

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

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In re:

License Renewal Application Submitted by

**Entergy Nuclear Indian Point 2, LLC
Entergy Nuclear Indian Point 3, LLC and
Entergy Nuclear Operations, Inc.**

Docket Nos. 50-247-LR and 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64

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**SUPPORTING EXHIBITS
TO THE DECLARATION OF BRUCE A. EGAN, Sc.D.
IN SUPPORT OF THE STATE OF NEW YORK'S
MOTION FOR SUMMERY DISPOSITION
ON CONTENTION 16/16A**

Filed on August 28, 2009

List of Exhibits
To the Declaration of Bruce A. Egan, Sc.D.
Dated August 28, 2009

1. Curriculum Vitae of Bruce A. Egan.
2. Declaration of Bruce A. Egan, dated November 27, 2007.
3. Maps of Indian Point Vicinity:
 - a. U.S. Department of the Interior, Geological Survey, Quadrangle Map, 7.5 Minute Series (Topographic) Peekskill, NY.
 - b. U.S. Department of the Interior, Geological Survey, Quadrangle Map, 7.5 Minute Series (Topographic) Haverstraw, NY.
 - c. DSEIS Map, Figure 2-9, Topographic features surrounding IP2 and IP3, December 2008 DSEIS, p. 2-25 (ML083540594).
4. Stephen F. LaVie, Senior Emergency Preparedness Specialist, United States Nuclear Regulatory Commission, Power Point Presentation: *What's in the Black Box Known as Emergency Dose Assessment?*, prepared for the 2009 National Radiological Emergency Planning Conference Dose Assessment Workshop, Part 2, Dispersion (ML091050257).
5. United States Nuclear Regulatory Commission/Lawrence Livermore National Laboratory, NUREG/CR-6853, *Comparison of Average, Transport and Dispersion, Among a Gaussian, a Two-Dimensional, and a Three-Dimensional Model* (Oct. 2004) (ML043240034).
6. United States Nuclear Regulatory Commission Office of Standard Development, Regulatory Guide 1.111, *Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors* (July 1977) (Draft for Comment).
7. T. McKenna, J. Trefethen, K. Gant (ORNL), J. Jolicœur, G. Kuzo, G. Athey, United States Nuclear Regulatory Commission, Incident Response Division, Office for Analysis and Evaluation of Operational Data, RTM-96: Response Technical Manual (NUREG/BR-0150, Vol. 1, Rev. 4) (Mar. 1996).

8. United States Nuclear Regulatory Commission/Brookhaven National Laboratory, NUREG/CR-6572, Rev. 1, Kalinin VVER-1000 Nuclear Power Station Unit 1 PRA: Procedure Guides for a Probabilistic Risk Assessment (Dec. 2005) (ML060450618) (Excerpt).
9. RSICC Code Package CCC-652, *MACCS2 Ver. 1.13.1: MELCOR Accident Consequence Code System for the Calculation of the Health and Economic Consequences of Accidental Atmospheric Radiological Releases* (Abstract dated May 1997, revised June 1998, March 2004, June 2005).
10. United States Department of Energy Office of Environment, Safety and Health, *MACCS2 Computer Code Application Guidance for Documented Safety Analysis: Final Report* (June 2004).
11. Steven R. Hanna, Gary A. Briggs, Rayford P. Hosker, Jr., National Oceanic and Atmospheric Administration, Atmospheric Turbulence and Diffusion Laboratory, *Handbook on Atmospheric Diffusion* (1982) (Excerpt).
12. J. Glynn Henry & Gary W. Heinke, *Environmental Science and Engineering*, (Prentice-Hall 1989) (pp. 527-28) (Excerpt).
13. United States Regulatory Commission, Regulatory Guide 1.23, Meteorological Monitoring Plan for Nuclear Power Plants (Rev. 1, Mar. 2007).

