

SUMMARY

Creative, energetic, highly scientific engineer with extensive experience in a broad range of state-of-the-art technologies and processes. Successfully accomplished in developing innovative programs and processes from conception, through scale up including transition through implementation and on-line advanced production/manufacturing systems. Successful in writing project proposals and soliciting for project funding. Proven leadership skills in organizing and coordinating technically diversified cross functional teams. Expertise in conducting and documenting efficient experimental research for specification and policy setting. Experienced in high temperature gas-solid reaction physics including corrosion and oxidation applications. Particular interest in environmental engineering including air quality control, hazardous materials and pollution prevention applications. Positive, progressive disposition and communication skills. Proficient in computer programming and operations. Also skilled in SPC, JIT, and other world class manufacturing practices.

PROFESSIONAL PREPARATION

University	Department	Degree, Year, Honor
Laney College	Electrical and Electronics Department	AS Electrical and Electronic Technology 2017 California Electrician Trainee
University of Cincinnati	Environmental Engineering	PhD, 2001, DOE Fellow
Milwaukee School of Engineering	Manufacturing Processes and Systems	Masters of Science in Engineering, 1988, Dean's Honor List
University of Wisconsin-Madison	Department of Engineering Mechanics	Bachelors of Science, 1983, Dean's Honor Roll

WORK EXPERIENCE AND APPOINTMENTS

[Environmental Health Trust](http://ehtrust.org), <http://ehtrust.org> (December, 2013-present)

Deputy Director of West Coast Programs and Research Engineer

- Develop engineering criteria for Sustainability Standards to reduce impacts from environmental and public health exposures especially in the built environment.
- Conduct educational outreach to provide information and best practices to reduce impacts from environmental and public health exposures.
- Work to advocate and address issues of vulnerable populations.
- Founder and Chair of the [Occupational Environmental Health & Safety Alliance \(OEHSA\)](#) (2014 to present) an organized labor organization and International Alliance that serves and advocates for improved Environmental Health & Safety of workers.
- OSHA 30 32-601368082
- NABCEP Entry Level
- HERS Certified
- State of CA Electrical Trainee T39462

State of California, April 5, 2005 to November 28, 2013 (retired), [Professional Engineers in California Government \(PECG\)](#) member.

***Department of General Services (DGS), Procurement Division,
Environmentally Preferable Purchasing (EPP) (June 3, 2008 to November 28, 2013)
Associate Procurement Engineer***

The Department of General Services (www.dgs.ca.gov) serves as the business manager for the State of California, with more than 4,000 employees and a budget in excess of \$1 billion. DGS helps state government better serve the public by providing services to state agencies including innovative procurement and acquisition solutions, creative real estate management, leasing and design services, environmentally friendly transportation, and architectural oversight and innovative funding for the construction of safe schools.

- Authored key EPP specifications and evaluation methodologies including in: open office panel furniture (Indoor Air Quality) , bio-diesel, disposable food containers, IT servers, office supplies, paper products, printers, auto parts.
- Built and developed cooperative working relationships with Statewide Acquisition Teams to develop EPP purchasing specifications for State bids to reduce environmental impacts on human health and the environment.
- Updated the EPP chapter of State Purchasing Manual. Defined EPP flow and methods for e-procurement.
- Participated on the Corporate Performance Committee for the [EPEAT standard update](#) for multi-functional imaging devices and televisions addressing disclosure of GHGs, waste, water and toxic emissions.
- Participated in the California Department of Public Health [update of the 01350 Standard Method.](#)
- Created and developed creative training materials and conducted college accredited half day [Cal PCA training workshops](#) for State Agency and Other Purchasers to teach and promote the implementation of EPP practices.
- Active member of the West Coast EPP Collaborative working with more than 5 other State government offices on EPP.
- Researched, networked, and collaborated closely with other Agencies, Industry Associations, environmental groups, and academic and other technical experts working in sustainability.
- Gave presentations to the Governor's Green Action Team, CA EPP Task Force, and the State's Sustainability Green Team.

