



AOAC International ~ Pacific Southwest Section 2021 Virtual Annual Meeting

Emerging Technologies in Analytical Chemistry and Microbiology



June 29-30, 2021

www.psw-aoaci.org

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Tuesday, June 29, 2021

- 9:00 AM** ***Welcome to the 2021 Virtual Annual Meeting***
**Josh Wurzer. President, AOAC INTERNATIONAL Pacific Southwest Section;
President & Co-Founder, SC Laboratories, Inc.**
- 9:10 AM** ***USDA Pesticide Data Program: An overview of the program and its impact***
**Director, Brenda Foos, Director Monitoring Programs Division
USDA Agricultural Marketing Service**

The Pesticide Data Program (PDP) is a national pesticide residue monitoring program that includes sampling, testing and reporting of pesticide residues on agricultural commodities in the U.S. food supply, with an emphasis on those commodities highly consumed by infants and children. Over 10,000 samples are collected annually representing select agricultural commodities. Samples are analyzed by state agricultural laboratories using QuEChERS-based methods for extraction along with current liquid and gas chromatographic technologies in tandem with mass spectrometry. Robust QA measures and electronic data reporting are also key to the development of PDP data.

Recent PDP results provide key observations of current pesticide residues in U.S. foods. Data include, for example, information on tolerance (maximum residue limit) violations, seasonal differences, commodities that are most/least likely to contain residues, and residue differences in domestic and imported foods.

All PDP results are made publicly available, and the database currently includes nearly 39 million pesticide-commodity data points (through 2019). The results are used by the Environmental Protection Agency in dietary risk assessments for pesticide registration review, the Food and Drug Administration for enforcement planning purposes, and the USDA for trade promotion. PDP data also help provide consumers with confidence in the safety of the foods they eat.

10:00 AM ***Measurement of Underivatized Glyphosate and Other Polar Pesticides in Multiple Matrices Using LC/MS/MS***
Jarod Grossman, Ph.D., Senior Application Scientist, Agilent Technologies

Glyphosate is one of the current foremost global health concerns. There exists a need to detect glyphosate at low levels in food, wine, and environmental and drinking waters. Currently, methods for this detection fail to be sensitive enough or simple enough for easy, high-throughput monitoring. Here a method has been developed and put forth that is simple, sensitive, and robust. This method only requires a dilute-and-shoot when not in water matrix. There is no sample pretreatment required other than a 10:1 dilution in water, no passivation or derivatization necessary, and can reach ppt detection of glyphosate in environmental samples with a normal LC on our 6470 Triple Quad.

10:30 AM ***Custom Analytical Solutions for Challenging Environments***
Thomas B. Pickens, III, CEO/CTO, AgLab Inc.

11:00 AM ***Testing Strategies and Quality Control Regulations in Dietary Supplements and Ingredients***
Hong You, Ph.D., Director of Scientific Affairs, Eurofins Scientific, Inc.

Due to the development of e-commerce, motivated adulterations in dietary supplements and ingredients have a greater chance to occur when the products are transported more frequently via vendors across different countries and regions. Because of the complexity and continuous development of dietary supplement industry, the determination of composition and the detection of adulteration are often accomplished using an orthogonal approach via multiple analytical technologies, ranging from macro-microscopic visual examination to DNA-based, spectroscopic, and chromatographic instrumental testing. The US FDA cGMP requires to use “scientifically valid methods” to perform quality control testing for dietary supplements and ingredients and that have been used to guide the analytical method development strategies in this industry. This presentation will provide an overview on the various analytical strategies, by demonstrating both real case studies in industrial settings and research advances in analytical sciences.

11:30 AM ***A comparison of IC-MS/MS and LC-MS/MS techniques for the multi-residue analysis of polar pesticides and metabolites in food***
**Ed George Sr. Applications Scientist, Analytical Instrument Group,
Thermo Fisher Scientific, San Jose, CA**

One of the most challenging groups of pesticides are the polar pesticides, such as glyphosate, perchlorate, chlorate, and the like, which often occur as residues in food, but are not always included in pesticide monitoring programs. Several analytical methods are detailed in the EURL-SRM-QuPPE method- “Quick Method(s) for the Analysis of Numerous Highly Polar Pesticides in Food Involving Extraction with Acidified Methanol and LC-MS/MS”. Polar anionic pesticides are commonly retained and separated using a hydrophilic interaction liquid chromatography (HILIC) column that provides strong retention of polar pesticides that are unretained under conventional reversed phase conditions. Another common approach is to use porous graphitic carbon (PGC, or Hypercarb™), which has unique properties as a stationary phase to retain polar analytes. Finally, IC-MS/MS based workflows have been implemented recently in many labs to achieve excellent sensitivity and reliable determination of multi-residue polar anionic pesticides and metabolites at low µg/kg levels in a single run.