AREAS OF EXPERTISE

- Air Quality Regulations
- Air Quality Modeling and Permitting
- Air Toxics
- Hazard Assessments
- Clean Air Act Compliance Strategies

EDUCATION

Harvard School of Public Health: Sc.D., Environmental Health Sciences, 1972

Harvard School of Public Health, S.M., Industrial Hygiene, 1969

Harvard University: S.M., Mechanical Engineering, 1962

Harvard College: A.B., Engineering, 1961

PROFESSIONAL HISTORY

Egan Environmental Inc.
Principal, 1998 to Present

Woodward-Clyde
Consultants, Boston, MA,
Vice President and
Technical Director, Air
Quality Services, 1994-
1998

ENSR Consulting and
Engineering (formerly
ERT), Senior Scientist to
Senior Vice President and
Chief Scientist, 1971-1994

REPRESENTATIVE EXPERIENCE

- Dr. Egan has over 35 years experience in Clean Air Act regulatory consulting, air quality model development and application, micrometeorology, fluid dynamics and thermodynamics, environmental risk analyses, air toxics, air quality permitting, visibility analyses, and litigation support. He has managed numerous projects involving the development and application of environmental impact modeling techniques, dispersion modeling in complex or mountainous terrain, modeling of sea breeze circulations, the modeling of accidental releases of chemicals, visibility impacts and the analysis of associated data. He has managed and led projects involving New Source Review, Prevention of Significant Deterioration, State Implementation Plan revisions, and Air Toxics Issues following the 1977 and the 1990 Clean Air Act amendments. He has also specified the meteorological data gathering needs for several regulatory compliance programs. He is considered an expert on EPA's PSD and Modeling Risk Management Program regulations.
- Comments and presentations on air quality model development and applications issues at EPA's Air Modeling Conferences including the most recent held in October 2008.
- Analysis and testimony regarding the dispersion modeling methods for the licensing of nuclear power plants located in Massachusetts and New York.
- Analysis and supporting comments regarding the potential air quality impacts of a proposed tunnel ventilation facility in downtown New York City. Work involved review of the facility's sources of air pollutants and the complex airflow patterns around the facility and the potential for infiltration of emitted contaminants into the ventilation systems of nearby high rise buildings. Analyses involved the application of Computational Fluid Dynamics modeling.
- Expert testimony and support analysis work on contaminated fugitive dust emissions from a hazardous waste site near Chicago, IL.
- Expert testimony and support work on fugitive dust emissions and ambient air impacts associated with land fill operations in Danbury, CT.
- Analyses of fugitive dust emissions from mining operations

**PROFESSIONAL HISTORY
(Continued)**

Educational Development Center, Staff Engineer to Associate Director, 1964-1968

Harvard University, Engineering and Applied Physics Laboratories, Engineer-in-Charge, Undergraduate Instruction Laboratory, 1962-1964.

REGISTRATION

Certified Consulting Meteorologist #196, American Meteorological Society

AFFILIATIONS

Air and Waste Management Association.

- Fellow
- Editorial Review Board
- Faculty - Air Toxics Workshops
- Member AB-3 Committee

American Meteorological Society -Fellow

Harvard School of Public Health. Visiting Lecturer on Air Pollution Meteorology 1995-1997

Commonwealth of Massachusetts Pesticide Board, Former Member

Wenham Lake Watershed Association- Director and Treasurer

near El Paso, TX.

- Project Manager for assessing the air quality impacts of aircraft and airport related activities on local air pollution levels. Project involves the use of the FAA Emissions and Dispersion Modeling System (EDMS V5) and the EPA AERMOD model.
- Project Manager for dispersion modeling analyses to assess air quality in the South Bronx for different transportation alternatives for large truck transport of municipal waste to waste transfer stations. The project involved working with New York University and a team of experts of traffic models and environmental policy alternatives.
- Project Manager for the development of models of the effects of complex sea breeze circulations on air quality on Cape Cod. This project involved the adaptation of the meteorological model, MM5, to a fine grid resolution and the use of this program to drive the SCIPUFF, CALMET/CALPUFF and ISC models. The effects of sea breezes on emissions from both elevated and ground level sources were simulated.
- Principal Investigator for the PSD permitting and visibility impact analyses of a municipal solid waste incinerator expansion in a coastal setting with nearby high terrain. This project was the first to use AERMOD in Hawaii and involved the use of two different meteorological data bases with AERMOD.
- Principal Investigator for the evaluation of state-of-the-art models (e.g., AERMOD, ADMS, ISC3) for application to dispersion of toxic substances in the vicinity of refineries.
- Principal Investigator for the offsite consequence analyses aspects of Risk Management Plans for paper industry, refinery, electric and gas utility, and wastewater treatment facility clients covered by EPA's Risk Management Program regulations.
- Principal investigator for developing a model Risk Management Plan for utilities, which addressed coordinated compliance with the OSHA Process Safety Management standard and EPA's Accidental Release Prevention Program (Clean Air Act section 112(r)) regulation.
- Project manager for the development and application of mathematical models to assess the ambient air consequences