**Department of Public Health, Environmental Health Laboratory Branch (EHLB),
Indoor Air Quality Program (April, 2005 to June, 2008)
Air Pollution Research Scientist,**

- **Technical Development of Guidelines:** Developed technical CDPH Indoor Air Quality Standard provisions, guidelines and best practices for Sustainable Green Building to safeguard building occupants from pollutants emitted from building materials and products.
 - Worked to update [Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.1 \(2010\)](#) "01350 Standard Practice" including sample preparations; chamber test parameters; analytical testing protocols; exposure models and parameters; and science based health threshold limits.
 - Researched new guidelines for standards to reduce toxic exposures from liquid/wet products such as cleaners and paints, and toxic exposures to semi-volatile organic compounds including phthalates, and glycols.
 - Co-hosted and facilitated educational workshops on IAQ Standards development, Life Cycle Assessment.

- **Promoted Integration of CDPH Guidelines in Green Building Frameworks:** Promoted integration of guidelines in Green Building specifications for project designs, architectural construction, and product procurement.
 - Principal author and technical point person of the [CA IAQ Specification for office workstation](#) the CA Department of General Services (DGS) \$64M 3 year procurement contract. Technical support to DGS staff and responded to IAQ questions from bidders, evaluated bidder IAQ submittals.
 - Chair of the Collaborative for High Performance Schools (CHPS) IEQ Committee. Led the 2006 and the 2009 CHPS IEQ Best Practice Manual update. Co-wrote awarded US EPA grant to develop the CHPS Low Emitting Material and EPP electronic database. Gave presentation on specifying High Performance Ventilation Systems.
 - Governor's Green Action Team Environmentally Preferable Purchasing (EPP) Task Force member and Schools Committee member. Subject Matter Expert in the CA EPP Best Practices Manual.
 - Provided technical comments and support to government agencies and other entities in green building code, certification, and eco-label development including for the National Green Building Standards, the California Green Building Standards, Green Seal GS-37, GS-11, GS-44 updates, United States Green Building Council's LEED Standards including for schools and homes, Green Guide for Health Care, GreenPoint Rated Homes, GREENGUARD, SCS, CRI, Floor Score, ANSI/BIFMA Furniture Emission Standard and Sustainable Assessment Standard, NSF 140 and 332.

- **Encouraged Execution and Implementation of Standards into Buildings:** Encouraged building owners, design professionals, and occupants to assess and conduct green building repairs and to integrate the CDPH IAQ standards and related sustainable provisions into their modernization and new construction projects. Focused emphasis on children's health and school applications.
 - Appointed to Task Force to assist the California Office of Public School Construction (OPSC) to develop the Statewide Facility Inspection Tool Task Force for use in the School Assessment Report Cards.
 - Co-led the Healthy and Sustainable Schools Task Force. Conducted a pilot within Oakland Unified School District for Emergency Repair for major improvements in the ventilation system in High School.

Zero Waste Task Force (ZWTF) of San Mateo, Santa Clara and San Benito Counties, Project of Acterra 2004-2006- Chaired this Project of Acterra. Lead a three county ad hoc Zero Waste (ZW), pollution prevention team to assist and encourage municipalities and businesses to reach for ZW. Co-Created and adopted a [Zero Waste Communities Strategy](#) Spoke at public hearings suggested policy changes. Successfully interested the city of Palo Alto in unanimously approving a Zero Waste resolution, the first of its kind in the Bay Area.

University of California, Davis and Irvine Post-Doctoral Researcher, Materials and Chemical Engineering Department, and the Department of Environmental Analysis and Design, School of Social Ecology, 2002-2003
Analysis of the complete life cycle of electronic equipment. Studied legislation, directives and regulations for managing waste electrical and electronic equipment (WEEE). Assessed the environmental, public health, and economic impacts of various alternative policy options for electronic solder materials.

University of Cincinnati, Research Fellow, Department of Civil and Environmental Engineering, 1993-2001, Co-funded by U.S. Department of Education and the Electric Power Research Institute (EPRI)
Advisor: Tim Keener [Investigation of the Chemical Pathway of Gaseous Nitrogen Dioxide Formation during Flue Gas Desulfurization with Dry Sodium Bicarbonate Injection](#)-- Determined an unknown reaction pathway responsible for unwanted NO_x formation during a dry injection flue gas desulfurization process used for a coal burning power plant application by the Public Service of Colorado.

