1992.

“Global Warming and Urban Smog: The Cost Effectiveness of CAFE Standards and Alternative Fuels,” (with Margaret A. Walls and Carol T. Collins) RFF Discussion Paper ENR92-13.

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"Emissions Trading in the Electric Utility Industry," (with Douglas Bohi, Dallas Burtraw, and Charles Stalon) Report to Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, February 1990; RFF Discussion Paper QE90-15, March 1990.

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"Maternal Work Status and Childhood Illness: Evidence from CHES," (with Winston Harrington) RFF Discussion Paper QE85-06, October 1984.

"Respirable Particulates and Acute Respiratory Disease in Children," (with Winston Harrington) for U.S. Environmental Protection Agency, October 1984; RFF Discussion Paper QE85-02.

"Benefits Analysis of Alternative National Ambient Air Quality Standards for Photochemical Oxidants: Phase I Report," for U.S. Environmental Protection Agency, September 1984.

"Air Pollution and Lung Function in Children," (with Winston Harrington) for U.S. Environmental Protection Agency, July 1984; RFF Discussion Paper QE84-12.

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"Acute Respiratory Disease and Exposure to NO<sub>2</sub>: Construction of Exposure-Response Functions Using CHESS Data from Chattanooga, Tennessee," (with Winston Harrington) Report prepared for Office of Policy and Resource Management, U.S. Environmental Protection Agency, October 1983.

"Assessment of the Chattanooga Acute Respiratory Disease Survey," (with Winston Harrington) Report prepared for Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, April 15, 1983.

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"Innovative Technology Compliance Extensions: A Qualitative Economic Analysis of Section 301(k) of the 1977 Clean Water Act Amendments," (with David R. Yardas) prepared for THE U.S. Environmental Protection Agency, January 1981.

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In *Nature*, review of W. Beckerman, *Small Is Stupid: Blowing the Whistle on the Greens*, Duckworth Press, London, 1995.

In *Environment International*, review of A.L. Nichols, *Targeting Economic Incentives for Environmental Protection*, The MIT Press, Cambridge, MA, 1984.

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Reviewer for:

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*Journal of Environmental Economics and Management*  
*Journal of Applied Policy and Management*

*Land Economics*  
*Journal of Risk and Uncertainty*  
*Environment and Resource Economics*  
*Contemporary Policy Issues*  
*Marine Resource Economics*  
*Environmental Science and Technology*  
*Operations Research*  
*Journal of the Air Pollution Control Association*  
*Journal of Industrial Economics*  
*Journal of Regional Studies*  
*Oxford University Press*  
*Journal of Forestry*  
*National Science Foundation*

Elected member of the Board of the Association of Environmental and Resource Economists (AERE), 2005.

Member, U.S. EPA Expert Panel on Environmental Models, 2004-5.

Consultant to the National Academy of Science's Institute of Medicine Committee to Evaluate Measures of Health Benefits for Environmental Health and Safety Regulations, 2004-5.

Co-Chair, Interagency Steering Committee on Valuing Health Outcomes, 2002-3.

Invited to serve on the Advisory Committee to the Center for Environmental and Resource Policy, North Carolina State University, 2002

Editorial Board, *Land Economics*, 2001-4

Member, CMAQ NAS Committee, 1999-2002

Member, STPP NAS Committee, 1999-2002

Member, Expert Panel on Reviewing the Canadian Proposed Ozone and PM Standards, Royal Society of Canada, 1999-2001

Co-Chair of the Workshop on the Convergence of Risk Assessment and Socioeconomic Analysis to Better Inform Chemical Risk Management Decisions, sponsored by U.S. EPA, OECD, and Health Canada, Arlington, VA, May 1-2, 2000.

Member, Subcommittee of the EPA Science Advisory Board for Review of the 812 Cost-Benefit Study, U.S. EPA (1998-99).

Co-chair of the Subcommittee for Development of Ozone, Particulate Matter and Regional Haze Implementation Programs, Clean Air Act Advisory Committee to U.S. EPA. 1995-7.

Member of the National Research Council's Review Team for the Federal Highway Cost Allocation Study, 1995-7.

Member of the National Research Council's Committee on Research and Peer Review at the Environmental Protection Agency, 1994-7.

Member of Scientific Advisory Board, Maryland Power Plant Research Program, State of Maryland, 1986-90.

Testimony, Senate Governmental Affairs Committee, House Marine Fisheries Committee, House Committee on Science, Space, and Technology.

Member of U.S. Department of Energy Environmental Costing Task Force.

Member of the New York State Managing Board for the Environmental Costing Study.