of accidental releases of toxic gases.

- Analyzed environmental consequences of accidental chemical spills, including heavier than air gases, volatile liquids and aqueous solutions of hazardous chemicals for several different clients.
- Project director for U.S. EPA sponsored Complex Terrain Model Development (CTMD) project. This multi-year effort required field experiments, assimilation of physical modeling experiments, and development of a state-of-the-art dispersion model for ultimate use in regulating emission sources located in mountainous terrain settings.
- Principal-in-charge for the Electric Power Research Institute (EPRI) sponsored Plume Model Development and Evaluation (PMD&E) Hybrid model project. This was a multi-year effort requiring the development, on the basis of field experiment data, of an advanced dispersion model for use at fossil fuel-fired power plants throughout the U.S.
- Project Manager for New Source Review permitting of a major expansion of a paper mill. Work involved developing a multi year strategy, extensive analyses of PSD netting options and working with design and construction engineers.
- Project director for a multi-phase effort to obtain approval for early reduction postponement of MACT standards applicable to a large chemical production facility. Work entailed extensive emissions data collection, emissions estimation efforts for a wide variety of source types, and regulatory interpretation and negotiation.
- Project manager for the air quality permitting of a paper mill. This project involved the collection of two years of meteorological data, extensive ambient air quality measurements, and subsequent use of this data in model development, validation and application efforts.
- Provided litigation support and expert witness testimony in cases relating to complex terrain dispersion modeling, accidental releases of toxic substances, PSD and state permitting issues.
- Provided potential litigation support to issues of deposition of mining products onto public areas and into surface water bodies.

PROFESSIONAL ACTIVITIES

(2008) Contributor and Presenter of comments on dispersion and visibility modeling needs at EPA's 9th Conference on Air Quality Modeling. Research Triangle Park. NC. October, 2008.

(2007) Invited Speaker on 'Roles of Meteorological Modeling for Wind Power Energy Analyses'. Conference to Promote Wind Energy in Rhode Island. University of Rhode Island. April 2007.

(2005) Contributor to Comments of the AWMA Meteorology Committee on the AERMOD Model for EPA's 8th Conference on Air Quality Modeling. Research Triangle Park. NC. September, 2005.

(2005) Session Chair: Air Quality Model Applications and Evaluation-Part I. NOAA/EPA Golden Jubilee Symposium on Air Quality Modeling and its Applications. Research Triangle Park NC. September 20-21, 2005)

(2003) Session Chair: CALMET/CALPUFF Studies. AWMA Conference: Guideline on Air Quality Models: The Path Forward. Mystic, CT. October 2003.

(2000) Coordinator of Comments of the AWMA Meteorology Committee on the AERMOD Model for EPA's 7th Conference on Air Quality Modeling. Washington D.C. August 2000.

(1996) Cochairman of *Frank Pasquill Memorial Session*. Ninth Joint Conference on Applications of Air Pollution Meteorology with A&WMA. 76TH AMS Annual Meeting. Atlanta, Georgia.

(1995) Coordinator/Presenter; Comments of the AWMA Meteorology Committee and the AMS Committee on Meteorological Aspects of Air Pollution at EPA's 6th Conference on Air Quality Modeling. Washington, DC.

(1995-1997) Instructor, *Atmospheric Science and Radioactivity Releases*. Harvard School of Public Health Center for Continuing Professional Education.

