



STEPHEN G. ZEMBA, PH.D., P.E.

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Dr. Zemba has consulted for more than 30 years in the areas of human health & environmental risk assessment, environmental fate and transport modeling, and air quality evaluation – all geared toward understanding and helping to manage risks to public health and environmental integrity. Dr. Zemba has offered expert testimony at many public meetings, in hearings, and in courtrooms. He has also taught graduate-level college courses in environmental engineering, air pollution control & modeling, and risk assessment, in colleges and universities in Massachusetts and Vermont. His expertise encompasses a wide variety of environmentally important contaminants. Much of Dr. Zemba's recent project work has focused on per- and poly-fluorinated alkyl substances (*aka* PFAS)

Ph.D., Mechanical Engineering, Massachusetts Institute of Technology (MIT).

M.S., Mechanical Engineering, MIT.

B.S. with University Honors, Mechanical Engineering, Carnegie-Mellon University.

REGISTRATION

Professional Engineer – MA

CURRENT & PREVIOUS AFFILIATIONS

Green Toxicology LLC, Consulting Senior Engineer, present

Risk Insight, LLC, President & Senior Engineer, present

Sanborn, Head & Associates, Project Director, 2015-2026

CDM Smith, Senior Engineer, 2013-2015

Cambridge Environmental Inc., Senior Engineer, 1989-2012

Norwich University, Adjunct Faculty, 2018-2025

University of Massachusetts, Adjunct Faculty, 1992-2025

Tufts University, Adjunct Faculty, 1995-2017

PROFESSIONAL ORGANIZATIONS

Air and Waste Management Association, Editorial Board Member for *EM Magazine*

Brownfields Coalition of the Northeast, Board Member

PROJECT HIGHLIGHTS

- Managed an extensive, environmental and public health evaluation of a major mining & industrial facility in Vermont
- Designed and led the Chattanooga, Tennessee Air Toxics Study
- Played an instrumental role in the study of anthropogenic background levels of PFAS in soils in Vermont
- Researched and evaluated PFAS emissions to air from hazardous waste incineration and landfill sources
- Conducted multi-pathway risk assessments of emissions from municipal waste combustors, including modeling of pollutant deposition and transfer through food webs
- Measured and evaluated PFAS emissions to ambient air from numerous hazardous waste incinerators and landfills
- Led numerous health risk assessments for contaminated sites, including a Superfund site in New Hampshire and a defunct refinery in Pennsylvania
- Developed exposure assessments to asbestos and ethylene oxide emissions from industrial facilities
- Served as an expert witness in air pollution assessment and health & ecological risk assessment

PROJECT EXPERIENCE

Confidential Client, PFAS Litigation Support

Evaluating historic atmospheric deposition of PFAS from coating operations. Perfluorooctanoic acid (PFOA) in soil is being used as a forensic marker. Serving as an expert witness.

PFAS in Municipal Solid Waste, EREF

Principal Investigator of a study of the presence of PFAS in components of municipal solid waste. Work is being developed under a grant from the Environmental Research and Education Foundation (EREF).

Viridi Energy, Air Permitting, Confidential Site, NH

Assisted the developer of a Renewable Natural Gas facility in obtaining an air permit. One of the regulatory concerns centered on PFAS, which are known to be present in the landfill gas feed to the facility. Most of the PFAS vented from the process will likely be destroyed by the facility's thermal oxidizer. Relevant data from landfill gas flare testing was used along with fate-and-transport models to demonstrate that the potential release from air emissions and deposition of PFAS will not significantly contribute to PFAS concentrations in local soils and groundwater.

US Dept of Defense, SERDP, PFAS Research

Principal investigator of a Strategic Environmental Research and Development research project to investigate PFAS destruction and transformation via high temperature combustion. Participated in a collaborative study of PFAS emissions at the Clean Harbors Hazardous Waste Incinerator in Aragonite, Utah. The November 2024 testing found high levels of PFAS destruction and low levels of residual emissions resulting from incineration of PFAS-laden wastes.

Collins & Aikman Superfund Site, Farmington, NH

Led the development of a baseline human health risk assessment for the site. While chlorinated solvents in groundwater have been the focus of the site investigation, metals and polycyclic aromatic hydrocarbons in soil also merited consideration in the risk assessment, with differentiation of background an important component.

PFAS Emissions from Landfill Gas Combustion

Contributed to a University of Vermont research team investigating PFAS emissions from landfill gas combustion. Funded by the Environmental Research and Education Foundation (EREF), the study is measuring PFAS destruction and emissions in both a stationary energy recovery engine and a flare fueled by landfill gas. An adaptation of U.S. EPA Method OTM-45 is being used to check for the presence of fluorotelomer alcohols expected to be present in landfill gas.

Technical Assistance, PFAS Air Deposition Review, NH Department of Environmental Services

Assisted in a review of the investigation of a large air deposition site involving PFAS. Commented on the methods and assumptions used by the potentially responsible party for estimating emissions and deposition of PFAS to soils, and subsequent leaching to groundwater.

City of Nashua, Four Hills Landfill Air Permitting, Risk Assessment, Nashua, NH

Designed and helped conduct a risk assessment of formaldehyde emissions from energy recovery engines operated at the landfill. Initial dispersion modeling determined exceedances of the state's ambient air limits. A site-specific risk assessment was thus conducted to derive a health-protective emission limit for formaldehyde, and subsequent engine testing was able to demonstrate compliance.

Vermont Department of Environmental Conservation, PFAS Pollution Prevention (P2) Project, VT

Vermont DEC's PFAS Pollution Prevention Project was designed to identify uses of PFAS in metal finishing and aerospace industries and to find opportunities to reduce releases of PFAS to the environment.

Ecological Evaluation of PFAS Toxicity and Bioaccumulation, Confidential Client

Prepared an ecological risk evaluation of PFAS contamination at a former military installation on behalf of a confidential client. Repeated application of aqueous film forming foam (AFFF) at a firefighting training area, as well as AFFF applications in response to specific incidents, led to PFAS contamination in soils, sediment, and groundwater. The residual contamination continues to discharge to surface water. Compared contaminant levels to ecological screening criteria to characterize potential risks to aquatic plants and animals. Also evaluated the potential for PFAS to bioaccumulate from surface water and sediment into plants, shellfish and other macroinvertebrates, and fish. Modeled concentrations in biota were compared with site specific data as an initial evaluation of potential bioaccumulation resulting from exposures to PFAS through the aquatic environment.

New England Waste Services of Vermont (NEWSVT Landfill), 2018 Phase VI Expansion Permitting, Coventry, VT Assisted with the evaluation of PFAS in leachate and the implications of its disposal at wastewater treatment plants.

New England Waste Services of Vermont (NEWSVT Landfill), 2019 PFAS Waste Source Testing, Coventry, VT Oversaw the implementation of a phased program of sample acquisition and laboratory analysis of targeted waste streams disposed at the NEWSVT Landfill, reporting results to VTDEC. Presented data at the EREF PFAS symposium.

Vapor Intrusion Litigation Support, Industrial Facility, MI

Reviewed site history to determine if underground storage tank investigations were conducted according to regulatory guidance and whether data were collected to identify the potential for vapor intrusion from chlorinated solvent compounds. Helped to review co-located groundwater, soil-gas, and indoor air data to assess the degree of vapor intrusion at off-site residential locations.

Fugitive Dust Evaluation, Industrial Facility, OH

Oversaw expert technical assistance for fugitive dust assessment and the relationship between fugitive dust emissions and concentrations of lead measured in ambient air. Recommended measures to mitigate dust emissions and lead exposure.

Litigation Support, Sterigenics Facility, Willowbrook, IL

Assisted the Illinois Attorney General's office in evaluating residential exposure to ethylene oxide (EtO) released from operation of a medical equipment sterilization plant. Used measurements collected by the USEPA to develop estimates of background exposure levels to distinguish impacts from facility-related EtO emissions.

PFAS White Paper, New York, NY

Assisted a confidential client in the estimation of future liabilities that might result from the mitigation of PFAS in the environment. The scope of the analysis included assessment of the magnitude of drinking water impacts across the nation and the potential costs of treatment, remediation, and compliance monitoring.

Multi-Pathway Risk Assessments of Waste-to-Energy and Other Facility Stack Emissions, Various Locations Coordinated and designed multi-pathway risk assessments of stack emissions from waste-to-energy plants, cement kilns, and hazardous waste incinerators in Biddeford, Maine; Harrisburg, Pennsylvania; Greencastle, Indiana; Harriman, New York; and the Setubal Peninsula, Portugal; and for proposed facilities in East Bridgewater, Massachusetts and Green Island, New York. Also provided technical support for the Town of North Kingstown in evaluating the proposed waste-to energy facility at Quonset Point, Rhode Island.

Interstate Technology and Regulatory Council (ITRC) PFAS Team

Assisted with the writing of the PFAS fate-and-transport fact sheet and the incorporation of information on the role of atmospheric transport and deposition of PFAS as a potential source of groundwater contamination in the vicinity of factories that used PFAS in manufacturing processes.

PFAS in Vermont Soils

Helped to design and implement a study to measure background levels of perfluoroalkyl substances (PFAS) in surface soils in Vermont. Collaborating with the University of Vermont, samples were collected from 66 locations across the state at public parks, greens, school grounds, and other areas with no known local sources of PFAS. PFNA and PFOS were found in all samples, and 6 other compounds were detected in 70% or more of all samples. The findings suggest that low levels of PFAS may be ubiquitous in soils, with the likely source due to long-range transport and atmospheric deposition.

Technical Assistance Grants (TAGs) Support, New England Superfund Sites

Assisted several citizens' groups under TAGs. Projects typically involved review of remedial investigation reports and feasibility studies, with specific attention to human health and ecological risk assessments, to help citizens understand the nature of potential risks and to develop comments on technical work. Organizations worked with include the Wilmington Environmental Restoration Committee (Olin Superfund Site, MA), the Seacoast Citizens Overseeing Pease Environment in reviewing risk assessments of groundwater and soil contamination found at the former Pease Air Force Base (Portsmouth, NH), including chlorinated solvent plumes. Provided similar TAG support to the Aberjona Study Coalition (Industri-Plex Site, Woburn, MA), Four Town Focus (former Fort Devens Annex, Sudbury, MA), and the Advocates for Rockland, Abington, Weymouth, and Hingham (former South Weymouth Naval Air Station, MA). .