GENERAL ELECTRIC COMPANY, 1985 to 1993

GE AIRCRAFT ENGINES, Engineering Materials Technology Laboratory, Materials and Process Engineer

Cincinnati, International manufacturer of commercial and military aircraft engines with annual sales of \$7 billion 1988-1993, Responsible for developing high temperature coating systems for: oxidation protection, thermal barriers (TBC), catalytic activity, and tailored optical emissivity.

- Launched and led the catalytic coating team. Gained support of the Chief Engineering Office through successful proof of concept tests. Conducted full scale sector tests resulting in significant CO emissions reductions.
- Led, conducted and technically documented two substantiating engine certification test evaluations eliminating American Airline's HPT nozzle service cracking through a new cost effective plasma spray bond coat and ceramic TBC topcoat repair procedure.
- Performed laboratory durability and compatibility tests of an advanced thick TBC bond coat/ceramic top coat for a new Dry Low NO_x hot walled combustor design.
- Responsible for development of coatings that provided oxidation/corrosion protection and specified infra-red optical signatures.
- Enabled customer production scale up by defining an innovative pulsed chemical vapor deposition (CVD) technique for a fluidized bed process. Resulted in increased oxidation resistance for the FeCrAlY substrate.

- Determined US Navy corrosion specification limits for use of a MCrAlY ceramic matrix composite (CMC). Substantiated through Type I SO₂ laboratory testing.
- Positioned GE as industry lead in IR suppression and was awarded the Significant Engineering Productivity award for development of a durable, high temperature low emissivity coating. Project included leading all sputter deposition activities and IR measurement collection tasks.
- Responsible for development and transition of advanced coating processes.
- Obtained GE-EMTL's highest recognition award, the STAR Award, by planning, coordinating, and successfully executing a six month, \$145K program to develop and transition into manufacturing a two step sputter deposition process on polymeric composite vanes for erosion protection in sandy desert environments.
- Acted as a technical liaison to a satellite plant to develop and integrate a new chemical vapor deposition facility for vapor phase aluminides.

GE MEDICAL SYSTEMS, 1985 to 1988

Process Development Engineer

Milwaukee, Wisconsin, International leader in the manufacture of medical imaging equipment. Developed a variety of manufacturing processes including electroplate, electro-polish, PVD, plasma arc spray, ion plate for high temperature metals, ceramics, and thermoplastics.

UNIVERSITY OF WISCONSIN-Madison

Engineering Mechanics Laboratory and Gas Dynamics Laboratory, 1982-1983, Designed and performed spectrum load fatigue testing on notched aluminum alloy. Operated closed loop servo hydraulic MTS tensile tester, Researched the fracture mechanics of clad glass fibers. Assembled hardware for Laser holographic interferometer. Performed system validation through optical and mechanics theory

UNIVERSITY OF WASHINGTON – Seattle

Bio-Engineering Laboratory, 1981,

Measured dynamic material properties for optical studies by laser speckle technique. Developed a rheological measuring device.

Acted as group leader and lab manager.

COMMUNITY INVOLVEMENT

- California Bureau of Electronic and Appliance Repair (EAR) and California Bureau of Home Furnishings and Thermal Insulation (HFTI) Advisory Council 2017-present, http://www.bearhfti.ca.gov/about_us/advisory_council.shtml
- Berkeley Disaster and Fire Safety Commission (2017-present)
- Berkeley Zero Waste Commission, 2017-present
- Berkeley Unified School District Facilities Safety and Maintenance Oversight Committee (2016-present)
- [Alameda County Source Reduction and Recycling Board](#) (Environmental Educator) 2014-2018
- [Berkeley Community Health Commission](#) 2011-2017
- Co-moderator for the CHE-EMF Workgroup <http://www.healthandenvironment.org/initiatives/emf> as a science based work group to share scientific information.
 - On August 18, 2015 I proposed an international standard data model and encoding for electromagnetic field (EMF) data to the [Open Geospatial Consortium, Inc. \(OGC\) Health Domain Working Group \(Health DWG\)](#). The Electromagnetic Spectrum Domain Working Group (EM Spectrum DWG) was Chartered in September 2016 http://external.opengeospatial.org/twiki_public/EMSpectrumDWG
- General Public Representative for the [U.S. Food and Drug Administration's Technical Electronic Product Radiation Safety Standards Committee \(TEPRSSC\)](#) to provide advice on technical feasibility, reasonableness, and practicability of performance standards for electronic products to control the emission of radiation.
- [Citizens Climate Lobby](#) (CCL CA East Bay Co-Leader) 2009-present
- Menlo Park Planning Commissioner 1999-to 2003
- Collaborative for High Performance Schools (CHPS-[Chair of Site and Water Subcommittee 2018 Indoor Environmental Quality \(IEQ\) National technical committee 2016-2017](#), Best Practice criteria development (2006 to 2016)
- San Mateo County Congestion Management and Air Quality Commission (CMAQ), 2000-2004
- Bay Area Air Quality Management District Hearing Board Member, 1999-2002
- San Mateo County Solid Waste Advisory Commission 1999-2004
- Standards Development volunteer to set criteria for environmental standards
 - UL 110
 - UL 2799
 - UL 1286
 - Environmental Assessment of Electronic Products 1680.2 and 1680.3 Standard development [EPEAT standard update](#)-Corporate Performance Committee and IAQ
 - International Council for Local Environmental Initiatives (ICLEI-Local Governments for Sustainability) [Community-Scale GHG Emissions Accounting and Reporting Protocol](#)-Co-Chair of the [Life Cycle Emissions Technical Advisory Committee](#), U.S. national standard for how to measure and report community's greenhouse gas emissions.
 - Contributor and reviewer of the [Railbelt Electricity Efficiency Landscape \(REEL\) in Alaska Roadmap](#), technical contributor and reviewer, 2010-Provides a electricity efficiency plan for Alaskans in the region of Anchorage, Juneau, and Homer that increases economic output, wages, business income, and provides new jobs.
 - [NSF LCA Product Category Rule \(PCR\) development for Flooring](#)
 - Gave presentation on PCR development for Environmental Product Declarations to the [Commercial Aviation Alternative Fuels Initiative \(CAAFI\) 2010](#)

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- SAE International Sustainable and Energy Efficient Manufacturing Organizer for the aerospace, automotive and commercial-vehicle industries
- [NSF/NSSEA 380](#) VOC Emissions and AV Equipment Task Group
- [ECOFORM/IBEL/TRANSPARE](#)- Chemical Metric Committee
- Air and Waste Management Association

PATENTS

“Process for removal of nitric oxides and sulfur oxides from flue gases”, 2001, [Patent 6,214,308](#), University of Cincinnati

“Non-Degrading Reflective Coating System for High Temperature Heat Shields and a Method Therefore”, 1996, [US patent 5,484,263](#). General Electric Company.

“Method for Forming a Non Degrading Reflective Coating System for high temperature Heat Shields”, 1996, [US Patent 5,545,437](#) .

"Catalyst-Bearing Component of Gas Turbine Engine", 1994, U.S. patent [5,355,668](#).

“Diffuse Low Emissivity High Temperature Coated Article and Method of Making” GE Patent disclosure, 1993, GE#13DV10851

AWARDS

GE Significant Engineering Productivity Award, 1991

GE Star Award, 1990,

GE Business Driver Award, 1988

PUBLICATIONS

Stein, Antoinette W., Bunn, Brian E, Davis, Devra L., Riley, Karl, Stadner, Alex, Scott, Stephen. (2015). Low EMF Best Practices for Indoor Environmental Quality in School Classrooms; The Importance of Implementing Existing NEC Electrical Building Codes and Other Feasible Best Practices to Reduce Non-ionizing Radiation Exposures from Electromagnetic Fields from Wiring And Other Common Electrical Devices To Protect Health And Safety Of Children And Teachers. Healthy Buildings 2015 America Poster Paper, <https://hb2015-america.org/program/presentations/>

Toffel, M. W., Stein, A, Lee, K.L, “Extending Producer Responsibility: An Evaluation Framework for Product Take-Back Policies”, Working Paper 09-026, Harvard Business School, September 2008, <http://www.hbs.edu/research/pdf/09-026.pdf> .

Zhu, K., Miller, R, Stein, A., Waldman, J., Williams, J, Hawkins,D., Baker, L, “Development and Evaluation of a Field Protocol for Real-time Measurement of Formaldehyde Emission from Composite Wood Products”, ISEA/ISEE Pasadena, CA, 2008.

Stein, A., Waldman, J., “Emission testing and standards in California: updating Section 01350”, Indoor Air 2008 International Conference, Denmark August 2008.

Ogunseitan, O.A., J.M. Schoenung, A.A. Shapiro, J.-D. Saphores, A.K. Bhuie, and A.W. Stein, “[Biocomplex dimensions of industrial ecology: Sectoral trade-offs on selecting alternatives to Pb in electronics.](#)” *The Sustainable World* 6:247-259, 2003.

Ogunseitan, O.A., J.M. Schoenung, A.A. Shapiro, J.-D. Saphores, A.K. Bhuie, and H-Y. Kang, and A.W. Stein, "The Devil that We Know: Pb Replacement Policies under Conditions of Scientific Uncertainty," Proceedings, The Third International Symposium on Microelectronics and Packaging, Israel, June, 2003 [published Jet Propulsion Laboratory, National Aeronautics and Space Administration](#), 2003.

Stein, A.W, Investigation of the Chemical Pathway for Gaseous Nitrogen Dioxide Formation during Flue Gas Desulfurization with Dry Sodium Bicarbonate Injection, PhD thesis, University of Cincinnati, Department of Civil and Environmental Engineering, 2001, http://www.ohiolink.edu/etd/send-pdf.cgi/Stein%20Antoinette%20Weil.pdf?acc_num=ucin997940666.

- Li, G.G., Keener, T.C, Stein, A.W., Khang, S.J., “CO₂ reaction with Ca(OH)₂ during SO₂ removal with convective pass sorbent injection and high temperature filtration”, Environ Engg and Policy 2, 2000, pp 47-56 <http://www.springerlink.com/content/tdfd8ndtal6gc7n2/>.
- Li, G. G., Keener, T. C. and Stein, A. W., “Continuous Sorbent Reactions in a High Temperature Fabric Filter Following Convective Pass Ca(OH)₂ Injection for SO₂ Removal”, Journal of Air & Waste Management Association, Vol. 49, pp 1292-1303, 1999.
- Li, G.G., Keener, T.C, and Weil, T., “Sorbent Conversions and BET Surface Area Evolution in the Combined Process of Economizer Zone Ca(OH)₂ Injection with High Temperature Filtration”, Proceedings of the International Conference of Environmental Protection of Electric Power, ICEPEP China '96, October 11-15, Nanjung, China, pp 384-393, 1996.
- Weil, A. E. , Keener T. C., Khang S.J, “Comparison of surface area changes during sulfation of sodium bicarbonate in a simulated flue gas with and without NO”, Pollution Control and Monitoring, ed. by J.M. Baldasano, C.A. Brebbia, H.Power, P. Zannetti, Computational Mechanics Publications, Boston,1996.
- Keener T. C., Weil, A. E., Khang S.J, “NO₂ Formation during Sodium Bicarbonate Injection for the Control of SO₂”, EPA/EPRI SO₂ Control Symposium, 1995.
- Weil, A. E., “Surface area changes during sulfation of sodium bicarbonate in a simulated flue gas environment.” Poster Paper, Air and Waste Management Association's 87th Annual Meeting & Exhibition, Cincinnati, OH, 1994.
- Lee, S.K., Keener, T.C., Weil, A.E., Khang, S.J., “ Effect of Wetting Efficiency of Dry Lime on Sulfur Dioxide Removal in a Circulating Fluidized Bed Absorber”, Air and Waste Management Association 86th Annual Meeting & Exhibition, Denver Colorado, June 13th-18th, 1993.
- Weil, A. E., “Sputtered Cr/NiTiB₂ Erosion Coating Development for the YF120 PMR15 Composite Vane”, General Electric Publications, TM#90-238, 1990.