

**Andrew D. Sauter, Jr.**

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To 2008. Then see <http://www.nanoliter.com/about5.pdf>

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**Nanoliter LLC/ADSC**, Henderson, NV, USA.

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1984-present and career highlights.

Executive level technical, business, managerial & contract skills. International contacts: industry; science; pharma; gov't. & press.

Founded Nanoliter after consulting (ADSC) in technical & business areas of mass spectrometry, microfluidics, pattern recognition, signal processing & data mining. Early often and right in the identification and implementation of new technology for ca. 35 yrs. Conducted, managed all phases of business: negotiations; publishing; web; booth design/setup/press conferences; management and IP.

Invented/patented/marketing, a microfluidic toolset for parallel nL, pL and uL liquid movement: the **first** nanoliter syringe; nanoliter pipette; non touch nanoliter pumps and parallel ek for LC/MALDI. See [nanoliter.com](http://nanoliter.com). "Received" bronze medal for best new instrument at Pittcon 2001 and honorable mention for devices shown at Pittcon 2007 & 2008. Pending patents.

Collaborated/ing with NIH MS center Washington U, Spark Holland, USF/Moffitt Cancer Research Center, MDS Sciex, Agilent, Affymax, Chem Space and others in liquid handling & MS. In licensing negotiations with LC/MS/MS market leader, Sciex/Applied Bio for parallel LC/MALDI and related sample prep tech. Ongoing development/licensing project/negotiations with Spark Holland.

Developed **first** model to estimate current arising from molecules (e.g., peptides, oligonucleotides) undergoing LC/ESI/MS/MS, '97. Performed **first** HTS LC/MS/MS ever (See ASMS 1983). Wrote among the **first** quantitative MS/MS paper in Analytical Chem, '83.

Sole source procured as an MS/analytical chemistry/data analysis expert by 7 different branches of the US gov't, well over 75 times. Private/public sector clients have included: Los Alamos National Lab; MDS Sciex; RTI; Kraft Foods; Lockheed; Extrel; ICF/KE; MRI; WMX; US Army; Hanford Fed. Services; USEPA HQ and Regions; Martin Marietta; Bechtel; Oak Ridge Nat'l Labs; Westinghouse and numerous small/large laboratories, instrument firms and other government agencies across the USA.

Developed/demonstrated the **first** priority pollutant GC/MS analysis methods, QC protocols/contracts before commercially available instruments. My work/papers/presentations are at the core of the implementation of many USA federal environmental regulations for the last three decades. Purity of USA's drinking water; the characterization of at hazardous wastes and hazardous waste sites and air quality test methods/tech/QA utilize approaches, I pioneered in the 70's and improved in the 80's and 90's. Four USA awards.

Acquired funding for/performed the **first** particle beam (PB) LC/MS work with inventor. Results: the first bench top LC/MS system and the multi-million dollar purchase of Extrel by Waters with major valuation increase. Waters entered the MS business via this path.

Won decision against a major silicon valley law firm, Reed & Associates, with self representation regarding an Internet domain name dispute (picoliters.com) before ICANN ( [See Decision.](#)). The plaintiff was found guilty of reverse domain name hijacking.

Developed a treatment, assessment plan based using numerous MS technologies and isotope dilution to QC the vitrification of the "tanks" wastes (50 M gallon of radioactive hazardous wastes) for Waste Management Federal Services at Hanford.

Copyrighted a pattern recognition program, COMPARE. It can detect/quantify patterns in MS, Chrom or any 2D data, N ways. Extensive MS/MS data mining exp. using confirmatory/exploratory statistics. Developed computer program for background correction and also developed/applied computer graphics and statistics approaches to quantify MS data for both integrity and quality.

For Westinghouse, I studied and evaluated hydrocarbon and immunoassay capacitance affinity sensors. Developed/applied electrode sampling system for LC analysis of E, EC or ECE generated organic products in aqueous and non-aqueous solvents.

Played key role in defeating 20 of the 40 largest firms in the USA in a \$500M environmental litigation. Hired as an expert by USDOJ.