Fugitive Dust Evaluation, Petroleum Coke Facility, IL

Assisted the City of Chicago with the third-party evaluation of fugitive dust emissions from a petroleum coke (pet-coke) storage facility and led a study of potential dust emissions from the facility that indicated the importance of control measures.

Environmental Evaluation of Omya Verpol Facility, VT

As Project Manager, led an extensive environmental and public health evaluation with intense public scrutiny. The 18-month study shed new light on the largest calcium carbonate ore-processing plant in North America. The project team reviewed existing environmental data, identified data gaps, and conducted additional investigations. Additional activities included drilling monitoring wells, identifying preferred analytical methods for detection of process chemicals in environmental samples, conducting a dust monitoring study, assessing emissions to air of potentially hazardous chemicals, surveying local aquatic systems receiving industrial or quarry discharges, developing drinking water guidelines for process chemicals, monitoring noise levels around the facility, and assessing the impacts of the plant operations on public health.

PCBs Indoor Air Assessments

Led several health risk evaluations associated with polychlorinated biphenyls (PCBs). In one such study, evaluated worker exposures to airborne sawdust generated from cutting floorboards stained with PCB oils and found modeled breathing zone concentrations to be lower than occupational exposure limits. In a second study, assisted in the evaluation of PCB exposure at a daycare center. PCB concentrations in indoor air exceeded EPA's protective Public Health Levels (PHLs), but exposure was found to be many times smaller than the background level received by nursing infants, suggesting a low probability of adverse health effects. In a third study, assisted a client in converting an industrial building for residential use. PCBs present in concrete floors cannot be removed in a cost-effective manner. Flux

chamber measurements were conducted that demonstrate a low rate of PCB off-gassing, and a subsequent health risk assessment indicated that the floors could remain place and present no significant health risks to future residents.

Project Manager, Municipal Solid Waste Landfill Risk Assessments, Various New England Locations

As Project Manager, designed the scope of the risk assessment of the City of Manchester Municipal Landfill and performed fate and transport modeling of the volatilization of organic chemicals from surface waters, along with subsequent atmospheric dispersion modeling. Designed and conducted Cumulative Impact Assessment risk characterizations of landfill gas and dust emissions for solid waste management facilities in Fitchburg, Chicopee, Taunton, Bourne, Fall River, Granby, and Marion, Massachusetts. Evaluated long-term risks to human health potentially associated with the proposed expansion and development of the Crossroads Landfill in Norridgewock, Maine.

200 Presidential Way, Human Health Risk Assessment, Woburn, MA

Helped develop and then led a focused human health risk assessment of a portion of the Industri-Plex Superfund Site.

U.S. EPA required a detailed risk screening of soils and groundwater as the area was slated for residential development. The focused risk assessment demonstrated no significant health risks to future residents at the site.

Proposition 65 Assessments, Green Toxicology, Brookline, MA

Conducted Proposition 65 Assessments of rubber products developed from recycled tires. The rubber products named in the Proposition 65 notice (which may be sold in California) are used for, *inter alia*, landscaping mulch, playgrounds and equestrian arena fill. Identified materials to be evaluated, documented similarities and differences (e.g., in coatings or additives) and evaluated the effect of any differences in the analysis. Identifying end users and product interaction was an important part of the project. Reviewed the measured chemicals in the products and compared it to the California Proposition 65 list. In addition, evaluated relevant toxicological properties and compared the results of exposure estimates with relevant No Significant Risk Levels and Maximum Allowable Dose Levels or equivalents and assisted legal counsel in evaluating the need for any warning labels. All parts of the assessments were documented to a standard allowing independent review and replication, suitable for submission to California authorities to demonstrate compliance with Proposition 65.

Consequence Modeling, Expert Witness Services, Town of Hopkinton, MA

Reviewed a worst-case study of dense vapor formation and dispersion due to potential spills of liquefied natural gas (LNG) from a peak shaving facility. Provided the Town with expert advice at public meetings and testified on the Town's behalf at a state Department of Public Utilities hearing on an application by the facility owner to upgrade the facility, stating that improved communication between the Town and the facility would be useful for improving emergency response planning.

MGM Springfield Casino, MCP Compliance, Springfield, MA

Provided expert risk assessment for the construction of the MGM Springfield Casino. Reviewed data and developed risk-based concentrations for workers and others in the area. Provided MCP risk calculations, developed a risk assessment report to support a comprehensive Release Abatement Measure Plan for the project.

88 Ames Street, Risk Assessment Services, Cambridge, MA

Provided risk assessment services for this high-rise redevelopment project in a highly urban setting. Conducted risk calculations for workers and trespassers and developed a risk assessment report addressing chlorinated volatile organic compounds (CVOCs) in fill soil and groundwater.

Southbridge Recycling & Disposal Park, Landfill Air Permitting, Southbridge, MA

Assessed risks from a multiple phase expansion project for a double-lined solid waste facility. Examined formaldehyde concentrations at monitoring locations and developed an air pathway exposure model. In addition, has developed a formaldehyde risk assessment report and has been involved in reviewing the air permit protocol.

BPR Sudbury Development, Risk Assessment, Sudbury, MA

Supported the design of building additions and improvements to the proposed Wastewater Treatment Plan. Conducted risk assessments of potential contaminants in excavation trenches possible during geotechnical subsurface explorations.

Air Emission Services, Expert Witness Services, City of Haverhill, MA

Reviewed an application filed by an industrial facility seeking to increase its processing throughput. Examined the detailed calculations submitted by the applicant and the likely changes in air pollutant emissions. The report and public hearing testimony informed the Board of Health's positive determination and approval of the project.

Emergency Response Planning for Oil Well Exploration

As Risk Assessor, assisted petroleum industry clients to evaluate hazards associated with potential well blowouts. Under certain circumstances, blowouts can release substantial quantities of oil and gas, and result in heavier-than-air mixtures with toxic levels of hydrogen sulfide (H₂S). Releases in mountainous terrain can channel the heavy gas, potentially endangering inhabitants over distances of several miles. Recognizing the limitations of standard heavy gas models, applied computational fluid dynamics (CFD) software to simulate the behavior of well blowout releases. The predicted H₂S concentrations have been used by clients to develop contingency measures for responding to inadvertent blowout releases.

Environmental Risk Assessment and Decision-Making Support for the U.S. Army Corps of Engineers, MS

As Project Manager, coordinated the development of a prototype decision support tool that integrated environmental models with decision analysis methods to formally and transparently evaluate tradeoffs and uncertainties regarding environmental resource management. The prototype decision support tool integrated Army Corps of Engineers and U.S. Environmental Protection Agency (EPA) environmental models within a Geographic Information System (GIS) framework to provide a powerful system of models for assessing the impacts of multi-media environmental contamination over varying spatial and temporal scales, with a direct linkage to a decision support module.

Risk Assessments of Hazardous Waste Disposal Sites, MA

As Project Manager, conducted numerous risk assessments of hazardous waste disposal sites in accordance with the Massachusetts Contingency Plan and federal Superfund guidance. The contamination at one site — a former jewelry manufacturing facility — included many heavy metals and several volatile organic compounds associated with solvent use. The assessment of a petroleum tank farm required consideration of the ecological consequences of potential discharges to an adjacent river. Another large site required a detailed exposure assessment involving eight age groups (infants through senior citizens) and seven hypothetical receptors (residents, workers, and visitors/trespassers).

Deep Ocean Disposal of Carbon Dioxide, U.S. Department of Energy

Research Engineer for a research team that performed one of the first evaluations of the physical and environmental consequences of ocean disposal of carbon dioxide (CO₂). Developed mass transfer calculations to demonstrate that bubbles formed by the injection of CO₂ into the deep ocean could dissolve and remain sequestered. Potential formation of hydrates, however, could blanket the ocean bottom and adversely affect deep ocean ecology.

Atmosphere to Ocean Deposition of Contaminants, Massachusetts Bays Program

As Research Engineer, participated in a University of Massachusetts Lowell research study to evaluate contaminant deposition from the atmosphere to the Massachusetts Bays and developed estimates of atmospheric deposition of nitrogen containing compounds, mercury, and polycyclic aromatic hydrocarbons to the Massachusetts Bay.

Vapor Intrusion Evaluation, Raritan Arsenal, NJ

As Project Manager, evaluated the potential migration of contaminants from groundwater to indoor air at the Former Raritan Arsenal in New Jersey. Also reviewed indoor air data, applied modeling algorithms to evaluate vapor transport from groundwater to indoor air, and developed groundwater and soil-gas screening levels that would be protective of indoor air. The work supported the U.S. Army Corps of Engineers' proposed approach for evaluating potential indoor air quality impacts at the Former Raritan Arsenal due to vapor intrusion.

MATES-II Review, Federal Highway Administration (FHWA)

As Risk Assessor in a team, evaluated the Multiple Air Toxics Exposure Study (MATES-II) and found uncertainties ranging over many orders of magnitude uncertainty in its risk estimates. A second bias typical of air toxics risk assessments is the assumption that current air quality will remain similar indefinitely (e.g., for a period of 70 years) despite projections that air quality will continue to improve. The findings afforded FHWA a more thorough understanding of the risks associated with highway vehicle emissions, which is expected to enable better informed decisions regarding the development of the nation's transportation infrastructure.

Health Risks Due to Transportation Emissions, Transportation Research Board (TRB)

As Project Manager, contributed to two research studies funded by the TRB. In one, developed metrics to allow for more meaningful comparisons of the health benefits of proposed transit projects, expanding the typical quantification of changes in project emissions to include population and meteorological variables. In the second, applied the U.S. EPA's AERMOD system to estimate ambient impacts from a proposed consolidation and renovation of an Intermodal Freight Terminal. AERMOD's area source algorithms were found to be advantageous for representing intermodal emission sources, but less convenient than traditional line source models for simulating roadway emissions.

RCRA Hazardous Waste Listing, BASF Corporation

As Project Manager, performed fate-and-transport modeling to predict evaporation rates of volatile chemicals from surface water impoundments at chemical manufacturing facilities in New York and West Virginia, with subsequent air dispersion modeling to predict potential exposure point concentrations in ambient air. The analyses supported the demonstration that certain dye wastes proposed for listing as hazardous wastes under the Resource Conservation Recovery Act did not present significant health risks.

Record of Decision Review, Sullivan's Ledge Landfill Superfund Site, New Bedford, MA

As Project Manager, evaluated the remedial investigations and feasibility studies of the Sullivan's Ledge site and the Middle Marsh operable unit and proposed alternative interpretation of the data collected during the field studies. The analysis included in-depth analysis of proposed sediment quality criteria designed to protect mink from excessive exposure to polychlorinated biphenyls (PCBs). Absence of a sustainable fish population indicated the assumed principal means of the mink's exposure to PCBs was unfounded, and hence proposed cleanup criteria were overly protective.

Facility Siting Hearings, Various Cities and Towns in MA

As Project Manager, testified at public meetings and hearings on findings of the likely environmental impacts of

proposed solid waste landfills, recycling facilities, biomass-to energy plants, and hot-mix asphalt plants. Conducted studies of the chemicals likely to be released from these facilities and evaluated potential health risks to people living and working nearby.

Development of Risk-Based Standards for Compost, Nantucket, MA

As Senior Engineer, participated in the development of standards for compost produced from advanced processing of municipal solid waste (MSW). State regulatory authorities demanded extensive testing of the MSW derived compost, including analysis for a wide range of organic and inorganic contaminants. Worked interactively with the project team, client, and regulators and helped to develop acceptable risk-based standards for a wide variety of chemicals identified in the compost.

Chattanooga Air Toxics Study, Tennessee

As Project Manager, designed and coordinated the human health risk assessment for the Chattanooga Air Toxics Study (CATS), a year-long monitoring study of potentially hazardous air pollutants in mixed-use Chattanooga neighborhoods. The project team worked closely with the U.S. EPA Region 4 Project Manager to develop and execute the protocol for the risk assessment in the absence of definitive regulatory guidance, while simultaneously meeting stringent budget, time, and quality assurance constraints. The project team processed and analyzed an extensive database of ambient air toxics measurements involving hundreds of samples and chemicals. A distinguishing factor of the Study was its incorporation of Superfund risk methodologies, a novel application in air toxics risk assessment that compensated for a void in established risk assessment guidance.

Plainville Landfill Comprehensive Site Assessment Risk Evaluation, MA

As Project Manager, designed, managed, and conducted portions of a complex human health and ecological risk assessments for the Plainville Landfill in Massachusetts. Under considerable public pressure and scrutiny, Allied Waste Systems asked project staff to evaluate health risks associated with intense odors experienced by nearby residents due to emissions from its landfill. The project team helped the landfill owner establish a novel monitoring system capable of real-time measurements of hydrogen sulfide (a marker for landfill gas) and develop an approved plan to collect additional data for the health evaluation. Data was collected while the landfill worked to mitigate the source of its odors and was subsequently used to develop an acute health risk evaluation. This effort served as the first of several tasks needed to satisfy regulatory requirements. The project developed into a large, multi-task project of complicated scope. The project team developed a comprehensive risk characterization focusing on both human health and the environment, working with third-party contractors to ensure collection of proper data to assess contaminant releases to air, groundwater, and surface water/sediment. The work required frequent interaction with stakeholders, including careful development of protocols to bridge gaps in regulatory guidance and effective communication with concerned citizens. Methods for the assessment of health risks from landfill gas emissions were later used in part as a model by the Massachusetts Department of Environmental Protection to develop Cumulative Impact Assessment guidance for solid waste facilities.

LITIGATION AND PUBLIC HEARING SUPPORT

Confidential Client, PFAS Litigation Support

Evaluated potential historic atmospheric deposition of PFAS from coating operations.

Perfluorooctanoic acid (PFOA) in soil is being used as a forensic marker. Served as an expert witness in the matter and developed an expert report.

Proposed Hot-Mix Asphalt Plant, Sunrock Industries, Zebulon, NC

Evaluated risks to human health associated with airborne emissions from operation of a proposed hot-mix asphalt plant. The health risk assessment was built upon an air dispersion modeling study developed in conjunction with air permitting. Health risks were projected to be below levels of significance. Provided testimony at a public hearing in support of the project on the client's behalf.

Attleboro Sand & Gravel, Concrete Batch Plant Evaluation, Expert Witness, Attleboro, MA

Evaluated the potential for the facility to cause conditions of air pollution that could be significantly hazardous, offensive, or detrimental to nearby neighbors. Developed and offered an expert opinion on the likely air quality impacts of the proposed concrete batching plant.

Air Emission Services, Litigation Support, Dupage County, IL

Reviewed data of the U.S. EPA on extensive test data from hot mix asphalt plants and health hazards. Assessed potential air quality and human health impacts of emissions from a particular plant and determined that air quality will not present significant health risks to nearby residents

Asbestos Risk Assessment, Litigation Support, St. Louis, MO

Assessed potential exposure to asbestos fibers that may have been released from the asbestos cement pipe plant. Developed an estimate of the level of exposure to asbestos received by the client due to potential emissions of asbestos fibers from the pipe manufacturing plant. Reviewed information about the St. Louis facility and how asbestos may have been released to the atmosphere, building on work done in a previous case.

Passaic River Superfund Site, Litigation Support, NJ

Assisted with support to a potentially responsible party (PRP) with ongoing litigation regarding the Passaic River Superfund site. Participated in a broad review of the sediment data available and critically reviewed the baseline risk assessment for the eight plus mile stretch of the Passaic targeted for dredging. Assisted with the evaluation of the PRP's potential releases of contaminants of concern (COCs) to the river., and also assisted with file reviews for many of the other PRP properties along the River, to assess the contributions of these other properties to the contaminants driving the need for remediation of the River

NH Dioxane Site, Litigation Support, Hampstead and Atkinson, NH

Assisted with litigation support by reviewing data regarding the 1,4-dioxane detected in several dozen residential wells that prompted an extensive NHDES groundwater investigation and a Time Critical Removal Action by the USEPA under the Superfund Program. Specifically assisted with the review of an evaluation of potential 1,4-dioxane sources other than the client's former facility and conducted an assessment of how the extent of contamination may change in the future, impacting the lowering of the 1,4-dioxane and the reasonableness of the USEPA's approximately \$4 million claim against the client.

Crude Oil Loading Litigation Support, Portland, ME

Provided litigation support to the City of South Portland, Maine, regarding the air quality impacts associated with bulk petroleum loading and transport. In developing an expert report/opinion, Reviewed documents, analytical data land use maps/photos, regulatory agency files and permits and

evaluated data and performance of engineering/scientific analyses or calculations. My expert report focused on short-term odor, SO₂, and NO_x impacts, and provided trial testimony regarding air pollutant emissions resulting from the loading of crude petroleum oil onto marine vessels, and also from breathing and filling losses from a petroleum tank farm.

Asbestos Cement Pipe Manufacturing in Riverside and Santa Clara, CA

As Project Manager and Expert Witness, conducted retrospective exposure studies to evaluate claims that a former manufacturer of cement pipe exposed neighbors to excessive levels of asbestos (used as a component of the pipes). Developed emissions and dispersion analyses to estimate concentrations of airborne asbestos at locations in communities surrounding the manufacturing facilities and testified as an expert witness in several cases related to these matters.

Third-Party Review of a Proposed Hot-Mix Asphalt Plant, Uxbridge, MA

As Project Manager, coordinated and performed portions of an in-depth evaluation of hazard, nuisance, and danger issues associated with the operation of a hot mix asphalt production facility proposed for Uxbridge, Massachusetts. The final results study found that, as with any industrial facility, the potential for hazard, danger, and nuisance conditions does exist with the proposed facility; however, it should be possible to build and operate a plant such that hazards and dangers are minimal, and nuisance conditions are infrequent, although some issues, such as noise, may require substantial mitigation measures. The evaluation concluded that if the plant was built, several safeguards and protocols should be made conditions of approval (such as formal limits on the hours of operation to eliminate concerns about nuisance noise after the normal workday). It was determined that the best chance for a successful plant would be a mediated and/or negotiated approach in which stakeholders — the proponent, the Town, neighbors, and citizens' groups — work cooperatively during planning, construction, and operational phases (including ongoing efforts beyond startup).

PUBLICATIONS AND PRESENTATIONS

- Zemba, S. and Estabrooks M. "PFAS thermal destruction via high-temperature hazardous waste incineration." Article. Air & Waste Management Association's *EM Magazine*. May 2026.
- Zemba, S., "Emissions of PFAS from Landfill Sources and Ambient Air Impacts." Poster, NEWMOA'S Third Biennial Conference on PFAS: Public Health & The Environment, DCU Center, Worcester, MA, April 14, 2026.
- Zemba, S., "Ambient Air Impacts of PFAS From Landfill Emission Sources." Poster. Global Waste Management Symposium 2026, Indian Wells, CA. February 26, 2026.
- Zemba, S. Identifying and Evaluating PFAS Emission Sources to Air, Presentation, American Council of Engineering Companies of Vermont, 10th Annual Environmental Protection Technical Workshop, November 13, 2025.
- Zemba, S. and Estabrooks M. "PFAS thermal destruction via high-temperature hazardous waste incineration." Article. Air & Waste Management Association's *EM Magazine*. May 2026.
- Zhu, W., Khan, K., Roakes, H., Maker, E., Underwood, K., Zemba, S., and Badireddy, A., "Vermont-wide assessment of anthropogenic background concentrations of perfluoroalkyl substances in surface soil," *J Haz Materials* 438:129479, September 2022.
- Zemba, S., "Identifying and Evaluating PFAS Emission Sources to Air." Presentation, American Council of Engineering Companies of Vermont (ACECVT)'s 10th Annual Environmental Protection Technical Workshop, November 13, 2025
- Zemba, S., "Health Effects, RSL Basis & Risk Assessment Models." Webinar, BCONE, November 5, 2025.
- Beaudoin, B., R. St Michel, Zeng, L. and S. Zemba, "PFAS Removal from Landfill Leachate: Pilot Study of Efficiency, Air Emissions, and Foamate Management," coauthor. Presented at the AEHS Foundation East Coast Conference, Amherst, MA, October 23, 2025
- Morzuch, B., H. Roakes, and S. Zemba. "Advanced Topics on Exposure Point Concentrations and Background Evaluations," coauthor. Presented at the AEHS Foundation East Coast Conference, Amherst, MA, October 22, 2025.
- Abell, R., Zemba, S. PFAS in Air: Likely Future Regulatory Focus, But What Sources are Most Important? Blog. August 21, 2025.
- Zemba, S., "Demonstrating Cost-effective PFAS Destruction Through High Temperature Incineration." Poster Presentation, 2025 SERDP & ESTCP PFAS Project Meeting, Long Beach, CA. August 4, 2025.
- Zemba, S., "Air Emission Testing for PFAS." Webinar, PCIC Webinar, June 3, 2025.
- Zemba, S., "PFAS Emissions from Landfill Sources." Presentation, Federation of New York Solid Waste Conference, Bolton Landing, NY. May 19, 2025.
- Zemba, S., "PFAS Emissions from Landfill Sources." Presentation, A&WMA Air Quality Measurements Conference, Denver, CO. April 24, 2025.
- Close M., Estabrooks M., and Zemba, S. "PFAS Releases from Landfills: Consideration of Air Emissions in Mass Balances." Article. Air & Waste Management Association's *EM Magazine*. March 20, 2025.
- Zemba, S., Costello, C. "What to do if you have PFAS at your Brownfield Site". Article, Spring-Fall 2024 edition of Pittsburgh ENGINEER Magazine, March 7, 2025.
- Zemba, S. "A Call to Comment: EPA Continues its Approach to Regulating PFAS with New Biosolids and Aquatic Life Criteria." Sanborn Head Blog. February 19, 2025.

Zemba, S. "Update on PFAS Destruction in High Temperature Incineration." Poster Presentation. December 2024.

Zeng, L., Zemba, S., Stetson, K., Pinto, P., Roy, S., Callahan, C., "Odor Mitigation and Control during Remediation of a Former MGP Site". Presentation, AEHS U-Mass Conference, Amherst, MA. October 2024.

Zeng, L., Zemba, S., Beaudoin, B., St. Michel, R., "PFAS Pilot Study for System Design and Waste Concentrate Management Strategy". Presentation, AEHS U-Mass Conference, Amherst, MA. October 2024.

Zeng, L., Roakes, H., "ProUCL Workshop" Presentation, AEHS U-Mass Conference, Amherst, MA. October 2024.

Zemba, S., "PFAS – Air Emissions Study", SWANA Keystone State Chapter, Fall Conference. Harrisburg, PA. September 2024.

Zemba, S., "Plenary Session: Overview of the Current Outlook for Landfills and PFAS", SWANA Keystone State Chapter, Fall Conference. Harrisburg, PA. September 2024.

Zemba, S., Abell, R., Costello, C., "PFAS in groundwater, surface water, soil and air. Pennsylvania Chemical Industry Council's PFAS Workshop", Pennsylvania. June 2024.

Zemba, S., "PFAS Emissions from Landfills to Air", Federation of New York Solid Waste Conference, Bolton, NY. May 2024.

Zeng, L., Heil, M., Shea, D., Zemba, S., Roakes., "Timely Waste Site Cleanup, Regulatory, and Technical Topics." LSP Association's 2024 Environmental Symposium, Framingham, MA. April 2024.

Zemba, S., "Poster on health effects associated with exposure to per-and polyfluorinated substances", Brownfield PA Conference, State College, PA. March 2024.

Pope, S., Roakes, H., Zemba, S., "Soils Sediments, Water, and Energy", AEHS Foundation's Annual East Coast International Conference, Amherst, MA, October 2023.

Zeng, L., Zemba, S., "What to do about PFAS" Presentation, BCONE Conference, Worcester, MA, September 2023.

Zeng, L., Zemba, S., "PFAS Treatment – Destruction," Presentation, SWANA New Jersey Chapter, April 2023.

Roakes, H. and S. Zemba. "Background Levels of PFAS in Vermont Soils" & "Background Levels of PFAS in Maine Soils", presentations at the Environmental Business Council of New England 4th Annual PFAS Seminar, February 7, 2023.

Zeng, L., Zemba, S. "PFAS Treatment Strategy for Leachate," Presentation, SWANA New Jersey Chapter, April 2023. Zemba, S., Abell, R., and Ashton, A., Invited presentation to the Ohio Utilitied Group, Columbus, OH, December 2022.

Zemba, S. and Roakes, H., "PFAS Cycling Between Landfills and Wastewater Treatment Plants," Sanborn Head & Associates sponsored webinar (RCEP credit), November 30, 2022.

Zemba, S., "PFAS in Landfills," Environmental Business Council of New England webinar, November 15, 2022.

Zemba, S. and Snay, T., "PCBs – Re-Emerging Contaminants," AEHS 38th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 18, 2022.

Morzuch, B., Roakes, H., and Zemba, S., "Environmental Data Analysis and MCP Risk Assessment Statistics with ProUCL," Licensed Site Professional Association course, November 1, 2022.

Zemba, S., "PFAS at Brownfields Sites," Northeast Sustainable Communities Workshop, September 13, 2022.

Zemba, S., "Perspectives on PFAS Health Effects," New England Water Works Association (NEWWA) Annual Conference, Newport, RI, September 21, 2022.

Zhu, W., Khan, K., Roakes, H., Maker, E., Underwood, K., Zemba, S., and Badireddy, A., "Vermont-wide assessment of anthropogenic background concentrations of perfluoroalkyl substances in surface soil," J Haz Materials 438:129479, September 2022.

Abell, R., Thurlow, M., Zemba, S., "PFAS: State Regulation, Private Litigation, Updated Scientific Analysis, Risks and Liabilities," Strafford CLE Webinar, August 17, 2022.

Damiano, L. and Zemba, S., "Renewable Natural Gas: The Future of Landfill Gas Energy Recovery?," Air & Waste Management Annual Conference and Exhibition, San Francisco, CA, June 29, 2022.

Zemba, S., "PFAS Emissions to Ambient Air from Landfills," Air & Waste Management Annual Conference and Exhibition, San Francisco, CA, June 29, 2022.

Zemba, S., "PFAS Issues Facing Landfills," Invited presentation to the New Hampshire Solid Waste Working Group, May 27, 2022.

Zemba, S., "How Significant are PFAS Emissions to Ambient Air from Landfills?," Federation of New York Solid Waste Associations Conference May 23, 2022.

Zemba, S., "PFAS at Brownfields: The Role of Risk Communication," Northeast Waste Management Officials' Association, Revitalizing New England: Brownfields Summit 2022, May 18, 2022.

Brown, L. and Zemba, S., "PFAS: Responding to Orders to Investigate and Increasing State and Federal Scrutiny," Strafford CLE Webinar, April 12, 2022.

Zemba, S., "PFAS: Trends and Issues for the Oil & Gas Industry", Moderator, 4C Conference, April 7, 2022.

Zemba, S., "PFAS and Brownfields," Moderator of Workshop sponsored by the Brownfields Coalition of the Northeast, Lebanon, NH, March 31, 2022.

Roakes, H. and Zemba, S., "PFAS and the Environment: Importance of Mass Fluxes and Balances," ASCE New Hampshire Section Webinar, March 22, 2022.

Zemba, S., "PFAS Issues Facing Landfills," Global Waste Management Symposium, Indian Wells, CA, February 15, 2022.

Zemba, S., "PFAS Developments", Invited Speaker, Brownfield Coalition of the Northeast Regulatory Update, November 16, 2021.

Zemba, S., "PFAS Update – Impact on Redevelopment Projects", Invited Speaker, Brownfield Coalition of the Northeast 2021 Sustainable Communities Workshop, October 26-27, 2021.

Zemba, S., "Perspectives on PFAS – Importance of Mass Fluxes and Balances", 37th Annual International Conference on Soils, Sediments, Water, and Energy (virtual), October 2021.

Zemba, S. & Shea, D., "PFAS Vapor Intrusion: Really a Concern", Air & Waste Management Association's Advancements in VI and Emerging Contaminant Air Quality Issues Virtual Conference, September 2021.

Zemba, S., Delude Roy, N., and Cooper, Ivan A., "Episode 102: Beyond the Basics of PFAS", Waste360's NothingWasted! Podcast, April 5, 2021.

Zemba, S., "Introductions to Short Forms for Human Health Risk Assessment", Licensed Site Professionals Association webinar, March 2021.

Zemba, S., "The Basis of PFAS Standards," Invited Speaker, Vermont Environmental Consortium (VEC) 9th Annual Conference (virtual), October 27, 2020.

Zemba, S., Pope, S., Badireddy, A., "Ecological Risk and Bioremediation of Per-and Polyfluoroalkyl Substances", Scientific Journal of Biology & Life Sciences, October 20, 2020.

Zemba, S., "Surface Water Standards: The Next PFAS Challenge?", AEHS 36th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 2020.

Estabrooks, M., and Zemba, S., "PFAS Study of Solid Waste Materials," Federation of NY Solid Waste Associations Virtual Conference, October 15, 2020.

Zemba, S., "PCBs in Building Materials and Indoor Air Exposure/Health Risks," PCBs in Building Products: Implications for Brownfields (webinar), Northeast Waste Management Officials' Association (NEWMOA), October 14, 2020.

Zemba, S., "PFAS Sequestration and Retention for Landfill Leachate," The Science of PFAS: Chemistry, Health, and Multimedia Measurements, Virtual Conference, Air & Waste Management Association, September 16, 2020.

Zemba, S., and Roy, N., "Beyond the Basics of PFAS," WasteExpo Together Online Conference Session, September 16, 2020.

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, New Jersey/Maryland/Delaware PFAS Webinar, September 2, 2020.

Roakes, H. and Zemba, S., "PFAS Updates: PFAS Fate & Transport Characteristics and Remediation Alternatives", RCEP Presentation for ACEC-NH, August 28, 2020.

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, Georgia-Florida PFAS Webinar, August 10, 2020.

Zemba, S., "PFAS in New Hampshire: The Latest Developments", Alpha Analytical Webinar, July 28, 2020.

Abell, R., Brown, M., Thurlow, M., Zemba, S., "PFAS: State Regulation, Private Litigation, Recent Science, and Risks and Liabilities," Strafford CLE Webinar, July 15, 2020.

Zemba, S., "PFAS Emissions from Air to Landfills," EBC Solid Waste Management Webinar, Update to the Solid Waste Industry, Environmental Business Council of New England, July 14, 2020.

Zemba, S., "Technology Overview: Methods for Assessing Health and Environmental Risks of Organic Micropollutants in Biosolids", Mid-Atlantic Biosolids Association Webinar, July 9, 2020

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, Northwest PFAS Webinar, June 24, 2020.

Roakes, H. and Zemba, S., "PFAS Exchange between Landfills and Wastewater Treatment Plants – The PFAS Cycle?", EM – The Magazine for Environmental Managers, May 2020.

Zemba, S., "PFAS: Responding to Orders to Investigate and Increasing State and Federal Scrutiny", Strafford CLE Webinar, April 8, 2020.

Zemba, S., "PFAS Cycling Between Landfills and WWTPS", EBC Emerging Contaminants Seminar, Framingham, MA, February 25, 2020

Zemba, S., "PFAS: Treading Dark Waters," presented at The Remediation Managers Roundtable Group, Bowling Green, FL, February 2020

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, Tallahassee, FL, January 8, 2020.

Roakes, H. and Zemba, S., "PFAS Cycling Between Landfills and Wastewater Treatment Plants," presented at the Solid Waste Association of North America -Southern New England Chapter membership meeting, Raynham, MA, December 18, 2019.

Abell R., Kray J., Thurlow, M., Zemba, S., "PFAS Contamination: Evolving State and Federal Regulatory Landscape, Science, Litigation, and Due Diligence in Transactions," Strafford Webinar, October 31, 2019.

Badireddy A., Zhu W., Roakes H., Zemba S., "PFAS Background in Vermont Shallow Soils," The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 23, 2019.

Zemba S., Roakes H., "PFAS Cycling Between Landfills and Wastewater Treatment Plants," The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 23, 2019.

Roakes H., Zemba S., and Beecher N., "PFAS Leachability from Soils: Principles, Regulatory Review, and Considerations for Site Investigations," The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 23, 2019.

Corenthall L., Roakes H., Sheehan A., and Zemba S., "Light Non-Aqueous Phase Liquid (LNAPL) Site Closure Using Non-Traditional Field Data and Analysis," (Poster Presentation) The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 22, 2019.

Zemba, S., PFAS – Here, There, and Everywhere. Presentation at the ACEC of Vermont 4th Annual Environmental Protection Technical Workshop, Burlington, Vermont, October 17, 2019.

Zemba, S., PFAS Cycling Between Landfills and WWTPs. Presentation at the Colorado SWANA 2019 Annual Conference, Rocky Mountain Chapter, Colorado Springs, Colorado, October 1-2, 2019.

Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. New England PFAS Workshop, American Groundwater Trust, Westford, MA, September 18, 2019

Zemba, S. and Steinhauer, E. (2019). PFAS and Landfills: Science, Policy and Risk Management. Presentation at the 21st Annual Joint Fall Conference, SWANA Keystone Chapter & PA Waste Industries Association, Harrisburg, Pennsylvania, September 4-5, 2019.

Zemba, S. (2019). PFAS Cycling Between Landfills and WWTPs. Presentation at the EREF Summit on PFAS in Leachate, Ypsilanti, Michigan, August 14-15, 2019.

Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Other Emerging Contaminants, American Groundwater Trust, Albuquerque, NM, July 24, 2019

Abell, R., Thurlow, M., and Zemba, S. (2019). PFAS: State Regulation, Litigation, Recent. Strafford webinar, July 16, 2019.

Mittleman, A., and Zemba, S. (2019). Atmospheric Deposition as a Source of Contamination at PFAS-Impacted Sites. Transportation Research Board, Sustainable Resource Conservation & Recovery in Transportation, Washington, DC, July 15, 2019.

Roakes, H. and Zemba, S. (2019). PFOA Fate and Transport: Considering Soil as a Potential Reservoir for PFOA in the Environment. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601867

- Roakes, H. and Zemba, S. (2019). PFOA Fate and Transport: Considering Soil as a Potential Reservoir for PFOA in the Environment. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601867.
- Damiano L. and Zemba, S. (2019). Comparison of Greenhouse Gas Emissions: Waste-to-Energy vs. Landfilling. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #602309.
- Zemba, S. and Roakes, H. (2019). PFAS Cycling Between Landfills and WWTPs. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601793.
- Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to PFAS Soil and Groundwater Contamination. Panel Session Per and Polyfluoroalkyl Substances (PFAS): Specific Technical Challenges, Litigation, and Solutions. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601793.
- Zemba, S., and Roakes, H. (2019). PFAS Cycling Between Landfills and WWTPs. NY Federation of Solid Waste & Recycling Conference. Bolton Landing, NY, May 19-22, 2019.
- Damiano, L. and Zemba, S. (2019). Comparison of Greenhouse Gas Emissions: Waste-to-Energy vs. Landfilling. NY Federation of Solid Waste & Recycling Conference. Bolton Landing, NY, May 19-22, 2019.
- Abell, R., Thurlow, M., and Zemba, S. (2019). PFAS: State Regulation, Litigation, Recent. Strafford webinar, May 16, 2019.
- Zemba, S. (2019). A Primer on PFAS: A Contaminant Emerged. Presentation to the Ohio Utility Group, Columbus, OH, May 9, 2019.
- Zemba, S., and Zevitas, C. (2019). Atmospheric deposition as a source of contamination at PFAS-impacted Sites. ACEC-NC, PFAS and Other Emerging Contaminants Conference, Raleigh, NC, April 23, 2019.
- Estabrooks, M., and Zemba, S. (2019), Siloxanes in the Waste Stream – Environmental and Financial Impacts. A&WMA EM Magazine, March 2019.
- Little, H., and Zemba, S. (2019), Landfill Gas-to-Energy – Evaluating Level of Risk from Formaldehyde Emissions. A&WMA EM Magazine, March 2019.
- Zemba, S., Abell, R., and Roakes, H. (2019), Landfills—Be Aware of Emerging Contaminants!. A&WMA EM Magazine, March 2019.
- Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Perfluorochemicals Groundwater Contamination Conference, American Groundwater Trust, Mount Laurel, NJ, March 6, 2019.
- Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Pittsburgh, PA PFAS Workshop., American Groundwater Trust, Canonsburg, PA, March 4, 2019.
- Zemba, S. (2019). A Primer on PFAS: A Contaminant Emerged. Presentation at the 4C HSE Conference, Austin, TX, February 6-8, 2019.
- Zemba, S., et al. (2018), Health Risk Assessment Perspectives on PCBs in Building Materials and Indoor Air. Environmental Business Council of New England PCB Management Program – Emerging Issues in PCB Management for Buildings and the Environment, Providence, RI, September 6, 2018.

- Zemba, S. and Abell, R. (2018). Comments on the June 23, 2018 draft Toxicological Profile for Perfluoroalkyls. Submitted to the Agency for Toxic Substances Registry, August 20, 2018. Docket ATSDR-2015-0004.
- Abell, R., Kray, J., Thurlow, M., and Zemba, S. (2018). PFAS Contamination: Evolving State and Federal Regulatory Landscape, Litigation, and Due Diligence in Transactions. Strafford webinar, August 7, 2018.
- Beecher, N., Zemba, S., and Lee, L. (2018). PFAS, Wastewater, and Biosolids Management, Water Environment Federation webcast, August 1, 2018.
- Zemba, S., et al. (2018). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Perfluorochemicals Groundwater Contamination Conference, American Groundwater Trust. Grand Rapids, MI, July 26, 2018.
- Zemba, S., et al. (2018). Health Risk Assessment Perspectives on PCBs in Building Materials and Indoor Air. Environmental Business Council of New England PCB Management Program – Managing PCB Impacted Building Materials, Boston, MA, July 17, 2018.
- Zemba, S. (2018). Comments on the June 22-23, 2018 Per- and Polyfluoroalkyl Substances New England Community Engagement meeting, submitted to the U.S. Environmental Protection Agency, July 10, 2018. Docket EPA-OW-2018-0270.
- Little, H, Zemba, S, and Damiano, L. (2018). Derivation of Risk-based Emission Limits for Formaldehyde from Landfill Gas-to-Energy Engine Emissions. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.
- Zemba, S. and Muniz, P. (2018). Case Study of Residential Redevelopment and PCB Encapsulation. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.
- Zemba, S. and Muniz, P. (2018). Assessing Risks of Using Soils in Landfills as Cover. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.
- Roakes, H., Zemba, S. and Abell, R. (2018). PFAS and the Solid Waste Industry. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.
- Estabrooks, M. and Zemba, S. (2018). Siloxanes: Impact on Landfill Gas Engine-Generator Air Emissions. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.
- Damiano, L. and Zemba, S. (2018). Management of Mildly-Contaminated Soil Outside of Landfills. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.
- Zemba, S. (2018). A Primer on PFAS: A Contaminant Emerged. 4C HSE Conference, San Antonio, TX, April 3, 2018. Zemba, S. (2018). Formaldehyde: A New Concern for Air Permitting? 4C HSE Conference, San Antonio, TX, April 3, 2018.
- Zemba, S., D. Adams, Reuse of Contaminated Soils as Alternate Daily Cover at Landfills. A&WMA EM Magazine, March 2018.
- Zemba, S., I. Cooper, M. Thurlow, F. Boodoo, J. Matthis, P. Stanford, S. Koenigsberg, Emerging Contaminants Found in Landfill Leachate Panel, International Solid Waste Conference, Annapolis (Washington, D.C.), March 12, 2018
- Thurlow, M., R. Abell and S. Zemba, PFAS Contamination Remains a Hot-Button Issue: Overview of Recent Regulatory, Litigation, and Technical Developments. American Bar Association, Section of Environment, Energy, and Resources, Committee Articles, December 15, 2017.
- Zemba, S. (2017). PFAS and Landfills. Norwich University, Northfield, VT, SWANA Northern New England Chapter meeting, October 24, 2017.

- Roakes, H., and Zemba, S., "PFAS Fate and Transport – A Heuristic Model for Understanding PFAS in the Environment," presented at the AEHS Foundation East Coast Conference, Amherst, MA, October 18, 2017.
- Damiano, L., and Zemba, S. (2017). Environmental Benefits and Impacts of Recovering Energy from Biogas. Southern New England SWANA Fall Breakfast, Amherst, MA, October 16, 2017.
- Zemba, S.G. (2017). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Perfluorochemicals Groundwater Contamination Conference, American Ground Water Trust, Cincinnati, OH, September 13, 2017.
- Zemba, S.G. (2017). Air Quality Impacts and Health Risks from Hot Mix Asphalt Plant Emissions. National Asphalt Pavement Association, Midyear Meeting, Chicago, IL, July 18, 2017.
- Thurlow, M., R. Abell and S. Zemba, Emergence of PFAS: A Public Health Concern? Webinar, American Bar Association, July 11, 2017.
- Zemba, S.G. (2017). Energy from Waste: Many Types, Many Challenges, Future Strategies. A&WMA's 110th Annual Conference and Exhibition, Pittsburgh, PA, June 5-8, 2017.
- Zemba, S.G. and Damiano, L.L. (2017). PFAS Contamination of Groundwater by Airborne Transport and Deposition. A&WMA's 110th Annual Conference and Exhibition, Pittsburgh, PA, June 5-8, 2017.
- Zemba, S.G., and Saikaly, R. (2017). Health Risks from Fugitive Petcoke Dust Emissions. A&WMA's 110th Annual Conference and Exhibition, Pittsburgh, PA, June 5-8, 2017.
- Roakes, H., and Zemba, S., "The Emergence of PFAS," presented at the Suzanne D. LaLonde Institute session of the Federation of New York Solid Waste Associations Solid Waste/Recycling Conference and Trade Show, Bolton Landing, NY, May 23, 2017.
- Damiano, L., and Zemba, S. (2017). What's the Best Way to Manage Landfill Gas? EM – The Magazine for Environmental Managers, Air & Waste Management Association, March 2017.
- Zemba, S.G. (2016). Background on PFC Composition, Sources, Transport & Fate, and Toxicity. Environmental Business Council of New England, New Hampshire Chapter Program: Update on Management of PFCs, November 18, 2016.
- Zemba, S., and Roakes, H. (2016). The Emergence of PFCs. NEWWA -2016 Water Resources and Sustainability Symposium, Devens, MA, October 27, 2016.
- Zemba, S., and Estabrooks, M. (2016). Air Emissions from Landfill-Gas-to-Energy Engines: A Health Risk? A&WMA's 109th Annual Conference and Exhibition, New Orleans, LA, June 20-23, 2016.
- Zemba, S.G. (2016). Can Air Pollution Sources Adversely Affect Soil and Vegetation? A&WMA's 109th Annual Conference and Exhibition, New Orleans, LA, June 20-23, 2016.
- Zemba, S., and Damiano, L. (2016). Air Emissions from Landfill-Gas-to-Energy Engines: A Health Risk? Federation of New York Solid Waste Association Solid Waste & Recycling Conference, May 18, 2016.
- Estabrooks, M.E., and Zemba, S.G.(2016). Siloxanes: Impact on LFG Engine-Generator Air Emissions. Webinar sponsored by the Solid Waste Association of North America (SWANA), March 30, 2016.
- Zemba, S.G. (2013). Global, Synoptic, and Local Scale Circulation. Guest Lecture at the 1.725 Chemicals in the Environment: Fate and Transport, Massachusetts Institute of Technology, Cambridge, MA, November 12.

- Zemba, S.G. and Lester, R. R. (2013). Application of USACE Dredged Material Management Decisions (D2M2) Model to Manage Contaminated Sediments. Podium presentation at the AEHS Annual Conference on Soils, Sediments, Water and Energy, Amherst, MA, October 21-24.
- Zemba, S., Green, L., and Peters, N. (2013). Landfill Gas Combustion: Evaluating Health Risks and Neighborhood Concerns. Podium presentations at the Annual Conference, New York Federation of Solid Waste Associations, Bolton Landing, NY, May 5-8 and Solid Waste Association of North America Wastecon Conference, Long Beach, CA, September 17-19.
- Zemba, S. and Green, L. (2012). PCBs in the indoor environment. Poster presentation at the Annual Meeting, Society for Risk Analysis, San Francisco, CA, December 9-12.
- Zemba, S.G. (2012). Implications of the 1-Hour National Ambient Air Quality Standard for NO₂. Podium presentation at the Annual Conference, New York Federation of Solid Waste Associations, Bolton Landing, NY, May 20-23.
- Zemba, S.G. (2012). Health Risk Assessment Perspectives on PCBs in Building Materials and Indoor Air. Invited presentation at the meetings Managing PCB Contaminated Caulking in Older Buildings, organized by the New England Environmental Business Council, and held at E.L. Harvey & Sons, Westborough, MA, March 2, Northeast Utilities, Berlin, CT, May 1, Adler Pollock & Sheehan, Providence, RI, October 23, and PSNH Energy Park, Manchester, NH, November 28.
- Zemba, S.G. (2011). Global, Synoptic, and Local Scale Circulation. Guest Lecture at the 1.725 Chemicals in the Environment: Fate and Transport, Massachusetts Institute of Technology, Cambridge, MA, November 15.
- Zemba, S. (2011). Relative Risk of Radionuclide Releases: Nuclear vs. Coal-Fired Power Plants. Podium presentation at the SETAC North America 32nd Annual Meeting, Hynes, Convention Center, Boston, MA, November 13-17.
- Zemba, S.G., Ames, M.A., and Sullivan, D.M. (2011). PCBs Exposure via Indoor Air. Poster presentation at the 21st Annual Meeting of The International Society of Exposure Science, Advances Exposure Science for Environmental Health, Baltimore, MD, October 23-27.
- Zemba, S.G. and Lester, R.R. (2011). Vegetable Ingestion Pathway at Contaminated Waste Sites. Podium presentation at the 21st Annual Meeting of The International Society of Exposure Science, Advances Exposure Science for Environmental Health, Baltimore, MD, October 23-27.
- Zemba, S.G. and Matthews, B. (2011). Multipathway Exposure Assessment of Hazardous Air Pollutants Emissions Workshop. 21st Annual Meeting of The International Society of Exposure Science, Advances Exposure Science for Environmental Health, Baltimore, MD, October 23-27.
- Zemba, S.G. (2011). Relevance of the Vegetable Ingestion Pathway in Contaminated Soil Risk Assessment. Podium presentation at the 27th Annual International Conference on Soils, Sediments, Water and Energy, University of Massachusetts, Amherst, MA, October 17-20.
- Zemba, S., Green, L., Ames, M., Hunt, G., and Sullivan, D. (2011). PCBs in Indoor Environments. Poster presented at Sustainable Remediation 2011, Amherst, MA, June 1-3.
- von Stackelberg, K., Zemba, S., Lester, R., Yatsalo, B., and Didenko, V. (2011). Use of a Spatial Decision Support System to Integrate GIS, Environmental Models, Decision Analysis Tools, and Stakeholder Preferences. Poster presented at Sustainable Remediation 2011, Amherst, MA, June 1-3.
- Zemba, S. and Ames, M. (2010). Considering potential health risks in the design of novel solid waste management facilities. Poster presentation, Annual Meeting, Society for Risk Analysis, Salt Lake City, UT, December 5-8.

- Zemba, S., Ames, M., Linkov, I., and Palma, J. (2010). Can dioxin sources be differentiated by congener profiles, and does it matter? Poster presentation, Annual Meeting, Society for Risk Analysis, Salt Lake City, UT, December 5–8.
- Zemba, S.G., Ames, M.R., and Green, L.C. (2010). Determining whether landfill gas poses risks to health. In: Proceedings of the WASTECON 2010 conference, Solid Waste Association of North America, Boston, MA, August 15-18.
- Green, L., Zemba, S., and Ames, M. (2010). Waste-to-Energy Facilities: MSW and Woodwaste Health Risk Assessments. Environmental Business Council, Westborough, MA, July 21.
- Zemba, S.G. (2010). Air Quality Issues: Beyond the Fenceline. Presentation at the Environmental Breakfast Club meeting hosted by Young Sommer LLC, Albany, NY, March 5.
- Zemba, S. (2009). Symposium: Risk Management Application in the Cement Manufacturing Industry. Annual Meeting, Society for Risk Analysis, Baltimore, MD, December 6–9.
- Zemba, S., Ames, M., Bennett, E., and Palma, J. (2009). Risk assessment of hazardous air pollutants from cement kilns: case study of a facility with extensive emission data. Annual Meeting, Society for Risk Analysis, Baltimore, MD, December 6–9.
- Zemba, S., Ames, M., and Green, L. (2009). What's in landfill gas; why does it smell; is it hazardous to breathe? Annual Meeting, Society for Risk Analysis, Baltimore, MD, December 6–9.
- Zemba, S., Crouch, E., and Lester, R. (2009). Perspectives on Vapor Intrusion, Brown Bag Seminar Series, Army Corps of Engineers, New England District, Concord, MA, November 6.
- Zemba, S. (2009). Invited panelist, Trends and the Relevancy of Risk Assessment Today. Joint Conference: International Thermal Treatment Technologies (IT3) & Hazardous Waste Combustors (HWC), Air & Waste Management Association, Cincinnati, OH, May 18-21.
- Ames, M.R. and Zemba, S.G. (2009). Landfill Gas Combustion and a Possible 1-hour NAAQS for SO₂, New York Federation of Solid Waste Associations Conference, Bolton Landing, NY, May 3-6.
- Zemba, S.G. and Green, L.C. (2009). What's in Landfill Gas? Why Does it Smell? How Do We Model its Impacts? New York Federation of Solid Waste Associations Conference, Bolton Landing, NY, May 3-6.
- Zemba, S.G. (2008). Symposium: Vapor Intrusion: Challenges, Risks, and Uncertainties. Annual Meeting, Society for Risk Analysis, Boston, MA, December 7–10.
- Zemba, S.G. (2008). Data and decision analysis in the context of vapor intrusion. Annual Meeting, Society for Risk Analysis, Boston, MA, December 7–10.
- Zemba, S.G. (2008). Health risk assessment perspectives on waste-to-energy. Paper presented at the 101st Annual Meeting of the Air & Waste Management Association, Portland, OR, June 24-27.
- Zemba, S., Ames, M., and Hendrix, S. (2008). Recent Observations on Risk Assessments of Combustor Stack Emissions. Air & Waste Management Association International Thermal Treatment Technologies Specialty Conference, Montreal, Quebec, Canada, May 12-16.
- Linkov, I. and Zemba, S. (2008). Nanotechnology & Risk Assessment. New York Federation of Solid Waste Associations Conference, Bolton Landing, NY, May 4-7.
- Zemba, S., Linkov, I., Satterstrom, S., Bullister, E., and DiNardi, S. (2007). Health and Environmental Simulation. American Industrial Hygiene Association Conference (AIHce 2007), June 2-7.
- Zemba, S.G. (2005). Indoor Air Pathway: Risk Management and Characterization Issues. Meeting of the Massachusetts Licensed Site Professional Association, March 8.

- Zemba, S.G. (2004). Context-Based Benchmarks for Indoor Air Evaluation. 20th Annual International Conference on Soils, Sediments, and Water, Amherst, MA, October 18-21.
- Zemba, S., Green, L., and Ames, M. (2002). Particulate (Composition) Matters. Air and Waste Management Association, Hazardous Waste Combustors Specialty Conference, St. Louis, MO, April 17-19.
- Green, L.C. and Zemba, S.G. (2002). Quantitative health risk assessment: the devil is in the details. Paper presented at the 10th Section Fall Meeting of the American Bar Association, Section of Environment, Energy, and Resources. Portland, Oregon.
- Zemba, S.G. and Green, L.C. (1999). Special topics in risk assessment: models and uncertainties. In: A Practical Guide to Understanding, Managing and Reviewing Risk Assessment Reports, D.A. Belluck, and S.L. Benjamin, Chelsea, MI: Lewis Publishers.
- Zemba, S.G. (1996). Atmospheric deposition of nitrogen compounds to the Massachusetts Bays. At: Atmospheric Deposition to the Great Waters Specialty Conference, Niagara Falls, NY, October 28-30.
- Zemba, S.G., Underhill, J.T., and Sorensen, J.A. (1996). Measurements of mercury in precipitation at Nahant, MA. At: Atmospheric Deposition to the Great Waters Specialty Conference, Niagara Falls, NY, October 28-30.
- Zemba, S.G., Underhill, J.T., and Sorensen, J.A. (1994). Measurements of mercury in precipitation at Nahant, Massachusetts. Poster presented at the ninth annual Boston Harbor/Massachusetts Bay Symposium, March 24-25.
- Underhill, J.T., Golomb, D.S., Zemba, S.G., Ryan, D.K., Eby, N., and Wade, T.L. (1994). Atmospheric deposition to Massachusetts Bays. Presented at the ninth annual Boston Harbor/Massachusetts Bay Symposium, March 24-25.
- Zemba, S.G., Golomb, D.S., Underhill, J.T., Ryan, D.K., and Eby, G.N. (1993). Assessing the role of atmospheric deposition of nitrogen compounds. Presented at the eighth annual Boston Harbor/Massachusetts Bay Symposium, March 31-April 1.
- Ryan, D.K., Eby, G.N., Golomb, D.S., Wade, T.L., and Zemba, S.G. (1993). Atmospheric deposition of contaminants onto Massachusetts and Cape Cod Bays. Poster presented at the eighth annual Boston Harbor/Massachusetts Bay Symposium, March 31-April 1.
- Zemba, S.G. (1993). Simulink™ applications to indoor air dispersion modeling. Presented at the Matlab User's Conference, Cambridge, MA, October 18-20.
- Green, L.C. and Zemba, S.G. (1993). Incorporating site-specific assumptions in risk-based regulations. Poster presented at Comparative Risk Analysis and Environmental Priority Setting, Keystone, CO, June 6-11.
- Luis, S.J. and Zemba, S.G. (1993). Estimating the impact of source depletion on long-term risk assessments. In: Hydrocarbon Contaminated Soils, Volume III. Boca Raton, FL: Lewis Publishers.
- Zemba, S.G., Crouch, E.A.C., and Green, L.C. (1993). An integrated approach to meeting risk-based cleanup goals at a lead-contaminated site. At: 86th Annual Meeting of the Air & Waste Management Association, Denver, CO, June 13-18.
- Zemba, S.G. and Pilkington, M.B.G. (1992). Estimating risks pose by contaminated soils: A comparison to two exposures routes. In: Hydrocarbon Contaminated Soils, Volume II. Boca Raton, FL: Lewis Publishers.

- Zemba, S.G., Crouch, E.A., and Pilkington, M.B.G. (1992). The effect of "hot spots" in determining exposure concentrations in soils. Presented at the Symposium on Superfund Risk Assessment in Soil Contamination Studies Conference, New Orleans, LA, 26-31, January.
- Zemba, S.G., Golomb, D.S., Dacey, J.W., and Michaels, A.F. (1992). Implications of deep sea disposal of CO₂. Presented at the Ocean Sciences Meeting of the American Geophysical Union, New Orleans, LA, 30, January. Abstract:EOS 72(51).
- Pilkington, M.B.G. and Zemba, S.G. (1992). Deposition modeling of chlorinated dioxins and furans. Presented at the International Symposium on Measurement of Toxic and Related Air Pollutants, Durham, NC, 3-8 May.
- Zemba, S.G., Jaffe, D., Green, L.C., and Robinette, M. (1992). Uncertainty in ecological risk assessment: An alternate interpretation of PCB contamination at a superfund site. Presented at the 85th Annual Meeting of the Air and Waste Management Association, 21-26 June, Paper No. 92-180.29P.
- Pilkington, M.B.G., Zemba, S.G., Crouch, E.A.C., and Green, L.C. (1992). A visual tool for assigning site-related soil contaminants at a superfund site. Presented at the 85th Annual Meeting of the Air and Waste Management Association, 21-26 June, Paper No. 92-180.28P.
- Jaffe, D.H., Zemba, S.G., Parsons, A.H., and Robinette, M. (1992). Ecological risk assessment of a PCB-contaminated marsh: How should wildlife exposures be estimated? Presented at the SETAC 13th Annual Meeting, 8-12 November, Paper No. 27039.
- Zemba, S.G. and Parsons, A.H. (1992). Implications of sediment quality criteria (SQC) as surrogates for ambient water quality criteria (AWQC). Presented at the SETAC 13th Annual Meeting, 8-12 November, Paper No. 27040.
- DeVoto, E., Pilkington, M.B.G., Sundstrom, S., and Zemba, S.G. (1991). Exposures to mercury: The importance of waste-to-energy facilities. Presented at the Measurement of Toxic and Related Air Pollutants conference sponsored by the Air and Waste Management Association, Durham, NC, pages 1077-1082.
- Crouch, E.A.C., Green, L.C., and Zemba, S.G. (1990). Estimation of health risk from landfill gas emission. Presented at the GRCDA 13th Annual International Landfill Gas Symposium, Lincolnshire, IL, pages 87-94.
- Zemba, S.G. and Fay, J.A. (1988). Seasalt contribution to wet cation concentrations in precipitation. Presented at the Fall meeting of the American Geophysical Union, San Francisco, CA, 5 December. Abstract:EOS 69(44).
- Fay, J.A. and Zemba, S.G. (1986). A conservative method for estimating gas concentrations in dense gas plumes. Presented at the 79th annual meeting of the Air Pollution Control Association, 22-27 June.
- Fay, J.A. and Zemba, S.G. (1984). The lateral extent of a dense gas plume near the source. Presented at the International Conference on Modeling Environmental Flows, American Society of Mechanical Engineers.
- Green, L.C., Crouch, E.A.C., and Zemba, S.G. (in press). Cremation, air pollution, and special use permitting: a case study. Human and Ecological Risk Assessment.
- Golomb, D., Zemba, S. and Arak, L. (2013). Lowering The Carbon Footprint Of A Traditional Fossil-fuel Power Plant Application of AERMOD to Model Air Toxics Impacts from an Intermodal Freight Facility. In: Proceedings of the Air and Waste Management Association Climate Change Conference, Herndon, VA, September 10-11.

- Zemba, S. and Porter, C. (2013). Application of AERMOD to Model Air Toxics Impacts from an Intermodal Freight Facility. In: Proceedings of the Air and Waste Management Association Annual Conference and Exhibition, Chicago, IL, June 25-28.
- Porter, C. and Zemba, S. (2013). Improving Health Benefit Estimation of Air Pollutant Emission Reductions for Transportation Projects. In: Proceedings of the Air and Waste Management Association Annual Conference and Exhibition, Chicago, IL, June 25-28.
- Zemba, S., Green, L., Miller, M., and Crouch, E. (2013). Pink Sky in the Morning, Should There be a Warning? In: Proceedings of the North American Waste-to-Energy Conference (NAWTEC 21), Fort Myers, FL, April 21-15.
- Palma-Oliveira, J., Zemba, S.G., Ames, M.R., Green, L.C., and Linkov, I. (2012). Uncertainty in multi-pathway risk assessment for combustion facilities. *Human and Ecological Risk Assessment* 18(3):501-516.
- Zemba, S. Ames, M. and Palma-Oliveira, J. (2012). Characterization of Air Toxics Emissions from Extensive Stack Testing of a Portland Cement Manufacturing Facility In: Proceedings of the Air and Waste Management Association Annual Conference and Exhibition, San Antonio, TX, June 19-22.
- Zemba, S.G. (2012). Do Odors at a Waste Management Facility Indicate a Risk to Health? In: Proceedings of the North American Waste-to-Energy Conference (NAWTEC 20), Portland, ME, April 23-25.
- Ames, M., Zemba, S., Green, L., Botelsho, M.J., Gossman, D., Linkov, I., and Palma-Oliveira, J. (2012). Polychlorinated dibenzo(p)dioxin and furan (PCDD/F) congener profiles in cement kiln emissions and impacts. *Science of the Total Environment* 419:37-43.
- Zemba, S.G., Ames, M.R., and Green, L.C. (2011). Modeling and measuring impacts from ash landfilling: Using data to inform regulatory policy. In: Proceedings of the North American Waste-to-Energy Conference (NAWTEC 19), Lancaster, PA, May 16-18.
- Collier, Z.A., Vogel, J.T., Zemba, S.G., Ferguson, E.A., and Linkov, I. (2011). Management tools for managing vapor intrusion. *Environ Sci Technol* 45(20):8611-12.
- Zemba, S., Ames, M., Green, L., Botelho, M., Gossman, D., Linkov, I., and Palma-Oliveira, J. (2011). Emissions of metals and polychlorinated dibenzo(p)dioxins and furans (PCDD/Fs) from Portland cement manufacturing plants: Inter-kiln variability and dependence on fuel types. *Science of the Total Environment* 409(20):4198-4205.
- Zemba, S.G., Binder, J.J., Ames, M.R., and Lester, R.R. (2010). A risk assessment framework for evaluating health risks from new and emerging waste management technologies. In: Proceedings of the North American Waste-to-Energy Conference (NAWTEC 18), Orlando, FL, May 11-13.
- Zemba, S., Ames, M., and Green, L. (2009). Waste-to-Energy Combustors: two sets of pollutants; two different stories. In: Proceedings of the Joint Conference: International Thermal Treatment Technologies (IT3) & Hazardous Waste Combustors (HWC), Air & Waste Management Association, Cincinnati, OH, May 18-21.
- Ames, M.R. and Zemba, S.G. (2009). Difficulties Demonstrating Compliance With a Possible One-Hour NAAQS For SO₂. Joint Conference: International Thermal Treatment Technologies (IT3) & Hazardous Waste Combustors (HWC), Air & Waste Management Association, Cincinnati, OH, May 18-21.

- Zemba, S., Ames, M., and Hendrix, S. (2008). Recent Observations on Risk Assessments of Combustor Stack Emissions. Air & Waste Management Association International Thermal Treatment Technologies Specialty Conference, Montreal, Quebec, Canada, May 12-16.
- Zemba, S.G. and Ames, M.R. (2006). Risk assessment perspectives on dispersion modeling. EPA/Air & Waste Management Association Guideline on Air Quality Models Conference, Denver, CO, April 26-28.
- Zemba S.G., Crouch E.A.C., Sahay S.R., Vanderhoff E., Donovan A. (2005) Background Study of Arsenic Concentrations at a Rhode Island Site. In: Calabrese E.J., Kostecki P.T., Dragun J. (eds) Contaminated Soils, Sediments and Water. Springer, Boston, MA
- Zemba, S.G., Crouch, E.A.C., Sahay, S.R., Vanderhoff, E., and Donovan, A. (2003). Background Study of Arsenic Concentrations at a Rhode Island Site. 19th Annual International Conference on Soils, Sediments, and Water, Amherst, MA, October 20-23.
- Ames, M.R. and Zemba, S.G. (2003). HWC Risk Assessments: Ruled by Uncertainty. Air & Waste Management Association Specialty Conference on Hazardous Waste Combustors, Charleston, SC, April 1-2.
- Zemba, S.G. (2003). Perspectives on Health Risk Assessments under Superfund. American Bar Association, Superfund Hazardous Waste Committee, Newsletter, vol. 4, no. 2.
- Zemba, S.G., Ames, M.R., and Green, L.C. (2002). Particulate (composition) matter(s). Air and Waste Management Association, Hazardous Waste Combustion Specialty Conference, St. Louis, MO, April 17-19.
- Ames, M.R., Zemba, S.G., Yamartino, R.J., Valberg, P.A., and Green, L.C. (2002). Comments on "Using CALPUFF to Evaluate the Impacts of Power Plant Emissions in Illinois: Model Sensitivity and Implications." Atmospheric Environment 36:2263-2265.
- Zemba, S., Ames, M., Alvarado, M., Gossman, D., Woodford, J., and Chrispell, C. (2001). Evaluating the Consequences of Mercury Emissions from a Point Source. Air & Waste Management Association Specialty Conference on Mercury Emissions: Fate, Effects, and Control, Chicago, IL, August 20-23.
- Golomb, D., Ryan, D., Eby, N., Underhill, J., and Zemba, S. (1997). Atmospheric deposition of toxics onto Massachusetts Bay. I. Metals. Atmospheric Environment 31(9):1349-1359.
- Golomb, D., Ryan, D., Underhill, J., Wades, T., and Zemba, S. (1997). Atmospheric deposition of toxics onto Massachusetts Bay. II. Metals. Atmospheric Environment 31(9):1361-1368.
- Zemba, S.G. (1996). Atmospheric deposition of nitrogen compounds to the Massachusetts Bays. In: Atmospheric Deposition to the Great Waters, VIP-72, Proceedings of an Air & Waste Management Conference, p. 48-62.
- Zemba, S.G., Underhill, J.T., and Sorensen, J.A. (1996). Measurements of mercury in precipitation at Nahant, MA. In: Atmospheric Deposition to the Great Waters, VIP-72, Proceedings of an Air & Waste Management Conference, p. 113-123.
- Golomb, D., Ryan, D., Underhill, J., Wade, T., and Zemba, S. (1996). Atmospheric deposition of polycyclic aromatic hydrocarbons onto Massachusetts Bay. In: Atmospheric Deposition to the Great Waters, VIP-72, Proceedings of an Air & Waste Management Conference, p. 228-237.
- Zemba, S.G., Green, L.C., Crouch, E.A.C., and Lester, R.R. (1996). Quantitative risk assessment of stack emissions from municipal waste combustors. J. of Haz. Materials 47:229-275.

- Zemba, S.G., Crouch, E.A.C., and Green, L.C. (1993). An integrated approach to meeting risk-based cleanup goals at a lead-contaminated site. In: Proceedings of the 86th Annual Meeting of the Air & Waste Management Association, Denver, CO, June 13–18.
- Zemba, S.G., Golomb, D.S., Ryan, D.K., Eby, G.N., Underhill, J.T., and Wade, T.L. (1993). Annual deposition of pollutants to the Massachusetts Bays. *Eos*, April 20 supplement:79.
- Green, L.C., Crouch, E.A.C., Zemba, S.G., and Parsons, A.P. (1992). Estimating exposures to dioxin-like compounds. Letter to Editor. *Municipal Solid Waste News* 14(11):13-14.
- Zemba, S.G. and Green, L.C. (1992). Perspectives on mercury. *Solid Waste and Power* 6(3):38–44.
- Golomb, D.S., Zemba, S.G., Dacey, J.W.H., and Michaels, A.F. (1992). The fate of CO₂ sequestered in the deep ocean. *Energy Convers. Mgmt.* 33(5-8):675-683.
- Zemba, S.G., Fay, J.A., and Golomb, D.S. (1991). The nature of time-averaged measurements of ozone concentrations. Presented at the Tropospheric Ozone and the Environment II: Effects, Modeling and Control and the Response of Southern Commercial Forests to Air Pollution.
- Herzog, H., Golomb, D., and Zemba, S. (1991). Feasibility, modeling and economics of sequestering power plant CO₂ emissions in the deep ocean. *Environmental Progress* 10:64–74.
- Crouch, E.A.C., Zemba, S.G., Pilkington, M.B.G., and Menzie, C.A. (1990). Distributions of metals in soils and their implication for risk assessment. The "How Clean is Clean" conference sponsored by the Air and Waste Management Association, Boston, MA, pages 202-220.
- Zemba, S.G., Fay, J.A., and Golomb, D.S. (1990). Ground-level ozone in Eastern North America: Its formation and transport. M.I.T. Energy Lab Report MIT-EL-90-002.
- Zemba, S.G. (1989). A seasonally averaged model of boundary layer ozone for eastern North America, Massachusetts Institute of Technology, Ph.D. Thesis.
- Fay, J.A., Golomb, D., and Zemba, S.G. (1989). Observed and modeled trend of sulfate and nitrate in precipitation in Eastern North America. *Atmospheric Environment* 23(8): 1863–1866.
- Zemba, S.G., Golomb, D., and Fay, J.A. (1988). Wet sulfate and nitrate deposition patterns in Eastern North America. *Atmospheric Environment* 22(12):2751–2761.
- Fay, J.A., Golomb, D.S., Galeucia, G., Poole, P., and Zemba, S.G. (1988). Seasonal/episodic control of acid deposition. M.I.T. Energy Lab Report MIT-EL-88-0
- Fay, J.A., Golomb, D., and Zemba, S.G. (1987). A regional model of annual average airborne NO_x. Presented at the APCA Specialty Conference on Ozone, Hartford, CT.
- Fay, J.A. and Zemba, S.G. (1987). Modeling the dispersion of initially compact gas clouds. Proceedings of the International Conference on Vapor Cloud Modelling, Cambridge, MA, pages 439–452.
- Fay, J.A., Golomb, D., and Zemba, S.G. (1987). Use of source apportionment model for designing acid deposition mitigating strategies in Massachusetts. M.I.T. Energy Lab Report MIT-EL-87-005.
- Fay, J.A. and Zemba, S.G. (1986). Integral model of dense gas plume dispersion. *Atmospheric Environment* 20(7):1347–1354.
- Golomb, D. and Zemba, S. (1986). Source apportionment of wet sulfate deposition and airborne sulfur oxides in Cannon County, TN, and Clifton, VA. Energy Laboratory, Massachusetts Institute of Technology.
- Zemba, S.G. (1985). Dense gas plume dispersion. Massachusetts Institute of Technology, Master's Thesis.

Fay, J.A. and Zemba, S.G. (1985). Dispersion of initially compact dense gas clouds. *Atmospheric Environment* 19(8):1257–1261.

TEACHING, PROFESSIONAL COURSE, AND WORKSHOP INSTRUCTION

Multi-Pathway Exposure Assessment, Full-day workshop co-taught at the International Society of Exposure Science Annual Meeting, Baltimore, MD, October 23, 2011.

Multi-Pathway Risk Assessment, Half-day workshop taught at the Society for Risk Analysis Meeting, Salt Lake City, UT, December 5, 2010.

MCP Risk Management, Full-day workshop (co-taught) sponsored by the MA Licensed Site Professional Association, given each of October 13, 2009, March 15, 2010, and February 16, 2012.

MCP ShortForm Short Course, Half-day-day workshop (co-taught) sponsored by the MA Licensed Site Professional Association, given each of May 7, 2008, November 4, 2008, December 17, 2009, September 8, 2011, and May 21, 2013.

Method 3 Risk Characterization, Full-day workshop (co-taught) sponsored by the MA Licensed Site Professional Association, given each of December 15, 2004 and April 6, 2006.