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DAVID A. SULLIVAN

CERTIFIED CONSULTING METEOROLOGIST (#256)

Education/Professional Certification

M.S. Meteorology, Pennsylvania State University, 1974.
B.S. Meteorology and Oceanography, New York University, 1972.
Certified Consulting Meteorologist (#256), 1980-present.

Biosketch

David Sullivan is a Certified Consulting Meteorologist (CCM) with 41 years of professional experience in air quality and meteorological analysis. Mr. Sullivan has served as a Certified Consulting Meteorologist since 1980, with a specialization in the integrated use of air quality dispersion modeling and measured air quality data. His range of expertise includes dispersion modeling, exposure assessment, meteorological and air quality analysis, emissions assessment, and the design, implementation, and analysis of air quality and meteorological field studies. Mr. Sullivan has designed and developed dispersion modeling software for acute exposure, dense gas releases, agricultural-related air quality exposures, and urban-scale air quality management systems. He has managed many urban-scale studies of toxic and criteria pollutants in the U.S. and on an international basis in Eastern Europe and Southeast Asia. Mr. Sullivan serves as Study Director on many air quality and meteorological monitoring field studies, including approximately 50 field studies conducted over the past 15 years. This work included studies conducted to meet the U.S. Environmental Protection Agency's (EPA) Good Laboratory Practice (GLP) requirements.

Urban-Scale Air Quality Analysis - Mr. Sullivan has extensive experience in the assessment of urban-scale exposures to toxic air pollutants, having served as the Principal Investigator for EPA's six-year Integrated Environmental Management Project (IEMP). He was the Principal Investigator for the air quality components of the EPA Project Silesia (industrial areas in the Czech Republic and Poland), conducted the dispersion modeling support for EPA's Baltimore Total Exposure Assessment Methodology (TEAM) study, and many other major U.S. studies of urban-scale exposures to toxic and criteria pollutants. Mr. Sullivan was responsible for guiding the exposure assessments for two World Bank studies in Russia that provided technical assistance in setting priorities to reduce airborne health risks in heavily industrialized Russian cities. He has designed, implemented, and interpreted data for EPA urban-scale air toxics monitoring systems for the following metropolitan areas: Philadelphia, Baltimore, Denver, and Charleston (WV), and urban-scale studies of criteria pollutants in Atlanta (ozone precursors) and St. Louis (SO₂). Mr. Sullivan was the Principal Investigator for Sullivan Environmental's work

for the U.S. Trade and Development Agency on the International “*Breathe Easy Jakarta*” project. This work involved compiling an emissions inventory, conducting dispersion modeling, designing an air quality monitoring network for the Jakarta, Indonesia metropolitan area, and conducting Work Group meetings with Indonesian officials.

Air Quality Field Studies - Over the past ten years, Mr. Sullivan has managed, and also participated in the field programs, for over 50 field studies for flux analysis as a function of time for area sources, which was focused on agricultural applications. His experience includes the collection and interpretation of air quality samples, meteorological data, and soil sampling data, noise analysis, and odor analysis. This research includes the collection of airborne concentrations (off-field and on-field profile monitoring), wind profile data, soil monitoring (temperature, soil moisture, and chemical concentrations), collection of odor samples, and monitoring of noise at industrial / commercial facilities.

Air Quality Model Development - Mr. Sullivan has directed the development of two EPA modeling systems, i.e. the TOXST peak exposure model, and the prototype Air Quality Integrated Management System (AIMS) installed in Baltimore. Mr. Sullivan developed the dense gas emergency response modeling system, RiskMan^{Pro}, including the generation of release characteristics and analysis of downwind concentrations for dense gas and non-dense gas applications. Mr. Sullivan directed the development of the Fumigant Emissions Modeling System (FEMS), i.e. Monte Carlo-based software to enhance the realism of modeling airborne exposures to agricultural fumigants (pesticides), where the following terms can be treated as Monte Carlo variables: the timing of the application, emission rate, and consideration of the uncertainty around the mean of meteorological variables (wind speed, wind direction, and atmospheric stability).

Specific Experience

1988 to present – Sullivan Environmental Consulting, Inc. Alexandria, Virginia (*President*)
1980 to 1987 Versar, Inc. – Springfield, Virginia (*Senior Meteorologist*)
1978 to 1980 NUS Corporation, Denver, Colorado (*Meteorologist*)
1974 to 1977 NUS Corporation, Rockville, Maryland (*Meteorologist*)

Mr. Sullivan has conducted and managed a wide range of research-related and applied air quality studies. The following provides examples of projects that show the range of his experience, including projects involving research, model development, applied modeling, expert testimony, and exposure assessment:

Air Quality Analysis of Jakarta, Indonesia – Sullivan Environmental completed in 2012 a two-year contract for the U.S. Trade and Development Agency to conduct air quality analysis of the Jakarta, Indonesia metropolitan area. This project is referred to as the “*Breathe Easy Jakarta*” project, which is a cooperative initiative involving U.S. and Indonesian participants. The primary emphasis of this project was to design an air quality monitoring network for the Jakarta metropolitan area, including fixed-site and mobile monitoring capability for air quality,

as well as meteorological monitoring. To support this task, urban-scale emissions assessment and CALPUFF modeling of the metropolitan area was conducted for criteria pollutants to support monitor placement, and to support the optimal allocation of mobile monitoring capability. Mr. Sullivan managed and served as the Principal Investigator for the U.S. component for work conducted from 2010 through 2012 under this contract.

U.S. Air Force Toxic Vapor Dispersion SBIR Project – David Sullivan was the Principal Investigator and Project Manager for a U.S. Air Force Toxic Vapor Dispersion Small Business Innovative Research (SBIR) project. This study evaluated the feasibility of designing a modeling system that could estimate air quality impacts from dense and non-dense gas releases. This design considered building influences on ambient concentrations, and differences between ambient and indoor concentrations as a function of building and meteorological conditions, and time after release.

Evaluation of Pesticide Deposition From Wind Erosion Associated with Pesticide Applications on Federal Lands in the Western U.S. - Mr. Sullivan was responsible for the CALPUFF modeling analysis of regional impacts from pesticide applications on separate tracts of land in a region that included farming areas. Deposition modeling was used as an input to a hydrology model to account for vertical movement within the soil. Soil concentrations of the pesticide were modeled as a function of time and depth throughout the region. Model performance relative to extensive soil measurements also was conducted as a function of time.

EPA Geographic Studies of Toxic Air Pollution – Principal Investigator and Task Manager for air quality analyses performed for EPA toxic integration studies performed in Philadelphia, Baltimore, Silicon Valley (CA), Kanawha Valley (WV), and Denver. This experience included developing emissions data for point and area sources (including temporal and spatial allocation of emissions), designing and implementing air toxics monitoring programs, performing dispersion modeling, and model performance evaluation. These studies involved characterizing concentrations of toxic air pollutants throughout major metropolitan areas, such as in Philadelphia and Baltimore, as well as microscale modeling analyses of major chemical plants in the Kanawha Valley of West Virginia, and conducting model performance evaluations. The Kanawha Valley study was conducted at the request of the EPA Administrator Lee Thomas, in response to concerns regarding toxic air pollutants after the Bhopal tragedy. These studies included oversight by the U.S. Environmental Protection Agency’s Science Advisory Board.

Modeling of Lead Smelter Emissions Within a Mid-Western Metropolitan Area - This analysis involved the modeling of airborne and soil deposition of lead emissions from a secondary lead smelter located in a suburban area. AERMOD modeling was conducted to evaluate air concentration fields within the affected community, as well as the estimation of soil concentrations. The modeling results were compared with available concurrent measured airborne data, and an extensive soil data base of lead concentrations.

Air Quality Analysis for Gas Station in Montgomery County Maryland - Mr. Sullivan served as the Principal Investigator for air quality, odor, and noise analyses that were conducted

to evaluate environmental exposures from a gas station that is planned to be located at a suburban mall in Wheaton, Maryland. This project included emissions assessment, air quality analysis, noise, and odor monitoring at a comparable facility, dispersion modeling of gas station operations and nearby sources (including nearby roadways, selected nearby mall sources, and parking lot sources). Mr. Sullivan presented testimony on multiple occasions, including to the Montgomery County Council, Montgomery County Planning Board, and to the Board of Appeals Hearing Examiner.

Modeling of Soil Lead Concentrations in the Vicinity of a Superfund Site – Mr. Sullivan conducted a modeling analysis at a western location that evaluated the airborne and soil lead concentrations in a town that contained numerous chat piles and tailings flats. Soil lead concentrations were computed as a function of time throughout this region. This analysis was conducted using the EPA ISCST3 dispersion model, with model performance considering available measured airborne and soil concentrations.

Evaluation of Potential Pesticide Residues at an Organic Farming Operation in Western U.S. – David Sullivan evaluated the potential for adjacent farming operations to create pesticide residues on an adjacent organic farm. This evaluation included emissions assessment, dispersion modeling, evaluation of residue data, and meteorological data assessment.

Odor Assessment Project for a Major Apartment Unit Near a Waste Transfer Facility – This study was conducted in the Washington D.C. metropolitan area. The project involved a proposed residential apartment building that was planned for development in the general vicinity of a waste transfer facility. Field olfactometer analysis, collection of odor samples with Tedlar™ bags sampled using a vacuum chamber, and dilution modeling based on the AERMOD dispersion model were used to assess the relative odors around the perimeter of the waste transfer facility in relation to the planned development.

Evaluation of Noise Levels Associated with Industrial Operation in Northern Virginia – A field study of noise levels was conducted around the perimeter of an industrial facility that had noise sources at rooftop and at ground level. A distributional analysis of noise levels was conducted throughout an entire 24-hour diurnal cycle, with additional follow-up sampling conducted. Noise modeling also was conducted to evaluate the expected noise levels as a function of height above ground level (upper story exposures) for a range of mitigation options.

Evaluation of Worker Exposures at an Industrial Facility Using a Biocide – Mr. Sullivan was the Study Director for a Good Laboratory Practice (GLP) study conducted in response to a data request from the U.S. Environmental Protection Agency to evaluate personal exposures and fixed-site concentrations throughout the process areas of two industrial facilities. Comparisons were made between fixed-site and personal sampling based data.

Development of the Fumigation Exposure Modeling System (FEMS) – Mr. Sullivan managed the development of a dispersion modeling system to support the evaluation of airborne exposures from the use of agricultural fumigants. The system treats the initiation of an application,

emission rates over time, and meteorological parameters as Monte Carlo variables. Software was developed to use the EPA models ISCST3 or CALPUFF6 to evaluate agricultural fumigation applications. FEMS was reviewed and accepted by the EPA Science Advisory Panel (SAP).

U.S. Study of Environmental Control Measures for Ostrava, Czechoslovakia and Katowice, Poland – David Sullivan served as Project Manager for Sullivan Environmental's support to this three-year study of the highly industrialized region of Northern Czechoslovakia and Southern Poland, which was conducted by the U.S. Environmental Protection Agency. Mr. Sullivan was responsible for the air quality aspects of this project, which included emissions assessment, dispersion modeling, model performance evaluation, and consulting support for enhancing ambient air toxics and criterion pollutant monitoring in one of the most industrialized areas in Eastern Europe.

PM₁₀ SIP Support to Allegheny County, Pennsylvania (Pittsburgh) – David Sullivan managed the development of the modeling strategy for a model-supported State Implementation Plan (SIP) for the Clairton area, which included complex coke oven sources and terrain influences. Mr. Sullivan was responsible for software development to link several models for simple and complex terrain into an easily managed system (including the BLP, ISCST2, and RTDM models). He also guided the enhancement of meteorological monitoring activities in the Clairton, Pennsylvania area.

PM_{2.5} SIP Support to Allegheny County, Pennsylvania – Sullivan Environmental provided meteorological support to Allegheny County for CALMET modeling. This work supported the development of the State Implementation Plan (SIP) to control airborne fine particulates (PM_{2.5}) in Allegheny County. The scope of work included the development of the CALMET input file, as well as conducting a performance evaluation of the computed meteorological fields.

Baltimore Air Toxics Study– Mr. Sullivan managed the technical analyses performed for this EPA-funded study, which was one of three urban-scale studies mandated by Congress in the Clean Air Act of 1990. These outputs helped to support the EPA development of a national strategy for air toxics. This study required extensive emissions assessment, dispersion modeling, and the development of an air quality management software system to facilitate the integration of modeling and monitoring initiatives in the Baltimore metropolitan area. End products of this study included summaries of exposure and risk as a function of nearly 200 source categories. Co-control issues involving air toxics and ozone precursors also were evaluated for a range of control alternatives. The Air Quality Integrated Management System (AIMS) software was developed through this study as a fully integrated air quality management system that connects emissions, dispersion modeling, and ambient monitoring into a mutually supportive urban-scale air quality management system.

Mirant Potomac Power Generation Facility in Alexandria Virginia –Sullivan Environmental provided technical expertise to the City of Alexandria in terms of dispersion modeling based on AERMOD and CALPUFF, as well as evaluation and interpretation of measured air quality data,

and providing recommendations for monitoring site locations. Mr. Sullivan served as the task manager for Sullivan Environmental's involvement in this project, which included detailed evaluation of plume impact on a nearby high-rise residential building.

EPA Dioxin Monitoring Study – David Sullivan served as the Principal Investigator and Project Manager for Sullivan Environmental's activities on an EPA dioxin air quality monitoring study. He was responsible for developing a plan for the monitoring program, which included gas and vapor phase airborne dioxin measurements, as well as vegetation, dry fall, and wet fall sampling. Mr. Sullivan drafted a report to interpret the results of this study in comparison with other available field data and model estimates of dioxin exposures.

Virginia Paving Facility in Alexandria Virginia – Sullivan Environmental served as independent experts to help resolve technical issues involving the City of Alexandria, the facility, and local residents. Mr. Sullivan managed this project and provided technical support in terms of review of emissions estimates, dispersion modeling methods, and guidance on the design of an air quality monitoring program. Mr. Sullivan presented oral presentations at public meetings.

Air Quality Monitoring Study to Evaluate Total Suspended Particulate Emissions in the Vicinity of a Sand and Gravel Mine - Mr. Sullivan was responsible for site selection, network set-up and operation, and data interpretation for a five-station study of total suspended particulate (TSP) at a quarry located in rural Maryland. A meteorological monitoring station also was installed onsite and operated to support data interpretation. Mr. Sullivan provided expert testimony at a zoning hearing related to this matter.

Review of the Nine City Study and Panel Study Data Set – Sullivan Environmental served as a subcontractor to Harvard School of Public Health on this project, which was conducted to study the air quality in nine cities in the Russian Federation. The scope of this project included inspecting monitoring sites and monitoring procedures, and conducting a detailed statistical evaluation of the air quality data collected at 14 air quality monitoring sites located in 9 cities in Russia. Mr. Sullivan developed a final database to support statistical analysis of this extensive data set that included coverage of PM₁₀, PM_{2.5}, SO₂, NO₂, and selected volatile organics. This review also included a quantitative analysis of quality assurance records relative to goals stated in the quality assurance plan.

Dispersion Modeling to Support Air Quality Permits for Industry – David Sullivan has broad modeling experience for permit applications, including Prevention of Significant Deterioration (PSD), air quality permits to construct, accident analyses to support OSHA process safety management, hazardous waste incineration permits, and modeling to support California air toxics permitting. This experience includes a broad range of industries and coverage in the following States: Virginia, South Carolina, North Carolina, Oklahoma, California, Illinois, Pennsylvania, and New York. Examples are offered as follows:

- *PSD Permit* - I-95 Lorton (Virginia) PSD permit for the Fairfax County mass burn

incinerator.

- *State Air Quality Permits to Construct* - Permits for industrial applications for cement plants located in South Carolina and Oklahoma.
- *OSHA Process Safety Management* - Permits for two process areas for industry in South Carolina.
- *Hazardous waste incineration permits* for facilities in Pennsylvania and Illinois.
- *Proposition 65* modeling analyses to support risk assessment in California.

Atmospheric Research for the U.S. Department of Agriculture (CSREES) – Co-Project Director on a research grant awarded by the USDA that included evaluating airborne impacts from the use of the agricultural fumigant, metam-sodium. This grant was awarded to Texas A & M as the prime contractor. Six field studies were conducted from 2002 through 2004 to compute emission rates of the active ingredient, methyl isothiocyanate, as a function of time. These studies included alternative forms of product application, and used dispersion modeling and statistical methods to compute best-fit emission rates as a function of time based on air quality monitoring networks of 8 to 10 air quality monitors. Mr. Sullivan was the Principal Investigator for the airborne flux assessment.

EPA "Six Month" study – Task Manager for EPA's "35-County" Study of Air Toxics. This was one of the three studies collectively referred to as the "Six Month Study of Air Toxics," which was one of the guiding force for EPA's air toxics initiatives in the mid to late 1980s. Mr. Sullivan was responsible for the compilation of emissions factors and dispersion modeling for this study. The study computed estimates of toxic emissions from all 3,000 counties in the U.S., and performed dispersion modeling for 35 of these counties.

Air Quality Quick Response – Program Manager for the EPA Air Quality Quick Response Team of the Stationary Source Compliance Division. Authored manual with procedures for all facets of an emergency response action, i.e., emissions characterization, ambient monitoring, dispersion modeling, and health assessments. As a field team member and as Advance Field Team Leader, Mr. Sullivan provided quick response for the following assignments:

- Secondary lead smelter (Fredericktown, New Jersey)
- Secondary lead smelter (Brooklyn, New York)
- Chemical company (North Haven, Connecticut).
- Hazardous waste facility (Baton Rouge, Louisiana)
- Hazardous waste in abandoned underground mine (Pittston, Pennsylvania)

Fairfax County I-95 / Lorton Incinerator PSD Permit – Mr. Sullivan was the principal analyst and Program Manager for the I-95 Incinerator PSD permit, Lorton, Virginia. He was responsible for all modeling and data interpretation.

Associations / Certification

Professional Member of the American Meteorological Society, Certified Consulting Meteorologist (#256) since 1980.

Air & Waste Management Association.

Publications

Ajwa, H., Sullivan, D.A., Holdsworth, M.T., Sullivan, R.D., and Nelson, S, Reduction of Methyl Isothiocyanate Atmospheric Emissions after Application of Metam Sodium by Shank Injection, Journal of Environmental Quality, JEQ201305.0182, 2013.

Ajwa, H.A., M.S. Stanghellini, S. Gao, Sullivan, D.A, A.R. Khan, J.W. Ntow, and R. Qin, California Agriculture Journal, “Fumigant Emission Reduction Using VaporSafe Totally Impermeable Film,” July-September 2013.

Gao, S., H. Ajwa, R. Qin, M. Stanghellini, and D.A. Sullivan, “Emission and Transport of 1,3-Dichloropropene and Chloropicrin in a Large Field Tarped with VaporSafe TIF,” Environmental Science & Technology, 47, 405-411, 2013.

Sullivan, D.A., and H. Ajwa, “Evaluation of Empirical Wind Erosion Emission Factors for Air Quality Modeling,” Soil Science Society of America Journal, Volume 75, Number 4, July-August 2011.

Qin, R., S. Gao, H. Ajwa, D.A. Sullivan, D. Wang, and G. Hanson, “Field Evaluation of a New Plastic Film (Vapor Safe) to Reduce Fumigant Emissions and Improve Distribution in Soil, Journal of Environmental Quality, 40: 1195-1203, 2011.

Sullivan, D.A. and H. Ajwa, “Review of Airborne Emissions from Agricultural Fumigants: Design and Uncertainty Considerations for the Use of the Integrated Horizontal Flux Method,” Journal of Environmental Quality, September 27, 2010 (*published online*).

McIntosh, D.L, J.H. Stewart, T.A. Myatt, J.E. Sabato, G.C. Flowers, K.W. Brown, D.J. Hlinka, D.A. Sullivan, “Use of CALPUFF for Exposure Assessment in a Near-Field, Complex Terrain Setting,” Atmospheric Environment , 44:262-270, 2010.

Chellemi, D.O., H. Ajwa, and D. Sullivan, "Atmospheric Flux of Agricultural Fumigants From Raised-Bed, Plastic-Mulch Crop Production Systems," Atmospheric Environment, Volume 44, Issue 39, 5279-5286, 2010.

Qin, R, S. Gao, J.A. McDonald, H. Ajwa, S. Shem-Tov, and D.A. Sullivan, "Effect of Plastic Tarps Over Raised-Beds and Potassium Thiosulfate in Furrows on Chloropicrin Emissions from Drip Fumigated Fields," Chemosphere, Volume 72, 558-563, 2008.

Sullivan, D.A., M.T. Holdsworth, and D. J. Hlinka, "Control of Off-Gassing Rates of Methyl Isothiocyanate from the Application of Metam-Sodium by Chemigation and Shank Injection," Atmospheric Environment, (38), 2457 – 2470, 2004.

Sullivan, D. A., M.T. Holdsworth, and D. J. Hlinka, "Monte Carlo-Based Dispersion Modeling of Off-Gassing Releases from the Fumigant Metam-Sodium for Determining Distances to Exposure Endpoints," Atmospheric Environment, (38), 2471-2481. 2004.

Nelson, S.D., D.W. Dickson, H.A. Ajwa, and D. A. Sullivan, "Efficacy of Metam Sodium Under Drip and Surface Spray Application in Florida Tomato Production," Subtropical Plant Science, 56: 16-20, 2004.

Lebedev, N.V., Furman, R.D., Kislitsyn V.A., Konygin, E.A., Vasil'eva, M.I., Segedevich, I.I., Shashina, E.A., Kin, S., Kunningham, K., and Sullivan, D. "Economic Efficiency of Sanitation Measures at the JSC "Severstal" in the City of Cherepovets (Russian Federation)," 1: Med Tr Prom Ekol; (4) 18-25. (article is in Russian), 2002.

Levy, J.I., J.D. Spengler, D.J. Hlinka, D.A. Sullivan, and D. Moon, "Using CALPUFF to Evaluate the Impacts of Power Plant Emissions in Illinois: Model Sensitivity and Implications," Atmospheric Environment, 1077-1086, Vol. 36, Issue 6, February 2002.

Sullivan, D.A., and D.E. Guinnup, "Enhanced TOXST", *Reviews in Toxicology*, 1 (1997), *In Vivo Toxicology and Risk Assessment*", IOS Press, 1997.

Sullivan, D.A., T. Lahre and M. Alford, "Assessing Multiple Pollutant Multiple Source Cancer Risks From Urban Air Toxics (Summary of Approaches and Insights From Completed and Ongoing Urban Air Toxics Assessment Studies)", EPA-450/2-89-010, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, April 1989.

Woodcock, B., D.A. Sullivan, and A. Gleit, "Coal as a Marine Boiler Fuel: Environmental Effects," The Journal of Environmental Sciences, Volume XXVI, March/April, 1983, 41-46.

Panofsky, H.A., D.W. Thomson, D.A. Sullivan, and D.E. Moravek, "Two-Point Velocity Statistics Over Lake Ontario," Boundary-Layer Meteorology, Volume 7, 309-321, 1974.

Sullivan, D.A., "A Study of Horizontal Coherence Over Lake Ontario," Master's Thesis, The Pennsylvania State University, 1974.

Example Presentations

Sullivan, D. A., D. J. Hlinka, M.T. Holdsworth, Assessing the Changing Impacts Over Time of Gas Station Related Source NO₂ Concentrations, to be presented at the Air & Waste Management Association's Annual Meeting, June 2016, New Orleans, Louisiana.

Sullivan, D.A., "On-Field Dilution of Airborne Flux: Importance for Modeling Exposures," Methyl Bromide Alternatives Outreach Conference, Orlando, Florida, 2014.

Sullivan, D.A., H. Ajwa, M.T. Holdsworth, R.D. Sullivan, "Metam Sodium Shank Compaction Applications as a Case Study in Mitigating Airborne Flux," Annual Meeting of the American Chemistry Society, Philadelphia, PA, 2012.

Sullivan, D.A., "Review of Design Issues for On-Field Flux Assessment Methods," Annual Meeting of the American Chemistry Society, Washington, D.C., August 2009.

Sullivan, D.A., and H. Ajwa, "Cost-effective Airborne Flux Monitoring Programs For Agricultural And Other Applications," Paper #133, Annual Meeting of the Air & Waste Management Association, Detroit, MI, 2009.

Sullivan, D.A., "Air Quality Impacts at Tar Creek", Metals Epidemiology Research Group, Harvard School of Public Health, Boston, MA, Seminar: October 24, 2007.

Sullivan, D.A., Invited Speaker at California Department of Pesticide Registration's VOC Symposium held in Sacramento, CA, title of presentation: "Estimating VOC Emissions From Agricultural Fumigants", May 2007.

Sullivan, D.A., "Updates in FEMS Model to More Accurately Represent Exposures From Fumigants," Methyl Bromide Alternatives Outreach Conference, Orlando, FL, November 2006.

Sullivan, D.A., "CALPUFF Modeling of Fumigation Applications: Advancing the State-of-the-Art in Computing Buffer Zones," 232nd National Meeting of the American Chemical Society, San Francisco, CA, September 2006.

Sullivan, D.A., "Options to Estimate Emission Rates: When to Rely on Ambient-Based Emissions and When to Use On-Field Flux Methods," 232nd National Meeting of the American Chemical Society, San Francisco, California, September 2006.

Sullivan, D.A., M.T. Holdsworth, and D.J. Hlinka, Background Document on the Fumigant Emissions Modeling System (FEMS), presented to the EPA Science Advisory Panel, August 2004.

Sullivan, D.A., D.J. Hlinka, and M.T. Holdsworth, "The Integrated Use of Dispersion Modeling and Ambient Monitoring to Evaluate Air Quality Sources with Complex Emissions," Paper # 406, Annual Meeting of the Air & Waste Management Association, Indianapolis, Indiana, June 23, 2004.

Sullivan, D.A., "Update: Research of the Metam-Sodium Task Force on Efficacy and Odor Management," Methyl Bromide Alternatives Outreach Conference, Orlando, Florida, November 2002.

Sullivan, D.A., "The Use of Empirically-Based Treatments to Model Exposures From Sources of Air Toxics That Cannot be Well Defined by Emission Factors or Direct Measurements," presented at the Coordinating Research Council Air Toxics Modeling Workshop, The Woodlands, Texas, and February 26-27, 2002.

Sullivan, D.A., Instructor for Atmospheric Science and Risk Projections for Hazardous and Radioactive Material Releases to the Environment, Harvard School of Public Health, Cambridge, Massachusetts, August 1998.

Sullivan, D.A., Development of RiskMan^{Pro} Software to Promote Strategic Planning for Risk Management Programs, Annual Meeting of the Air & Waste Management Association, Toronto, Ontario, June 1997.

Sullivan, D.A., Technology for Environmental Uses: Computer Science Resources for Environmental Managers, Course Instructor, George Washington University, November 15, 1996.

Sullivan, D.A., Baltimore Air Toxics Study (BATS), Air & Waste Management Association (AWMA) Emission Inventory: Key to Planning, Permits, Compliance & Reporting Conference, New Orleans, Louisiana, September 1996.

Sullivan, D.A., The Air Quality Integrated Management System (AIMS), presented at the Fall Meeting of the Carolinas Air Pollution Control Association, Myrtle Beach, South Carolina, October 25, 1995.

Sullivan, D.A., and T.G. Grosch, Air & Waste Management Association Faculty for Professional Development Course: Application of the New EPA TOXST Model: More Realistic Evaluation of Peak Air Quality Exposures. Presented June 18, 1995, San Antonio, TX.

Sullivan, D.A., "Strategic Planning and Coordination Efforts for the EPA Baltimore Air Toxics Study," presented at the 88th Annual Meeting of the Air & Waste Management Association, San Antonio, TX, June 1995.

Sullivan, D.A., Invited presenter at Air Quality Symposium on Exposure Assessment Methods, Sponsored by American International Development Agency (AID), Nizhnii Tagil, Russia, March 1995.

Sullivan, D.A., and D. Guinnup, "Enhanced Version of TOXST," presented at the 87th Annual Meeting of the Air & Waste Management Association, Cincinnati, OH, June 1994.

Sullivan, D.A., T. G. Grosch, and D. J. Hlinka, "Air Quality Assessment of Katowice, Poland," presented at the 87th Annual Meeting of the Air & Waste Management Association, Cincinnati, OH, June 1994.

Sullivan, D.A., "Air Toxics: The Evaluation of Peak Exposures," invited paper presented at the 25th Year Spring Meeting of the Carolinas Air Pollution Control Association, Raleigh, NC, April 1994.

Sullivan, D.A., guest speaker at the March 16, 1994 meeting of the local chapter of the American Institute for Chemical Engineers in Baltimore, MD. Topic of the presentation was: "Meeting the Challenge of Estimating Peak Ambient Air Quality Concentrations Without Extreme Conservatism: A Description of EPA's New TOXST Model."

Sullivan, D.A., "Modeling Acute Exposures," presented at the Research Triangle Chapter of the Society for Risk Analysis Workshop entitled: Living with Uncertainty: The Future of Exposure Assessment, Chapel Hill, NC, October 1993.

Sullivan, D.A., S.S. Lande, and J. R. Foster, "CMA Model Development Initiatives in the Evaluation of Peak Exposures," presented at the Electric Power Research Institute Symposium on Toxic Air Pollution, Washington, DC, July 1993.

Sullivan, D.A., "The Application of Integrated Environmental Management Concepts to Track Emission Reduction Strategies Required Through the Clean Air Act Amendments of 1990," presented at the 86th Annual Meeting of the Air & Waste Management Association, Denver, CO, June 1993.

Sullivan, D.A., D. J. Hlinka, and T.G. Grosch, "Project Silesia Phase I Ambient Air Quality Analysis (Method and Results)," presented at the 86th Annual Meeting of the Air & Waste Management Association, Denver, CO, June 1993.

Sullivan, D.A., T. G. Grosch, and D J. Hlinka, "The Evaluation of Peak Exposures to Meet State and Clean Air Act Requirements: Benefits of Establishing a Proactive Position," presented at the 86th Annual Meeting of the Air & Waste Management Association, Denver, CO, June 1993.

Sullivan, D.A., "Establishing Environmental Priorities in the Industrial Centers of Ostrava, Czechoslovakia and Katowice, Poland," presented at the Annual Meeting of the Air & Waste Management Association, Kansas City, MO, June 1992.

Sullivan, D.A., T. G. Grosch, and D. J. Hlinka, "Atlanta Ozone Precursor Study: Dispersion Modeling of NO_x and NMOC," presented at the Annual Meeting of the Air & Waste Management Association, Kansas City, MO, June 1992.

Sullivan, D.A., D. J. Hlinka, and T. G. Grosch, "Monitoring Network Strategies to Address the Potential 15-Minute to 1-Hour SO₂ Ambient Air Quality Standards," presented at the Annual Meeting of the Air & Waste Management Association, Kansas City, MO, June 1992.

Sullivan, D.A., and C.P. Silberman, "Results of the Exposure Assessment for the Study of Noncancer Health Effects in the Kanawha Valley of West Virginia," presented at the Annual Meeting of the International Society of Exposure Analysis: Measuring, Understanding and Predicting Exposures in the 21st Century, Atlanta, GA, November 1991.

Sullivan, D.A., "Comprehensive Apportionment of Air Toxic Risks Considering Chronic, Short-term, and Potential Exposure," presented at the Annual Meeting of the Air & Waste Management Association, Vancouver, British Columbia, June 1991.

Sullivan, D.A., "Comparison of Modeled and Measured Ozone Precursors for the Atlanta Ozone Study," presented at the Annual Meeting of the Air & Waste Management Association, Vancouver, British Columbia, June 1991.

Sullivan, D.A., "Lessons Learned From the U.S. Environmental Protection Agency's Kanawha Valley Studies of Toxic Air Pollutants," presented at the Annual Meeting of the Air & Waste Management Association, Pittsburgh, PA, June 1990.

Sullivan, D.A., "A Technical Perspective on the Use of Dispersion Models to Estimate Exposure to Air Toxics," presented at the Annual Meeting of the Air & Waste Management Association, Pittsburgh, PA, June 1990.

Sullivan, D.A., "VOC Dispersion Modeling", presented at the EPA Quail Roost III Volatile Organic Receptor Modeling Workshop, Research Triangle Park, NC, December 13-15, 1989.

Sullivan, D.A., "An Evaluation of the Effectiveness of Dispersion Modeling to Estimate Human Exposure: A Case Study Based on the Baltimore Total Exposure Assessment Methodology (TEAM) Study," presented at the 1989 EPA/ Air & Waste Management Association International Symposium on Total Exposure Assessment Methodology, Las Vegas, Nevada, November 29, 1989.

Sullivan, D.A., luncheon speaker at EPA/ Water Pollution Control Federation workshop on "Air Emissions From POTWS", Alexandria, Virginia, July 11, 1989.

Sullivan, D.A., speaker at EPA Urban Air Toxics Workshops in Anaheim, CA (February 15-17, 1989); Denver, CO (March 8-10, 1989); and Baltimore, MD (April 15-17, 1989).

Sullivan, D.A., T. Lahre and M. Alford, "Assessing Multiple Pollutant Multiple Source Cancer Risks From Urban Air Toxics (Summary of Approaches and Insights From Completed and Ongoing Urban Air Toxics Assessment Studies)", EPA-450/2-89-010, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, April 1989.

Sullivan, D.A., presented testimony for EPA at TSCA Hearings on EPA Asbestos Rule, Arlington, VA, September 19-20, 1988.

Sullivan, D.A., speaker at workshops on hazardous waste incineration, presented by EPA (Office of Solid Waste) in Kansas City, MO, (September 21, 1988) and Alexandria, VA (September 13, 1988).

Sullivan, D.A., Guest Speaker for the Instrument Society of America, "Presentation of the Results of the EPA Kanawha Valley Air Toxics Study", Charleston, WV, February 9, 1988.

Sullivan, D.A., speaker: Presented Air Quality Protocol and results for EPA Kanawha Valley Study to the EPA Science Advisory Board (SAB), Washington, DC, August 28, 1986, September 18, 1986, and March 16, 1987.

Sullivan, David A., "Monitoring and Modeling of Toxic Pollutants in Philadelphia," American Society for Quality Control Congress, Baltimore, MD, May 6, 1985.

Sullivan, David A. and Alan Jones, "Results of the U.S. Environmental Protection Agency's Air Toxics Analysis in Philadelphia." Air Pollution Control Association Annual Meeting, Detroit, MI, June 19, 1985.

Sullivan, David A., Charles Carter and John Richards," Urban-Scale Monitoring Programs for Airborne Toxics in Philadelphia and Baltimore," National Meeting of the American Chemical Society, Philadelphia, PA, August 28, 1984.

Sullivan, David A., speaker: "Air Toxics Emissions Inventory Workshop," Sponsored by Region I of the U.S. Environmental Protection Agency, Lexington, MA, June 6, 1984.

Sullivan, David A. and Jerome B. Strauss, "A Sensitivity Analysis of Plume Depletion in the Modeling of Particulate Emissions in the Coal Mining Industry," Annual Meeting of the Air Pollution Control Association, New Orleans, LA, June 24, 1982.

Sullivan, David A. and Jerome B. Strauss, "Monitoring of Airborne Emissions from a Hazardous Waste Site," presented at the Management of Uncontrolled Hazardous Waste Sites Conference, Washington, DC, October 29, 1981.

Sullivan, David A., lecturer UCLA Extension Course on "Underground Coal Conversion," conducted sessions on environmental licensing, Los Angeles, CA, March 1980 and March 1981.