Developed the business plan & cash flow models for a \$15 M lab for WMX. The lab paid for itself in < 3 yrs per plan.

Invited speaker: Microfluidics 2002 (on dais with Harvard's Whitesides), at Nanocommerce2003 invited by NIST, at US Army Edgewood., Los Alamos, Extrel, RTI, ASQC, Washington U and many others. Course offered at Pittcon2005-07.

Published fundamental and applied papers on EI, CI, PB and ESI MS and LC/MS/MS. Funded early ICP/MS, MS/MS and LC/MS: Houk (UI), Hunt/Shabanowitz (UVA) & Willoughby (Extrel). Directed R&D w/latter two groups.

Developed mass spectrometry, applied statistics and related data/contracts/auditing training courses. Offered contract/wrote a book for Academic Press: [Using The PC And Off The Shelf Software In Analytical Chemistry Programs.](#)

Published 3 interlaboratory MS studies in the peer review literature. Authored methods, QC protocols/contracts and managed study that involved 11 laboratories presenting results at ASMS for two years period with US government and other scientist. Extensive field sampling/analysis experience across USA. Studied by MS: polymers; coal gasification; incineration & water treatment.

**Par Enterprises, Inc.,** Henderson, NV, VP Chemical Information Systems 1992-1996 (Concurrent w/ ADSC.)

I won and managed (group of 15 employees and consultants at four locales) a seven figure contract for Los Alamos National Lab to develop the first Windows based chemistry project management system. Off-the-shelf & developed software was successfully employed for purchasing, reporting and auditing of data (34 different chemical analysis and other measurement techniques within cGMP/cGLP) integrating data from 11 organizations. QC audits of sample results took only seconds for any technique.

**USEPA, EMSL, LV, NV** Group Leader, then Methods Development Manager 1980-1984

I managed a research group of Ph.D.'s doing in-house MS methods development studies & QA/QC work in GC/MS, LC/MS/MS, LC/MS, etc.). Implemented new technology at the core or CERCLA, RCRA and other environmental methods nationally. Managed 7 figure extramural R&D and special programs (one eight figures) at UVA, Lockheed, TRW and labs nationally. Pre-contract award & QA auditor for national programs spending \$B/yr.

**Computer Science Corp,** Athens, GA, Senior Chemist 1979-1980

Member of the team that built first national water pollution database. This GC/MS data (17 labs and different systems 20,000 raw data files) was built from samples of USA's rivers/plants. It was the first set of information employed to set water treatment standards for USA's industries, defining, best available, economically achievable treatment technology.

**Merck, the Calgon Subsidiary,** Pgh, PA, Senior Chemist 1977-1979

I built a MS lab. I managed a group of three chemist doing R&D and routine analysis of water, consumer and polymer products.

**Midwest Research Institute,** KC, MO. Associate Chemist 1974-1977

Contract research. Wrote proposals. Performed contract R&D in support of energy, environmental, electrochemistry, instrument development projects/programs. This included the development of the first priority pollutant protocol in 1976/77.

**Anesthesia Research Associates, Mercy Hospital/U. Pittsburgh,** Pgh, PA, Technician 1971-1972

Research technician. Chemical analysis of animal, human and other samples by multiple techniques for many studies.

### Education

M. Sc., physical organic analytical chemistry, Marquette University, 1974 B.S., chemistry, Duquesne University, 1971  
Courses in Statistics (Georgia Tech.), Atomic Spec (Varian); Programming and Instrument Op.(Finn. Institute); Program/Contracts Mgmt Courses.  
Mentored 20 years by J.J. Downs former Director Carnegie Mellon Institute For Research and principal research scientist at MRI, Franklin Institute, industry.

### Selected Microcomputer/Computer Experience

Extensive data mining experience: confirmatory; exploratory & multivariate statistics; published in signal processing and pattern recognition. Offered contract from Academic Press to author a book on using Windows applications in chemistry laboratories and programs. Used MS Office, stat packages (Statistica, Statgraphics, SAS, etc.), machine vision software (Vision Builder), numerous utilities (WinZip, Webalizer, Leap, Samspace, etc.), graphics (Photoshop & Paint Shop) for scientific, QC and business plan presentations.

Managed/hands on built databases under Windows and VMS. Used Informix, Access and dBase to mine (SQL), and organize data. Managed software dev projects in signal processing, library matching, data reporting, using VB, Excel, Labview from needs analysis, design, line level debugging to implementation/support. Wrote/developed nanoliter.com. Some programming.

### Previous\*/Current Affiliations

Instructor at Pittcon short course, Nanoliters And Induction Based Fluidics. Invited Pittcon presenter 2005- to present.

American Society Of Mass Spectrometry  
Association for Laboratory Automation.

ACS\*, ASTM\*, Adjunct U. of Nevada, Dept. of Physics\*, AOAC, Former Gen. Referee For Analytical Methods For Ground Water\*.

### References, Publications/Presentations Available Upon Request.

**SELECTED PRESENTATIONS, PUBLICATIONS AND OTHER WORK. (Invited are embolden.)**

A.D. Sauter, et al, "Millisecond Nanoliters", ASMS 2008 poster session. Denver, CO June 2008.

A. D. Sauter, et al, Nanoliter Dispensing, Pittcon Poster 2008, New Orleans, LA, March 2008.

A. D. Sauter, et al, Nanoliter Syringes And Induction Based Fluidics, Lab Automation, poster session, Palm Springs, CA, 2008.

A. D. Sauter et al, Launching & Directing Nanoliters To Diverse Targets With Electric Fields, Induction Based Fluidics, poster session presented at ASMS 2007, Indianapolis, IN, June 2007.

**A.D. Sauter, IBF and MALDI, Invited Presentation Washington University @ St. Louis to Dr. Gross' Group, March 2007.**

A. D. Sauter, Introducing the Nanoliter Syringe, the Nanoliter Pipette and the Nanoliter Pump, Pittcon 2007, Chicago, IL, March 2007. System received an honorable mention for best new instrument.

A.D. Sauter, Introducing the Nanoliter Syringe, Press Conference, presented at Pittcon 2007, Chicago, IL, March 2007.

A.D. Sauter, How to make MALDI plates fast. Presented at Pittcon 2007, Chicago, IL, March 2007.

**A.D. Sauter, Induction Based Fluidics: Invited Lecture presented at Pittcon 2007, Session: "Drops."**

A.D. Sauter, The Nanoliter Syringes, American Laboratory, February, 2007

A. D. Sauter, Provisional Patent No. 4, January 2007.

A.D. Sauter, Business/Technical Opportunities In The Nanoliter Regime presented Nanocon, LV, NV Sept, 2006

**A. D. Sauter, Charging Liquids. Detecting Disease?, presented at Nevada Cancer Institute, June 2006**

**A. D. Sauter, Induction Based Fluidic Tools For Detecting Cancer, NCI/SBIR submission, May 2006**

A. D. Sauter, Aspirating Nanoliters, poster session presented at Pittcon 2006, Orlando, FLA, March 2006.

A. D. Sauter, Provisional patent filed 1/05/06.

A. D. Sauter, Nanoliters, Induction Based Fluidics presented to Pittsburgh Life Sciences Green House, Pgh, PA, June 2005.

A. D. Sauter, Parallel LC via IBF, Project Report for Dr. Wm. Davidson, Director of R&D, MDS Sciex, May 2005.

A. D. Sauter, N-Component, Y-Energy Mode, Z-Nested Gaussian Surfaces And Devices, Provisional Patent Filed 5/20/04. Full patent filed 5/20/05.

A. D. Sauter, Sample/Standard Preparation: Manipulating Liquids With IBF. Course Book For Presentation at Pittcon, 2005/07.

A.D. Sauter Jr., A. D. Sauter III, B.N. Colby, R. Willoughby and M. Johnson, "The Nanoliter, Microliter Syringe That Can Also Dispense Picoliters," Lab Automation Poster Session, 2/2/05, San Jose, CA.

Quoc Truong and A. D. Sauter, " Feasibility Study for Development of Induction Based Fluidics Assisted/Facilitated Transport Perm-Selective Membranes for CB Protective Clothing. \$1.1M proposal coauthored with US Army, April 2004.

A. D. Sauter and L Williams, The Nanoliter, Microliter Syringe That Can Dispense Picoliters, MALDI and Other Applications to be presented at the USEPA Conference, July 2004.

**A. D. Sauter, "Nanoliter Economics," presentation at Nanocommerce2003, Chicago Ill., Dec 2003.**

A. D. Sauter, D. Eastwood, and R. Willoughby, A USAF Requested White Paper, "A Clutter Filter To Facilitate The Detection Of Bioagents," solicited white paper submitted to, Aberdeen Proving Grounds, May, 2002.

**A. D. Sauter, "Flying Nanoliters, Microliter and Picoliters Using Electric Induction," invited presentation at Microfluidics 2002, San Francisco, CA, September, 2002.**

A. D. Sauter and A. D. Sauter III, " 'Electric' Zip Tips For MALDI And Other Applications," Journal of the Association of Laboratory Automation, May-June 2002.

**SELECTED PRESENTATIONS, PUBLICATIONS AND OTHER WORK. (Invited are embolden.)**

- A. D. Sauter, "Nanoliter-sicles," presented at Pittcon 2002, New Orleans, March, 2002.
- A. D. Sauter, "Transporting nL, uL and pL, Lab Automation," Palm Desert, CA February, 2002.
- A. D. Sauter and A. D. Sauter III, "Nanoliters Onto Media, Use Of Electric Induction, American Laboratory, October, 2001.
- A. D. Sauter, "Electric Induction Based nL Solution Movement," smallTalk 2001, San Diego, CA, August 2001
- A. D. Sauter, "Nanoliters?" Pittcon 2001, New Orleans, March, 2001.
- A. D. Sauter, "Induction Based Nanoliter AND Microliter Solution Transport," Pittcon 2001, New Orleans, March, 2001.
- A. D. Sauter, "Parallel Solution Movement Devices In The nL,uL and pL/sec Flow Regimes," Pittcon 2001, New Orleans, LA March, 2001.
- A. D. Sauter and A. D. Sauter III, "The Nanoliter Syringe, A Movie," Pittcon 2000, New Orleans, LA March, 2000.
- A. D. Sauter, USA Patent Application resulting in US Patent No. 6,149,815, November, 1999 awarded November, 20,2000.
- A. D. Sauter, 8260 and 8270 "MDL Studies Of The Hanford Tanks Contents Using MS And Isotope Dilution," Project Report for Waste Management Federal Services, Hanford, WA, April, 1999.
- A. D. Sauter, W. Fitch, J. Chakel, A. Affel, R. Willoughby and E. Sheenan, "Approaches For Estimating ESI/MS/MS Relative Response," Pittcon 97, New Orleans, LA, March 1997.
- A. D. Sauter, COMPARE, A Pattern Recognition Data Quality Calculator, Installation and Reference Manual, June, 1995.
- A. D. Sauter, "Same Day Data Validation," USDOE Hanford, Hanford, WA, 1995**
- A.D. Sauter, *The Los Alamos Electronic Data Deliverable Ordering And Receiving User's Guide*, Copyright September, 1994
- A.D. Sauter, *The Los Alamos User's Guide For Auditing Organic, Inorganic, And Radiochemical Data*, Copyright September, 1994,
- A.D. Sauter, *Function Forms For Validation Criteria*, and *Source Code*, Copyright September, 1994, & , *The Los Alamos Electronic Data Deliverable Process Order Tracking Database*, Copyright September, 1994
- A.D. Sauter, "Microcomputer-Based Environmental Project Management," Environmental Lab, August, 1994 .
- A.D. Sauter, "A New, Open Approach for the Purchasing, Reporting, Review, and Assessment of Organic, Inorganic, and Radiochemical Environmental Data," presented at the 1994 Pittsburgh Conference, March, 1994.
- A. D. Sauter, "Using the PC & Off-the-Shelf SW to Enhance Project Management," Rocky Mountain Arsenal, Denver, CO, 1994.**
- A. D. Sauter, "Introduction to a PC-Based System to Report, Review, and Upload Environmental Data," presented at Los Alamos National Laboratory, Los Alamos, NM, February, 1994.**
- A.D. Sauter, *Los Alamos Electronic Data Deliverable Process Spreadsheets For The Reporting Of Environmental Data*, Copyright September, 1994
- A.D. Sauter, *Los Alamos Electronic Data Deliverable Process Spreadsheets For The Reporting Of Environmental Data Business Order Workbook*, Copyright September, 1994
- A. D. Sauter, "New Ways to Report and Evaluate Environmental Data," presented at the 7th Annual Quality Assurance and Environmental Monitoring Symposia, New Orleans, LA, November, 1993.
- A.D. Sauter, "A Rapid New Approach for Quality Assessment for Environmental Data," presented at the 1993 American Society for Quality Control at Palm Desert, CA, October, 1992.
- A.D. Sauter, "Tools for the Review of Environmental Data for Integrity and Quality," Project Report for U.S. EPA, October, 1992.
- A.D. Sauter and L.R. Williams, "Will it Leach with the TCLP?," Environmental Lab, October 1992, p. 47.

**SELECTED PRESENTATIONS, PUBLICATIONS AND OTHER WORK. (Invited are emboldened.)**

A.D. Sauter and A.D. Wait, "Perspectives on Data Integrity and Quality," Environmental Lab, June, 1992, p. 25.

A.D. Sauter, *Approaches for Determining Data Quality and Usability: New Perspectives on Analytical Data in Hazardous Waste Site Investigations*, Edited by R.B. Gammage and B.A. Bernen, Lewis Publishers, 1992.

A. D. Sauter, "The Simultaneous Assessment of Environmental Data for Integrity and for Quality Using Reference Sets & Procedures, Computer Graphics, Multivariate Statistics in an Overt/Covert Fashion," presented at U.S. EPA Data Efficacy project meeting, Las Vegas, NV, January, 1991.

**A. D. Sauter, "Data Integrity and Data Quality, New Perspectives on Analytical Data," 10th Annual Life Sciences Symposium, Oak Ridge National Laboratory, Oak Ridge, TN, May, 1990.**

A.D. Sauter, "A Waste Component Mobility Scale," presented at the 4th Annual Superfund Conference, Washington, D.C., June, 1990.

A.D. Sauter, "Examination of GC/MS and GC Data for Anomalous Properties," ADSC project report for U.S. EPA, AOB, December, 1990.

A.D. Sauter, "An Assessment of Technical Efforts and Other Programs at the U.S. EPA's Environmental Monitoring and Systems Laboratory," ICF/KE, July, 1989.

A.D. Sauter, D. Bottrell and J. Fisk, "Qualitative Effects of Ion Abundance Tuning Criteria on Modern Quadrupole Mass Spectrometer Systems, Results from an Interlaboratory Study," presented at the 1989 ASMS meeting, Miami Beach, FL, May, 1989

A.D. Sauter, D. Bottrell, and J. Fisk, "The Quantitative Effects of Ion Abundance Tuning Criteria on Modern Quadrupole Mass Spectrometer Systems, Results from an Interlaboratory Study," presented at the 1989 ASMS meeting, Miami Beach, FL, May, 1989.

A.D. Sauter, D. Bottrell, P. Isaacson, H. McCarty, and J. Fisk, "Laboratory Quality Matching," presented at 1989 Pittsburgh Conference, March, 1989.

A. D. Sauter, "Analytical Distance," presented at U.S. EPA EMSL/LV GC/MS Tuning Conference Workshop, LV, NV, January, 1989.

A. D. Sauter, "Results from an Interlaboratory GC/MS Study," presented at U.S. EPA EMSL/LV GC/MS Tuning Conference Workshop, Alexandria, VA, January, 1988.

A.D. Sauter, Special Reports in Support of Litigation for the U.S. Department of Justice, four separate reports, 1988-1989.

A.D. Sauter and J.J. Downs, "Determination of the Occurrence of Organic Compounds at AFB 032," Commercial Client, 1988.

A.D. Sauter, "Evaluation of Hydrocarbon Sensor Technology for Measurements of Organic Compounds in Water and Soil," four separate reports, Westinghouse BioAnalytical, 1988.

A.D. Sauter, J.J. Downs, P. Marsden, and L.R. Williams, "A Formal Way to Measure and Compare Waste Component Mobility, Wastes, and Leachates," presented at Office of Solid Waste and Emergency Response Conference, Washington, D.C., July, 1988.

A.D. Sauter, J.J. Downs, L.R. Williams, and P. Marsden, "How Much of Analyte X is in That Solid?: A Solution to a Long-Standing Problem in Environmental Analysis," presented at Office of Solid Waste and Emergency Response Conference, Wash. D.C., July, 1988.

A.D. Sauter, *The Los Alamos Electronic Data Deliverable Process User's Guide*, Copyright September, 1994

A.D. Sauter, *Environmental Data, Purchasing, Reporting, and Evaluation Forms and Files for Radionuclidic and Non-Radionuclidic Environmental Measurement Techniques*, Copyrighted Version 1, 1993, and Version 2, 1994.

A.D. Sauter, J.J. Downs, P. Isaacson, D. Bottrell, D. Youngman, J. Fisk, C. Dempsey, and A. Carasea, "Development of a Proposed National Reference Set of Electron Impact GC/MS Relative Response Factors for the U.S. Environmental Protection Agency's Contract Laboratory Program," presented at the 1988 ASMS meeting, San Francisco, CA, June, 1988.

A.D. Sauter, J.J. Downs, R. Schlenker, J. Solsky, and D. Eastwood, "Preliminary Missouri River Division Laboratory Underground Storage Tank Manual," prepared for the U.S. Army Corps of Engineers, March, 1988.

A.D. Sauter, R. Schlenker, J. Solsky, and D. Eastwood, "Missouri River Division Laboratory Quality Assurance Manual, Chemistry Branch," revised draft prepared for the U.S. Army Corps of Engineers, February, 1988.

**SELECTED PRESENTATIONS, PUBLICATIONS AND OTHER WORK. (Invited are emboldened.)**

A.D. Sauter, "Special Analytical Services GC/MS Study," prepared for J. Fisk, U.S. Environmental Protection Agency, Hazardous Site Evaluation Division, Analytical Operations Branch, Washington, D.C., June, 1987.

A.D. Sauter, "Marketing Study for the Introduction of New Products to the Analytical Services Industry," Commercial Client, May, 1987.

A.D. Sauter, "Laboratory Initiation Report: Market Survey, Product Definition, Strategic Planning, Instrument Selection, and Personnel Assistance," Waste Management, April, 1987.

**A.D. Sauter, "Electron Impact LC/MS Analysis of Exotic Appendix VIII Listed Analytes and Semivolatile Priority Pollutants with a New LC/MS Interface," presented at 1987 Pittsburgh Conference, March, 1987.**

A.D. Sauter, J.J. Downs, D. Eastwood, and J. Solsky, "Proposed User Defined, Site-Specific GC/MS Protocols for the Characterization of Hazardous Waste Sites and the Concept of Analytical Distance," presented at 1987 Pittsburgh Conference, March, 1987.

A.D. Sauter, Reports in Support of the U.S. EPA's GC/MS Tune Study, for the U.S. EPA Analytical Operations Branch, 1987-1989.

A. D. Sauter, "Validation of U.S. EPA Methods for Analysis of Groundwater and Drinking Water, a Three-Year Plan," presented at the Annual AOAC Meeting, San Francisco, CA, October, 1987.

A. D. Sauter, "Future Directions of the U.S. EPA Contract Laboratory Program," presented in conjunction with U.S. EPA, OERR, AND EMSL/LV at the 7th Annual Superfund Analytical Services Conference, Las Vegas, NV, July, 1987.

**A. D. Sauter, "Particle Beam LC/MS, Environmental Applications," presented at the U.S. EPA 3rd Annual Symposium on Solid Waste Testing and Quality Assurance, Washington, D.C., July, 1987.**

A. D. Sauter, "Particle Beam LC/MS: An Emerging Practical Technique for the Characterization of Involatile and Semivolatile Environmental Pollutants," presented at the 10th Annual EPA Conference on Analysis of Pollutants in the Environment, Norfolk, VA, May, 1987.

A. D. Sauter, "On the Old DFTPP Criteria," presented at the U.S. EPA OERR GC/MS Tuning Conference, Alexandria, VA, April, 1987.

A.D. Sauter, "Particle Beam (PB)/LC/MS Analysis of Selected Appendix VIII Listed Analytes," prepared for Dynamac Corporation under U.S. EPA Sub contract, October, 1986.

A.D. Sauter, "Defense Environmental Restoration Account Site-Specific Contract for the Analysis of Water Sample for Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry," prepared for the U.S. Army Corps of Engineers, October, 1986.

A.D. Sauter, "Defense Environmental Restoration Account Site-Specific Contract for the Analysis of Water Samples for Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry," draft prepared for the U.S. Army Corps of Engineers, July, 1986.

A.D. Sauter, "Chain of Custody Procedures for Defense Environmental Restoration Act Projects," draft prepared for the U.S. Army Corps of Engineers, July, 1986.

A.D. Sauter, Videotape Presentation, "Estimating Response Factors for PCDDs, PCDFs, and PCBs When Standards are Not Available," presented at U.S. EPA's Office of Solid Waste meeting, Washington, D.C., July, 1986.

A.D. Sauter and J.J. Downs, "The Quantitation of Chlorinated Biphenyls, Dibenzodioxins, and Dibenzofurans Using Response Factor Estimation," presented at the 1986 ASMS meeting, Cincinnati, OH, June, 1986.

A.D. Sauter and J.J. Downs, "Model for the Estimation of Electron Impact GC/MS Response Factors for Quadrupole Mass Spectrometers," presented at the 1985 Pittsburgh Conference, Anal. Chem. 1986, 58, 1665.

A.D. Sauter, "In-house versus Contractor-Based Acquisition of Environmental Data, a Six-Year Comparison of Cash Flow, Technical and Other Factors," prepared for a multi-billion-dollar corporation, March, 1986.

A. D. Sauter, "Particle Beam LC/MS: An Important New Developing Technique for Characterization of Hazardous Waste Sites," U.S. EPA Office of Solid Waste, Washington, D.C., December, 1986.

A. D. Sauter, "Estimation of Response Factors for Dioxins, Dibenzofurans, and PCBs," U.S. EPA Office of Solid Waste RCRA Conference, Washington, D.C., July, 1986.

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- A. D. Sauter, "Multivariate Statistical Methods for the Analysis of Complex Environmental and Human Health Data," U.S. EPA Environmental Monitoring and Systems Laboratory, Las Vegas, NV, June, 1986.
- A.D. Sauter, "Proposal for the LC/MS Analysis of Appendix VIII Listed Organic Compounds," prepared for the U.S. EPA, November, 1985.
- A.D. Sauter, *Standard Operating Procedures for Three Rivers Analytical Laboratory, Inc.*, September, 1985.
- A.D. Sauter, *Business Plan for the Establishment of Three Rivers Analytical Laboratory, Inc.*, July, 1985.
- A.D. Sauter, "Evaluation of Mass Spectrometer and Software for Participation in U.S. EPA Superfund Program," Extrel, Inc., April-July, 1985.
- A.D. Sauter and J.J. Downs, "Quality Management Review of the Remedial Investigation/Feasibility Study of the Drake Superfund Site," U.S. Army Corps of Engineers, March, 1985.
- A. D. Sauter, "Environmental GC/MS-Based Testing: Historical Aspects, Current Practices, and Future Trends," Extrel's Fall Mass Spectrometry School, Pittsburgh, PA, December, 1985.**
- A. D. Sauter, "Chemical Quality Assurance and Quality Control in Remedial Investigation/Feasibility Studies," Bechtel National, Inc., Engineering Consultants, San Francisco, CA, April, 1985.**
- A. D. Sauter, "Applications of Triple Quadrupole Mass Spectrometry in Federal Agencies, EPA, USDA, FDA, and DOA," LABCON West 85, San Mateo, CA, April, 1985.**
- A. D. Sauter, "Suggestions for the Department of Army's Superfund Program," U.S. Army Corps of Engineers Superfund Conference, Omaha, NE, December, 1984.
- A.D. Sauter, "Special Technical Reports in Support of the Livingston Train Derailment Cleanup: QA/QC; Interlaboratory Study; Deposition Review and General Posturing and Planning," I.T. Corp., November-March, 1984.
- "A General Approach to the QA/QC of Multianalyte, Mass Spectrometry-Based Analysis Methods," American Society for Quality Control, RTP, NC, September, 1984.**
- A.D. Sauter, "The Quality Control Protocol for the Pulsed Positive Ion, Negative Ion Chemical Ionization GC/MS Analysis of Chlorinated Biphenyls," subcontract Research Triangle Institute, ADS Project Report, August, 1984.
- A.D. Sauter, "Proposed Technical and Monitoring Approach for the Stringfellow Remedial, Investigation/Feasibility Study," ADS Project Report, June, 1984.
- A.D. Sauter and J.J. Downs, "Evaluation of GC/MS Data, and Expert, PC-Based System," Unsolicited Proposal, March, 1984.
- A.D. Sauter, "Mobile Triple Quadrupole Mass Spectrometry and Appendix VIII Testing," ADS Project Report, February, 1984.
- A.D. Sauter, "Special Report No. 1, No. 2, and No. 3," ADS Project Report, CompuChem, September-November, 1984.
- A.D. Sauter, "The Fourth Annual U.S. EPA Contract Laboratory Program Meeting, A Report," ADS Project Report, September, 1984.
- A.D. Sauter, "Evaluation of Fused Silica Capillary Column GC/MS for the Determination of Semivolatile Priority Pollutants," U.S. EPA Response Report, January, 1984.
- A.D. Sauter, "Examination of Interlaboratory, Electron Impact GC/MS Data for PCB's," ADS Project Report, Lockheed Engineering and Management Company, January, 1984.
- A. D. Sauter, "Rapid, Triple Quadrupole Mass Spectrometry-Based Analysis of Nonvolatile Appendix VIII Listed Organic and Organometallic Compounds," LABCON West, Long Beach, CA, May, 1984.**
- A. D. Sauter, "Rapid Analytical Method Development, the MS/MS Potential," 6th Annual Symposium on Priority Pollutants, Norfolk, VA, March, 1983.**
- A. D. Sauter, "MS/MS Approaches to the Characterization of Hazardous Waste," Franklin Institute, Philadelphia, PA, 3/1983.**

**SELECTED PRESENTATIONS, PUBLICATIONS AND OTHER WORK. (Invited are embolden.)**

L.D. Betowski, H. Webb, and A.D. Sauter, "The Application of Pulsed Positive Ion Negative Ion Chemical Ionization to the Analysis of Hazardous Wastes," Biomedical Mass Spectrometry, 1983, Vol. 10, No. 6, 369.

A.D. Sauter, L.D. Betowski, and J.M. Ballard, "Triple Quadrupole Mass Spectrometry, Environmental Applications to PCB's in Industrial Oils, 'Dioxin' Screening and Hazardous Waste Analysis," presented at the 31st Annual Conference of Mass Spectrometry and Allied Topics, May, 1983.

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