(1992-1997) Faculty Instructor, Air and Waste Management Association Title III Workshop Series specializing on 'Accidental Release Prevention', 'Residual Risk', 'Alternatives to MACT', and 'Air Toxics Overview'. Twelve Locations,

Nationwide.

(1992-1993) Lecturer, Air and Waste Management Association Short Courses on Implications of the 1990 Clean Air Act Amendments.

(1992-1996) Member, Editorial Review Board, Journal of the Air and Waste Management Association.

(1991) Member, EPA Research Grant Review Panel, Durham, NC.

(1990) Co-Chairman and Speaker, "Air Toxics Regulation Conference" Executive Enterprises, Inc., Washington, DC.

(1990) Speaker, "Driving Forces in Air Toxics Regulations" California Clean Air Regulation and Compliance Conference, San Francisco, CA.

(1990) Member, American Meteorological Society Awards Committee.

(1990) Member, Editorial Review Board, Journal of the Air and Waste Management Association.

(1988) Speaker, "The New Maryland Air Toxics Program," Maryland Chamber of Commerce, Columbia, MD.

(1988) Lecturer, AIChE course "Safety Analysis and Risk Assessment for Chemical Process Industry Practitioners," Princeton, NJ.

(1988) Chairman, National Acid Precipitation Assessment Program, Task Group III Peer Review Panel for Completed Work.

(1986) Lecturer, UNESA Workshop, "Air Pollution Diffusion Model Utilization for Siting and Operation of Fossil-Fuel Power Plants," Madrid, Spain.

(1986) Member, DOE Review Committee for the Atmospheric Sciences in Complex Terrain (ASCOT) Program.

(1985) Member, DOE Review Committee for the Illinois State Water Survey Program in Atmospheric Sciences.

(1985) Member, Peer Review Committee for U.S. EPA Office of Research and Development.

(1984) Participant on National Science Foundation/Council on Environmental Quality Expert Panel, on Geochemical and

Hydrological Processes and their Protection.

(1984) Lecturer at the Institute of Atmospheric Optics and Remote Sensing on Dense Gas Dispersion Models and Emergency Response Models.

(1984) Invited Opening Lecturer at the 29th OHOLO Conference on Boundary Layer Structure, Modeling and Application to Air Pollution and Wind Energy. Zichron Yaacov, Israel.

(1983) Invited Speaker and Participant at the Gordon Research Conference on Aerobiology, New London, NH.

(1983 to 1985) Member of the University of Chicago Review Committee for the Energy and Environmental Systems Division at Argonne National Laboratory.

(1983) Chairman for the AMS/EPA-sponsored Workshop on Dispersion in Complex Terrain, Keystone, CO.

(1983) Member, American Meteorological Society Awards Committee.

(1982) Subgroup Chairman at the AMS/EPA-sponsored workshop on Quantifying and Communicating Uncertainty in Regulatory Air Quality Modeling, Woods Hole, MA.

(1981) Panel Leader at the U.S. EPA-sponsored workshop of the Role of Atmospheric Models in Regulatory Decision Making, Airlie House, VA.

(1980) Subgroup Chairman at the AMS/EPA-sponsored Workshop on Dispersion Model Performance, Woods Hole.

(1980-1982) Member of the Argonne University Association Review Committee for the Energy and Environmental Systems Division of Argonne National Laboratory.

(1979 to 1982) Member of the Steering Group of the AMS/EPA Cooperative Agreement.

(1979) Member of the National Commission on Air Quality Atmospheric Dispersion Modeling Panel, Washington, DC.

(1979) Panel Leader at the U.S. EPA Workshop to Develop Recommendations on Atmospheric Dispersion Models in Complex Terrain, Raleigh, NC.

(1977 to 1983) Member of the General Committee of the Air Pollution Control Division of the American Society of Mechanical Engineers.

(1977) Program Chairman for the AMS/APCA Joint Conference on Applications of Air Pollution Meteorology, Salt Lake City, UT.

(1977) Invited Participant in the AMS Workshop on Stability Classification Schemes and Sigma Curves, Boston, MA.

(1977) Invited Participant in the U.S. EPA-sponsored Specialists Conference on the EPA Modeling Guideline, Chicago, IL.

(1976) Participant in the USA-USSR Working Group on Air Pollution Modeling, Instrumentation and Measurement Methodology, Leningrad, USSR.

(1976) Invited Participant in the DOE/ERDA-sponsored Workshop on Research Needs for Atmospheric Transport and Diffusion in Complex Terrain, Albuquerque, NM.

(1975) Consultant to the Office of Technical Assessment to review the U.S. EPA 5-Year Plan for Research and Development, Washington, D.C.

(1975 to 1979) Member of the American Meteorological Society Committee on Meteorological Aspects of Air Pollution, (Chairman 1976, 1977).

(1975) Invited by the American Meteorological Society to prepare and present a comprehensive review, Turbulent Diffusion in Complex Terrain, Boston, MA.

PUBLICATIONS

Egan, B.A. and B.L. Murphy. 2007: Forensic Air Dispersion Modeling and Analysis. Chapter 12: Introduction to Environmental Forensics. ELSEVIER.

Egan, B.A., N.L. Seaman, R. Yamartino and J. Purdum. 2002: Modeling Pollutant Dispersion from Elevated and Ground Level Sources affected by Sea-Breeze Circulations produced by Cape Cod and its Surroundings. 12th Joint Conference on Applications of Air Pollution Meteorology with the Air and Waste Management Association., Norfolk, Virginia. Paper 1.6.

Egan, B.A., N.L. Seaman, and R. Yamartino 2002: Development of a Dispersion Modeling Capability for Sea Breeze Circulations and other Air Flow Patterns over Southeastern Massachusetts. RFR File Number 1J2 Commonwealth of Massachusetts Dept of Public Health, Boston, MA. January 2002.

Seaman, N.L., A. Deng, G.K. Hunter, B.A. Egan and A.M. Gibbs. 2002: Numerical Study of the Influences on Pollutant Transport Due to Multiple Convergence Zones in the Sea Breezes of Cape Cod and Southeastern Massachusetts. 12th Joint Conference on Applications of Air Pollution Meteorology with the Air and Waste Management Association. 20-24 May, Norfolk, Virginia. Paper 2.3.

Egan, B.A. and W. H. Snyder. 2001: "Atmospheric Dispersion : Complex Terrain." Chapter in the "Encyclopedia of Environmetrics." John Wiley and Sons, West Sussex, UK

Hanna, S. R., B. A. Egan, J. Purdum, and J. Wagler. 2000: Comparison of AERMOD, ISC, and ADMS Model Performance with Five Field Data Sets. Presented at the 93rd Annual Meeting and Exhibition of the Air and Waste Management Association, Salt Lake City, Idaho

Egan, B. A., and D. Heinold. 1997. "A Guide to EPA's Risk Management Program Under Section 112(r) of the Clean Air Act: Strategies for Effective Compliance." Air and Waste Management Association, Pittsburgh, PA.

Egan, B.A., and J.A. Yuhas. 1997. "The Development of Alternative Scenarios for Hazard Analyses under 112(r)(7)." Presented at the 90th Annual Meeting and Exhibition of the Air and Waste Management Association, Toronto, Canada.

Egan, B.A., R.G. McInnes, J.M. Kingsley. 1993: A Compliance Information Management System for Air Quality Regulatory Needs. Presented at the 86th Annual Meeting of the Air and Waste Management Association. Denver, CO.

Egan, B.A., 1992: Science and Technology. Chapter in Clean Air Law and Regulation. Timothy A. Vanderver, Jr., Editor-in-Chief. The Bureau of National Affairs, Inc., Washington, DC.

Egan, B.A., 1992. Modeling for Accidental Releases of Air Toxics. Proceedings of the AWMA Specialty Conference: New Hazardous Air Pollutant Laws and Regulations, Their Impact on Industry, Government and the Public. King-of-Prussia, PA

Egan, B.A. 1992. Environment Action "Game Plan." Hydrocarbon Processing, January 1992, pp. 99-101.

Egan, B.A. 1991. Proactive Steps for Industry Regarding Clean Air Act Provisions. Journal of Environmental Regulations. Winter 1991-92, pp. 187-193.

Egan, B.A. 1991. The New Clean Air Act Amendments: Action Items Industry Can Take Now. ENSR Report.

Egan, B.A. 1991. Modeling and Analysis Needs for the Prevention of Accidental Release Provisions of the 1990 CAAA. Presented at the 84th Annual Meeting of the Air Waste Management Association, Vancouver, BC.

Egan, B.A. 1991. Air Toxics Provisions of the Amendments to the Clean Air Act. Presented at the TAPPI Conference. April 1991. San Antonio, TX.

Egan, B.A. and R. Dickinson. 1990: Air Toxics Provisions of the Clean Air Act and the Pulp and Paper Industry. Technical Association of the Pulp and Paper Industry. Annual Meeting. April 1990. Seattle, WA.

Egan, B.A. 1990: Federal Clean Air Act Amendments - Requirements for the Chemical Industry. American Institute of

Chemical Engineers Environmental Meeting. Orlando, FL.

Egan, B.A. 1989: "New Clean Air Legislation Could Mean Large Industry Expenditures." Pulp and Paper Magazine, pp. 179-180. September 1989.

Egan, B.A. and M.T. Mills. 1989. "Estimating Atmospheric Emissions from Accidental Liquid Releases." 82nd Annual Meeting of the Air and Waste Management Association Paper, 89-55.2.

Egan, B.A. 1988. "Industry Must Address Emergency Chemical Spill Response Planning." Pulp and Paper Magazine. Miller Freeman Publications. April 1988.

Egan, B.A. and D.G. Smith. 1988. "Implications of Amendments Regarding Hazardous Air Pollutants." AIChE 1988 Summer National Meeting. Denver, CO.

Egan, B.A., and B.W. Schwab. 1988. "Analysis of Potential Accident Release of Anhydrous HCL from a Tank Car." Presented at the TAPPI 1988 Environmental Conference April 18-20. Charleston, SC.

Egan, B.A. 1988. "Air Toxics Regulations: The Impact of SARA Title III." AIChE 1988 Annual Meeting, Washington, DC.

Egan, B.A. 1988. "Emergency Response Planning for the Pulp and Paper Industry." Presented at the 1988 NCASI Southern Regional Meeting. June 7-9. New Orleans, LA.

Paine, R.J., D.G. Smith, and B.A. Egan. 1987. "Use of Meteorological Data in Assessing Potential Impacts of Accidental Releases of Vapor Clouds." Proceedings of the International Conference on Vapor Cloud Modeling, November 2-4. Cambridge, MA. pp 293-316.

Paine, R.J., B.A. Egan, M.T. Mills and D.G. Strimaitis. 1987. "Applications of the Complex Terrain Dispersion Model." 80th Annual Meeting of the Air Pollution Control Assoc. NY, NY

Egan, B.A. 1987. "Consequence Analysis for Accidental Releases of Chemicals to the Atmosphere." Presented at the American Institute of Chemical Engineers Summer National Meeting. August 1987. Minneapolis, MN.

Egan, B.A., and R.J. Paine. 1986. "The Rough Terrain Diffusion Model and Its Use with Different Terrains." TAPPI Journal, 69(12).

Kringel, D., B. Egan, D. Smith, A. Lloyd, D. Monroe, A. Chaplin, A. Hirata, and M. Wang. 1986. "Assessment of Impacts from Hypothetical Major Releases of Chlorine and Ammonia." 79th Annual Meeting the Air Pollution Control Assoc. Minneapolis, MN.

Egan, B.A., and F.A. Schiermeier. 1986. "Dispersion in Complex Terrain: A Summary of the AMS Workshop Held in Keystone, CO, May 19-20. Bull. Amer. Meteorological Society, 67(10).

Egan, B.A., and R.J. Paine. 1986. "The Applicability of the Rough Terrain Diffusion Model (RTDM) to Different Terrain Settings." Paper 4-2, Proceedings of the 1986 TAPPI Environmental Conference. Atlanta, GA. TAPPI Press.

Egan, B.A., R.J. Paine, and J.R. Foster. 1986. "Screening Techniques for Estimating Potential Impacts of Chemical Spills to the Atmosphere." Proceedings of the 1986 Hazardous Material Spills Conference. May 1986. St. Louis, MO.

Paine, P.J., and B.A. Egan. 1986. "Results of Additional Evaluation of the Rough Terrain Diffusion Model (RTDM)." Paper 86-8.4, Proceedings of the 79th Annual Meeting of the Air Pollution Control Association. June. Minneapolis, MN. Pittsburgh, PA. APCA.

Paine, R.J., J.E. Pleim, D.W. Heinold, and B.A. Egan. 1986. "Physical Processes in the Release and Dispersion of Toxic Air Contaminants." Paper 86-76.3, Proceedings of the 79th Annual Meeting of the Air Pollution Control Association. June. Minneapolis, MN. Pittsburgh, PA. APCA.

Egan, B.A. and C.J. Vaudo. 1985. "Regulatory Needs for Air Quality Models." Chapter in Handbook of Applied Meteorology D.D. Houghton, ed. New York, NY. Wiley.

Hanna, S.R., and B.A. Egan. 1985. "Application of the Bootstrap to Model Evaluation." In Proceedings, 9th Conference on Probability and Statistics in Atmospheric Science AMS, 252-255.

Hunt, G.T., and B.A. Egan. 1985. "Air Toxics Update." Pollution Engineering, 17:46-52.

Egan, B.A. 1984. "Transport and Diffusion in Complex Terrain (review)." Boundary Layer Meteorology, 30:3-28.

Hanna, S.R., B.A. Egan, C.J. Vaudo, and A.J. Curreri. 1984. "A Complex Terrain Dispersion Model for Regulatory Applications at the Westvaco Luke Mill." Atmospheric Environment, 18(4):685-699.

Schiermeier, F.A., T.F. Lavery, D.G. Strimaitis, A. Venkatram, B.R. Greene, and B.A. Egan. 1983. "EPA Model Development for Stable Plume Impingement of Elevated Terrain Obstacles." Proceedings, Fourteenth International Technical Meeting on Air Pollution Modeling and Its Application, Copenhagen. Brussels, Belgium. NATO/CCMS.

Lavery, T.F., B.R. Greene, B.A. Egan, and F.A. Schiermeier. 1983. "The EPA Complex Terrain Model Development Program." Extended Abstracts, Sixth Symposium on Turbulence and Diffusion, Boston, MA. American Meteorological Society.

Venkatram, A., D. Strimaitis, D. DiChristofaro, J. Pleim, T. Lavery, A. Bass, and B. Egan. 1982. "The Development and Evaluation of Advanced Mathematical Models to Simulate Dispersion in Complex Terrain." Extended Abstracts, Third Joint Conference on Applications of Air Pollution Meteorology, San Antonio, TX. Boston, MA. American Meteorological Society.

Lavery, T.F., A. Bass, B. Greene, R.V. Hatcher, A. Venkatram, and B.A. Egan. 1982. "The Cinder Cone Butte Dispersion Experiment." Third Joint Conference on Applications of Air Pollution Meteorology, San Antonio, TX. Boston, MA. American Meteorological Society.

Egan, B.A., D.G. Fox, S.R. Hanna, D.R. Anderson, and F.D. White. 1981. "Air Quality Modeling and the Clean Air Act: Recommendation to EPA on Dispersion Modeling for Regulatory Applications." Boston, MA. American Meteorological Society.

Hatcher, R.V., B.A. Egan, T.F. Lavery, and A. Bass. 1981. "The Complex Terrain Modeling Program." Paper 81-62.8, 74th Annual Meeting of the Air Pollution Control Association. June 1981. Philadelphia, PA.

Egan, B.A. 1979. "Comments, Atmospheric Dispersion Modeling - A Critical Review." APCA Journal. 29(9).

Smith, D.G., and B.A. Egan. 1979. "Design of Monitor Network to Meet Multiple Criteria." APCA Journal 29(7).