In this study, a modified Quick Polar Pesticide (QuPPE) extraction procedure using a cartridge solid phase clean-up is evaluated for applicability to a wide range of matrices, including leek, fruit-based baby food, turmeric powder, and ginseng. The prepared matrix extracted spikes (MES) are injected onto a) LC-MS/MS equipped with a HILIC column b) LC-MS/MS equipped with a porous graphite Hypercarb column, and c) IC-MS/MS system equipped with an anion exchange column and suppressed conductivity. Data will be compared across the three detection methods and evaluated for compliance to SANTE guidelines and EU MRLs. Absolute recovery, precision, and retention time stability for spiked samples at 10 and 50 ng/g will be summarized with advantages and disadvantages summarized for each technique.

12:00 PM *AOAC INTERNATIONAL UPDATE*
Erin S. Crowley, President AOAC INTERNATIONAL, CSO, QLaboratories

How is YOUR Association faring in 2021? What are the special challenges and opportunities ahead?

12:30 PM *The Analysis of Highly Polar Agrochemicals by CESI-MS*
Wiley Hall, Ph.D., Director of Chemistry, DFA of CA / Safe Food Alliance

1:00 PM *Per- and polyfluoroalkyl substances(PFAS) contaminants in your water and more*
Andrew Patterson – Technical Director, Eurofins, Test America

1:30 PM *Food Safety Environmental Monitoring*
Melissa Calicchia, M.S., C.F.S., President/Chief Scientist ,
Food Safety Solutions, Inc. & Food Microbiological Laboratories, Inc.

2:00 PM *Simplifying Food & Cannabis Workflows with Novel Methodologies and Improving Sample Throughput with Laboratory Automation – A Mixed Reality Experience*
Toby Astill, Ph.D., PerkinElmer, Global Market Manager – Cannabis & Hemp

This presentation will focus on overcoming challenges found in food & cannabis testing labs. Driven by the need for faster turn around times and higher data quality, laboratories continue to explore new methodologies and technologies. Appreciating this, PerkinElmer will provide insight, and data, on testing food & cannabis samples for pesticide, mycotoxin and microbial contaminants using dedicated assay workflows designed to save time and improve data quality. These workflows include preformatted reagents and automation capabilities that further improve data quality, compliance reporting, and sample throughput.

2:15 PM Q&A with speakers, and sponsors, network.

Wednesday, June 30, 2021

9:00 AM ***Welcome to Day 2 of the 2021 Virtual Annual Meeting***
Josh Wurzer, President, AOAC INTERNATIONAL Pacific Southwest Section;
President & Co-Founder, SC Laboratories, Inc.

9:10 AM ***New Era of Smarter Food Safety***
Barbara Cassens, Director Office of Partnerships, ORA-FDA

10:00 AM ***Got milk analysis? From Contaminants to Quality to Composition***
Robert DiLorenzo, Ph.D., Staff Scientist, SCIEX

10:30 AM ***Redox as a Process Parameter for Wine Making***
Gordon Walker, Ph. D., Gordon Walker Consulting

The most common metrics for tracking wine fermentations are Brix (density) and Temperature (heat), however, neither of these parameters adequately describe yeast behavior in real time. Oxidation Reduction Potential (ORP) is a dynamic measurement that can be used to track fermentations in real time. ORP is a composite measurement of dissolved oxygen, pH, temperature, and all the chemical half reactions in solution. The value of ORP is in providing a new process parameter that can be used to not just track yeast activity, but also be used to control fermentations stylistically. Implementation of ORP probes in the winemaking processes will result in faster and more robust fermentations, while giving winemakers a new way of visualizing what is happening in their tanks.

11:00 AM ***Flow Cytometry to Monitor Yeast during Fermentation***
Stephan Sommer, Ph.D., CA State University, Fresno

Throughout fermentation, yeast faces continuously changing medium conditions and reacts by adapting its metabolism. The adaptation is a critical process and is dependent on the accurate functioning of the cell. A stable membrane potential, which is, among other roles, responsible for protecting the yeast from low pH, is an important attribute for evaluating functionality. Other factors are storage products such as glycogen, trehalose, and neutral lipids, as well as mitochondrial activity and the integrity of the DNA. These parameters can be complemented by the analysis of viability, cell cycle, intracellular pH, and reactive oxygen species in the cell. The correlation of all these factors provides valuable information for evaluating the performance of a yeast population during fermentation. In order to demonstrate the analytical capabilities of flow cytometry, a *Saccharomyces cerevisiae* yeast strain was observed in a modified growth medium for 384 h (16 days). The results confirm observations made with other methods and reports from the literature. However, with flow cytometry, it is possible to gain deeper insight into stress response and adaptation behavior of yeast at a cellular level. The causality from the formation of oxygen-radicals to cell death, for example, can be shown, as well as the dependency of the

intracellular pH on the stability of the membrane. The proposed bio-monitoring system has the potential to provide applicable information as a process control tool for wineries.

12:00 PM ***Food Safety Modernization Act (FSMA) Update***
Peyman Fatemi, Ph.D., IEH Laboratories and Consulting

12:00 PM ***Pacific Southwest Section, AOAC INTERNATIONAL Business Meeting***
Josh Wurzer, President

All attendees are urged to participate. Election of the Executive Committee is on the agenda.

12:30 PM ***GenomeTrakr's 2020 transition to independent submissions establishes the network as a model for open global genomic epidemiology***
Ruth Timme Ph. D., Research Microbiologist,
FDA Center for Food Safety and Applied Nutrition

The GenomeTrakr surveillance network of laboratories collects genomic data for foodborne pathogens isolated from non-clinical sources (e.g., food, environmental, water). These data are submitted to NCBI Pathogen Detection (NCBI-PD) where they are clustered with clinical isolates, aiding in traceback and regulatory actions. Until 2019, the FDA brokered most of these submissions for nearly 50 GenomeTrakr laboratories, receiving genomic data and metadata, performing quality control, and submitting to NCBI.

These Best Practices include suite of protocols, hosted on a version-controlled web platform, protocols.io. They include detailed step-by-step protocols to assess sequence quality, to populate the metadata template using standardized vocabulary, to submit genomic data and metadata to NCBI, and to maintain and curate public data submitted by your laboratory.

This direct submission model improves workflow efficiency by eliminating the FDA as a data broker as well as assures that acceptable quality standards are preserved. Importantly, these tools and protocols were designed for any laboratory wishing to submit microbial pathogen data to NCBI, providing a model framework for other open genomic pathogen surveillance efforts.

1:00 PM ***Cannabis Testing Laboratory***
Zach Eisenberg, VP & COO ANRESKO Laboratories

1:30 PM ***Assessing Lead Exposure Sources in Oakland Residences –
A Student- and Community-Engaged Model for Environmental Exposure
Monitoring***
Peter Palmer, Ph.D., San Francisco State University

Media reports indicated higher blood lead levels (BLLs) for children in Oakland, CA compared to those in Flint, MI. The goal of this work was to engage students in assessing lead exposure sources in Oakland residences. Lead was measured in 841 samples from 172 locations in Oakland in 2017 and 2018. The majority of these samples were collected by Life Academy High School students. Samples were analyzed by San Francisco State University (SFSU) students via X-Ray Fluorescence (XRF) and Microwave Plasma Atomic Emission

Spectrometry (MP-AES). Lead levels in excess of relevant regulatory limits were found in 2% of the soil samples (N=98), 56% of the paint samples (N=64), 30% of dust wipe samples (N= 73), and 10% of the tap water samples (N= 606). Elevated lead levels were found in a significant number of paint and dust samples in older residences occupied by low income Latinx and children under age five. High school - university partnerships like this provide students with service learning experiences, generate valuable data on lead exposure sources, and bring attention to environmental justice and public health issues.

2:00 Q&A with Speakers and sponsors, networking. All attendees encouraged to participate.

Our Speakers Curriculum Vitae

Director Brenda Foos, Director Monitoring Programs Division, USDA Agricultural Marketing Service



As director of the USDA/AMS Monitoring Programs Division, Brenda Foos oversees the USDA Pesticide Data Program (PDP), which is a nationally representative pesticide residue monitoring program for the US food supply, with an emphasis on those commodities highly consumed by infants and children. She manages all aspects of the PDP, including the food sampling, laboratory testing and public reporting of the residue data, as well as budgetary concerns and cooperative agreements with participating State Departments of Agriculture.

Brenda Foos has over 20 years of experience working on environmental and public health issues. Prior to joining USDA in 2019, she was the Director of Regulatory Support and Science Policy at the Environmental Protection Agency’s Office of Children’s Health Protection. She also has prior experience working on a variety of environmental issues for private consulting firms. Brenda Foos holds a Bachelor of Science degree from Texas A&M University and a Master of Environmental Management degree from Duke University.

Jarod Grossman, Ph.D., Senior Application Scientist, Agilent Technologies

Dr. Jarod Grossman is a Scientist at Agilent Technologies where he utilizes his extensive experience/knowledge in small molecules analysis, environmental applications, and workflow development to provide comprehensive detection solutions to mass spectrometry customers and scientists around the world. He considers himself a problem solver at heart and this can be seen in his implementation of novel workflows for “Big Data” Exposomics and Non-Targeted Analysis. He has previously worked at the US EPA in the National Exposure Research Lab, where he developed workflows for non-targeted analysis and suspect screening to map the chemical space of common media and environments, leading to novel exposure forensics and exposure classification. During his time at the EPA and now at Agilent, he has become a subject matter expert in the field of Exposomics, consulting with researchers and scientists around the world as one of the foremost experts, as well as organizing national conferences on the topic. Previous to all this he completed a PhD in Chemistry at Syracuse University and a BA in both Chemistry and Environmental Science at Drew University.



Thomas B. Pickens, III, CEO/CTO, AgLab



Mr. Pickens is currently the Chairman and Chief Executive Officer of Astrotech Corporation and also currently serves as the CEO/CTO of AgLAB, Inc., Chairman of 1, Detect Corporation & CEO/Chairman Agriculture Technology Corporation.

Over the past 35 years, Mr. Pickens has been the founder of 28 companies beginning with Beta Computer Systems, Inc., T.B. Pickens & Co., The Code Corporation, U.S. Utilities Inc., Great Southern Water Corp. and South Carolina Water Inc. He has also been the CEO and Chairman of CatalystEnergy Corporation, United Thermal Corporation, Golden Bear Corporation, United Hydro, Inc., Slate Creek Corporation, Eury Dam Corporation and was the General Partner of Grace Pickens Acquisition

Partners L.P. and Sumpter Partners L.P.

Mr. Pickens has also served as the was also the Chairman of Xplore Technologies, Inc., Chairman of the Board of Astrotech Space Operations, Inc., Century Power Corporation and Vidalia Hydroelectric Corporation. He has also served on the board of Trenwick America Reinsurance Corporation, Spacehab Inc., Advocate MD Inc., Optifab Inc. He was also the Co-Chairman of the Equity Committee of Mirant, Corp. and served as the Chairman of the New York chapter of United Shareholders Association, a shareholders rights organization.

He also serves on the board The Monroe Institute, a non-profit organization. Mr. Pickens follows a devoted meditation practice and enjoys photography, skiing, and travel and lives in Austin, Texas.

Hong You, Ph.D., Director of Scientific Affairs, Eurofins Scientific, Inc.

Dr. Hong You is a Director of Scientific Affairs at Eurofins, the largest contract TIC (Testing, inspection and certification) corporation worldwide by revenue and profits. He oversees the company's Research&Development activities and leads senior (Ph.D.) scientists to conduct analytical method development/validation/harmonization projects for testing dietary supplements, botanicals, sports nutrition products, and functional foods. Dr. You is a Technical Working Group Member (Chemical Analysis) of the US FDA Botanical Safety Consortium. He is also a member of the AOAC Analytical Solutions Forum Steering Committee, a leadership team member of the Institute of Food Technologists - Nutraceuticals and Functional Foods (IFT NFF) Division, an Expert Review Panel member for AOAC Official Methods of Analysis (OMA), and an Editorial Board Member of Journal of Food Biochemistry. Dr. You has published more than 20 peer-reviewed papers on top-tier academic journals including Journal of Agricultural and Food Chemistry, Food Chemistry, Talanta, J of AOAC Int., etc. and has reviewed more than 150 manuscripts and meeting abstracts for the American Botanical Council Botanical Adulterants Prevention Program (ABC BAPP), Journal of Agricultural and Food Chemistry, Food Chemistry, Phytochemical Analysis, Food Research International, J of AOAC Int, J Food Biochemistry, and American



Society for Nutrition (ASN) and IFT Annual Conferences. He was invited to serve as session chairs and give presentations at scientific conferences, trade shows, and universities.

Ed George, Sr. Applications Scientist, Analytical Instrument Group, Thermo Fisher Scientific, San Jose, CA



Ed George has a BS in Chemistry from the University of Notre Dame with concentration in Environmental Science. He worked for 15 years in the environmental laboratory industry, holding positions of Lab Technician, Lab Manager, and R&D Manager, responsible for developing novel sample preparation and analytical methods in soil and water on GC/MS/MS and LC/MS/MS platforms. He participated in several collaborative method development projects with the USEPA. In 2014, he joined Thermo Fisher Scientific and is currently a Senior Applications Scientist. He has worked closely with key

collaborators on food safety and environmental projects in universities and industry and has recently developed workflow applications for pesticide and veterinary drug residues in food on both LC/MS/MS and high-resolution MS platforms.

Wiley Hall, Ph.D., Director of Chemistry, DFA of CA / Safe Food Alliance

Wiley Hall is an environmental / analytical chemist with a Ph.D. from the University of Delaware and over 10 years of experience in the detection of toxic chemicals in foodstuffs and the environment. In past positions he has worked on detecting chemical weapon agents and toxic industrial chemicals in the environment, the formation and reactions of airborne particles in the atmosphere, and methods to prevent the release of methyl bromide following post-harvest fumigations of agricultural commodities. As Director of Research Chemistry for the DFA of California / Safe Food Alliance, Wiley's work focuses on the analysis of pesticide residues and research to ensure the post-harvest quality of agricultural commodities and to overcome trade barriers."



Melissa Calicchia, M.S., C.F.S., President/Chief Scientist, Food Safety Solutions, Inc. & Food Microbiological Laboratories, Inc.



Melissa Calicchia is the President and Chief Science Officer for Food Microbiological Laboratories, Inc., Food Safety Solutions, Inc., located in Cypress, CA. She has 30+ years' experience in food safety and microbiology and authored numerous original journal research papers on microbiological and food safety topics.

Food Microbiological Laboratories is an ISO 17025 Accredited third-party lab, performing routine testing for COA release of finished products, ingredients and environmental swab samples.

Food Safety Solutions, Inc. is a food safety consultancy practice that designs and executes microbiological challenge studies, designs and validates CCPs and Preventive Controls to support HACCP and Food Safety Plans, and troubleshoots microbiological contamination and regulatory issues. They also develop and evaluate food safety and quality systems to comply with regulatory, SQF and BRC standards with heavy emphasis on contaminant control trending and mapping in the food processing environment.

Toby Astill, Ph.D., PerkinElmer, Global Market Manager – Cannabis & Hemp



Dr. Toby Astill is PerkinElmer’s Global Market Manager for Cannabis & Hemp. Dr. Astill has a Ph.D. in Chemistry and has spent the last 15 years working in Science, Technology and Business Roles for leading technology companies. For the last 11 years he has worked for PerkinElmer, based in locations across the West Coast of Canada & US. Dr. Astill is now focused on driving PerkinElmer's global cannabis and hemp business; including but not limited to new product development, market & industry research, collaboration agreements with customers, application content development and marketing initiatives.

Barbara Cassens, Director for the Office of Partnerships, ORA-FDA



Barbara Cassens is the Director for the Office of Partnerships (OP). In her role as the Director of OP, she is responsible for the oversight, strategic planning, collaboration and integration with our federal, state, and local, partners, for manufactured human and animal food safety standards. Barbara began her career with the FDA in 1990 as a field investigator and the Pacific Region Cooperative Programs Director. Eventually, she became San Francisco’s District Director. