



**J. Andrew Irwin, P.E., LSP, TURP,
CPEA
PRESIDENT/SR. PROJECT MANAGER**

**Professional
Licenses/**

Registrations: Registered Professional Engineer: Massachusetts #38968; New York #062816; Connecticut #21573; Rhode Island #7505; Georgia #034953; and New Hampshire #13346 Licensed Site Professional #9997 (Full License): Massachusetts Certified Toxics Use Reduction Planner: Massachusetts BEAC Certified Professional Environmental Auditor ISO14000 Plus

Experience: Mr. Irwin has over 30 years of professional consulting experience involving chemical and environmental engineering. He has worked with private industrial and commercial companies handling a gamut of environmental issues from process design for operations and permitting for compliance to assessment and remediation of spills, historical releases, or disposal facilities. He has also worked with Universities, Colleges, State and Federal organizations on matters of assessment for contaminated sites and compliance for operating facilities. Through his knowledge of operations, compliance, and remediation, Mr. Irwin brings a practical and useful perspective to evaluation of sites for environmental matters.

Industrial clients have included manufacturers of commodity and specialty chemicals, metal fabrication and finishing, pharmaceuticals, electronics and electrical components, pesticides, petrochemicals, food and beverages, molded plastics, detergents and soaps, steel foundries, aluminum mills, and precious metals refining. He has also worked with a spectrum of attorneys on environmental issues related to corporate acquisitions, property transfers, commercial development, land takings, and enforcement cases.

Education: B.S., Chemical Engineering, Cornell University, 1981
M.Eng, Chemical Engineering, Cornell University, Chevron Fellowship, 1982
HAZOP Studies and other PHA Techniques for Process Safety and Risk Management - AIChE CCPS Exam Course 87/100, Oct. 2-4, 2012.
40-Hour OSHA Health & Safety Training/Supervisor /8-Hr Refresher
ANSI-RAB Advanced Environmental Management Systems Auditor Course
Amtrak Safety Training

KEY PROJECT EXPERIENCE

PROGRAMS AUDITING - Mr. Irwin has managed environmental compliance audits for over 160 commercial, institutional and industrial facilities in New York, Connecticut, Massachusetts and Rhode Island. The audits have addressed technical compliance with a range of regulatory programs including hazardous waste, air emissions, waste water discharge, water supply protection, groundwater protection, emergency and spill response planning, underground storage tanks, storage and handling of flammable and combustible materials, the OSHA Hazard

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Communication Standard and worker Right-to-Know, and reporting under SARA Title III and TURA. Mr. Irwin has performed compliance and EMS audits for several companies participating in the EPA Region I StarTrack Program and EPA Performance Track Program.

FACILITY/PROJECT PERMITTING - Mr. Irwin has assisted numerous clients in modification of existing or design of new, facilities for achieving permit standards for fuel burning and process air emissions, wastewater discharges and hazardous waste treatment operations. Clients have been assisted with preparation of permit applications for the following activities: industrial wastewater discharge to surface waters, groundwater and sewer; storm water discharges; air emissions with BACT controls; hazardous waste TSD operations; solid waste landfill closure; hazardous waste on-site recycling; underground storage tanks and handling of combustible materials; and fuel burning equipment. His experience in chemical process engineering has generated savings for clients through waste reductions, energy conservation, recycling, and process substitutions for pollution prevention.

COMPLIANCE PLANS - Mr. Irwin has managed preparation of more than 200 compliance program documents including the following: emergency response and contingency plans, best management practice plans for NPDES industrial and storm water discharges, toxics use reduction plans, SPCC plans for good engineering practice in handling oil, hazardous waste training programs, hazardous waste management systems, hazard communication programs, and operation & maintenance programs for wastewater treatment systems, air pollution controls, RCRA storage facility operations, RCRA land farming facilities and hazardous waste recycling systems. Mr. Irwin managed development of a Model Integrated Contingency Plan for the Massachusetts Office of Technical Assistance under a grant from the EPA following the National Response Team Guidance Document.

TRAINING - Mr. Irwin has conducted over a dozen site specific and general training programs for clients and groups on topics of hazard communication, environmental auditing, pollution prevention opportunity assessments, hazardous waste management, underground storage tank regulations, and regulations concerning disposal site remediation.

SITE ASSESSMENT & REMEDIATION - Mr. Irwin is responsible for scoping and managing projects involving disposal site investigations, engineering feasibility studies, permitting for air and waste water emissions, and preparation of design plans and specifications for implementation of remedial action programs. He has managed over 200 site assessments under the Massachusetts Contingency Plan. In addition, over 80 sites have been managed through remediation including tank removals, on-site soil treatment, and groundwater treatment systems. Sites have involved a range of contaminants that pose particular challenges to remediation including the following: perchlorate, PCBs; chlorinated solvents; petroleum; and mercury, nickel, copper, zinc, lead, and other heavy metals.

PROCESS ENGINEERING Mr. Irwin has worked on process development, scale up and process engineering for a variety of processes and waste treatment operations. His experiences have focused on system aspects related to process safety, chemical reactions, hydraulics, mixing, heat transfer, surface coating, electroplating, drying, distillation, stripping, chemical oxidation, filtration, ventilation, high purity water, wastewater treatment, and air emission controls.

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Affiliations:**

LSP Association 1993 – present; Board of Directors 2007 – 2011; Technical Practices Committee Chairman 2004-2006; Treasurer 2007–08; President 2009-10; LSPA Member Award - Contribution to the Practice, 2010.

American Institute of Chemical Engineers, 1981 to Present; Boston Section Membership Chairman 1985-86; Program Committee 2003-04; Vice Chairman 2004-05; Chairman 2005-06; AIChE National Gary Leach Award 2006; Elected National AIChE Institute Fellow 2007.

Massachusetts DEP Green Remediation Task Group Member 2012 - present

Toxics Use Reduction Planners Association, Member 1998 – 2008; Board of Directors 1999-2003; President 1999 – 2001; Treasurer 2001-03.

Central Massachusetts Business Environmental Network – Member 2013 – Present; Board of Directors 2015-present.

Massachusetts Chemistry & Technology Alliance - Member 2015 – Present, Board of Directors 2016-present. Treasurer 2017.

ASTM E-50 – Member 1997 – present; E50.04 Task Group on Regulatory Environmental Compliance Auditing Standard Practice 1998-2001.

Massachusetts Superfund Advisory Committee Subcommittee on Short Term Remedial Measures - Chairman, 1989. Member as LSP Association Representative 2010-2011.

Wayland Conservation Commission – Associate 1995-96; Member 1996-2014; Chairman 2010 – 2014.

Employment O'Brien & Gere Engineers, Inc. – 1982 to 1988, *Sr. Project Engineer*
Stone & Webster Engineering Corporation 1988 to 1989, *Sr. Environmental Engineer*
Rizzo Associates, Inc. 1989 – 1995, *Technical Specialist*
Corporate Environmental Engineering, Inc. 1995, *Associate*
IRWIN Engineers, Inc. 1996 to present, *President*

Courses/ Presentations:

Speaker: ***Greener Cleanup Remedy Optimization Leads to Novel In-Situ Perchlorate Treatment***, AEHS UMass Soils Conference, Amherst, MA, November 2016.

Instructor: ***MCP For Everyone***, LSP Association, 5-Hour Continuing Education Course, February 2015 and April 2016.

Instructor: ***Preparing Conclusive MCP Reports***, LSP Association, 6-Hour Continuing Education Course, April 2013, October 2014, November 2014, November 2015 and November 2016.

Panelist: ***Greener Remediation***, Environmental Business Council, November 2013

Speaker: ***Process Hazard Evaluation and Emergency Response Planning and Accident Prevention***, New Hazardous Materials Processing Regulations and Preventive Emergency Planning by Central Massachusetts Business Environmental Network (CMBEN), February 2013.

Instructor: ***Hazardous Materials Processing Workshop For Facilities Preparing Applications For DFS Permits 527 CMR 33.00***, IRWIN Engineers, September and October 2012.

AIChE CCPS Exam Course ***HAZOP Studies and other PHA Techniques for Process Safety and Risk Management*** Grade 87/100, Oct. 2-4, 2012.

Lead Instructor: ***Remediation Waste Management***, LSP Association, 8-Hour Continuing Education Course, December 2009, January 2010 and March 2010.

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Speaker: *Removal of Perchloroethylene within a Silt Confining Layer Using Hydrogen Release Compound*, Presented at the UMASS Annual International Conference on Soils, Sediments, Water and Energy, Amherst, MA, October 20, 2009.
Guest Lecturer: *Plant Design Considerations for Health, Safety & the Environment*, Cornell University, Chemical Engineering Department, Course 462 Plant Design, March 2008, October 2008, March 2009, March 2010, March 2011, March 2012, March 2013, March 2015 and March 2016.

Speaker: *Use of the Conceptual Site Modeling Process to Support MCP Deliverables*, LSP Association, 8-Hour Continuing Education Course, September 2006.

Speaker: *Environmental Regulatory Update – Overview of Changes*, Associated Industries of Massachusetts, AIM Plant Manager Roundtable, Marlborough, MA July 17, 2005.

Speaker: *Recent Developments In The Spill Prevention, Control and Countermeasure (SPCC) Oil Storage And Use Regulations*, Central Massachusetts Business Environmental Network, Worcester, MA June, 2005.

Panel Moderator: *Chemical Engineering as a Launch Platform for Diverse Careers*, American Institute of Chemical Engineers - Boston Section, October 1, 2004.

Speaker: *Recent Developments In The Spill Prevention, Control and Countermeasure (SPCC) Oil Storage And Use Regulations*, Associated Industries of Massachusetts, Marlborough, MA May 19, 2004.

Speaker: *TUR Planning The Consultant's Perspective*, Toxics Use Reduction Institute TUR Planners Course, Sturbridge, MA, March 6, 2003.

Speaker: *Water Regulations Impact on Facility Design and Operation*, Build Boston Conference, Boston, MA November 13, 2002.

Speaker: *Integrated Contingency Plan – Case Study*, EPA SERC and LEPC Symposium, Portland, ME, May 9, 2002.

Speaker: *TUR Through Energy Recovery*, Toxics Use Reduction Institute, Marlboro, MA, March 2002.

Instructor: *ASTM Course on Regulatory Environmental Compliance Audits (E2107-00)* Washington, DC November 2001 and Pittsburgh, PA April 2002.

Presenter: *Spills, Releases, and Your Reporting Requirements* as part of Environmental Regulation Course, Executive Enterprises, Inc. July 1997, 1999, 2000 and 2001.

Presenter: *Environmental Compliance Auditing* as part of Environmental Regulation Course, Executive Enterprises, Inc. July 2000 and 2001

**Publications/
Papers:**

US Patent US9,199,288 B2, Bioremediation of Perchlorate-Contaminated Media, Inventors: Michael T. Saul and Jonathan Andrew Irwin, December 1, 2015.

Irwin, J. Andrew and Marsh, Daniel E. (2010) "Removal of Perchloroethylene within a Silt Confining Layer Using Hydrogen Release Compound," *Proceedings of the Annual International Conference on Soils, Sediments, Water and Energy*: Vol. 15, Article 20.

Irwin, J. A. and S. J. Roberson, "Massachusetts Policy Developments on Short-Term Measures," *Conference Proceedings of Real Estate Site Assessments and Environmental Audits*. Resource Education Institute, Sturbridge, Massachusetts, December 13 and 14, 1989.

Tomik, J. C., J. A. Irwin, and R. C. Ganley. "Chapter 10 - The Disposition of Groundwater," *Hazardous Waste Site Remediation - The Engineers Perspective*, Van Nostrand Reinhold, New York, 1988.