Egan, B.A., R. D'Errico, and C. Vaudo. 1979. "Estimating Air Quality Levels in Regions of High Terrain Under Stable

Atmospheric Conditions." P177-181 Preprint Volume: Fourth Symposium on Turbulence, Diffusion and Air Pollution, January 15-18. Reno, NV. Boston, MA. American Meteorological Society.

Egan, B.A., B.L. Murphy, W.B. Bendel, and S.A. DePietro. 1978. "Modeling and Monitoring Requirements Implicit in the New PSD Regulations." ASME Paper No. 78-WA/EPA-14. Presented at the Winter Annual Meeting of the American Society of Mechanical Engineers. December 1978. San Francisco, CA.

Egan, B.A., and B.L. Murphy. 1978. "The Future of Air Quality Modeling." APCE Paper No. 78-20.4. Presented at the 71st Annual Meeting of the Air Pollution Control Association. June 1978. Houston, TX.

Egan, B.A., R. D'Errico, and C. Vaudo. 1978. "Assessing Air Quality Levels in Regions of Mountainous Terrain." World Meteorological Organization Symposium on Boundary-layer Physics Applied to Specific Problems of Air Pollution. June 1978. Norrköping, Sweden.

Hanna, S.R., G.A. Briggs, J. Deardorff, B.A. Egan, F.A. Gifford, and F. Pasquill. 1977. "AMS Workshop on Stability Classification Schemes and Sigma Curves - Summary of Recommendations." Bulletin of the American Meteorological Society, 58(12).

Hoffnagle, G.F., B.A. Egan, and B.R. Greene. 1977. "Model Applications in Complex Terrain." Presented at the AMS/APCA Conference on Applications of Air Pollution Meteorology. November-December 1977. Salt Lake City, UT.

Egan, B.A. 1977. "Atmospheric Transport of Pollutants and the Significant Deterioration Regulations." Presented at the Fifth National Symposium of the Air Pollution Control Division of ASME. May 1977. Pittsburgh, PA.

Egan, B.A., K.S. Rao, and A. Bass. "A Three-Dimensional Advective-Diffusive Model for Long-Range Sulfate Transport and Transformation." 7th NATO Conference on Air Pollution Modeling and Its Application. September 1977. Airlie House,

VA.

Rao, K.S., C.S. Ingersall, and B.A. Egan. 1976. "A Numerical Model for Regional Transport of Sulfur Pollutants in the Atmosphere." Summer Computer Simulation Conference. July 1976. Washington, DC.

Egan, B.A., E.C. Reifenstein, and A. Bass. 1976. "The Computer for Environmental Studies." ASME Winter Annual Meeting. December 1976. New York, NY.

Rao, K.S., J.S. Lague, and B.A. Egan. "An Air Trajectory Model for Regional Transport of Atmospheric Sulfates." 3rd Symposium on Atmospheric Turbulence, Diffusion and Air Quality. October 1976. Raleigh, NC.

Egan, B.A., and A. Bass. 1976. "Air Quality Modeling of Effluent Plumes in Rough Terrain." 3rd Symposium on Atmospheric Turbulence, Diffusion and Air Quality. October 1976.

Rao, K.S., I. Thomson, and B.A. Egan. 1976. "Regional Transport Model of Atmospheric Sulfates." Paper 76-34.3, Annual Meeting of the Air Pollution Control Association. June-July 1976. Portland, OR.

Rosenblum, H.S., T.F. Lavery, and B.A. Egan. 1975. "The Development of a Numerical Model to Predict Pollutant Concentrations During Fumigation Conditions with an Onshore Flow." Presented at the International Conference on Environmental Sensing and Assessment. September 1975. Las Vegas, NV.

Egan, B.A. 1975. "Turbulent Diffusion in Complex Terrain." Lecture notes for the American Meteorological Society Workshop on Meteorology and Environmental Assessment. September-October 1975. Boston, MA.

Rao, K.S., J.S. Lague, and B.A. Egan. 1975. "A Dynamic Plume Model for the Prediction of Atmospheric Effects Associated with Cooling Tower Operation." Paper 75-04.5, Annual Meeting of the Air Pollution Control Association. June 1975. Boston, MA.

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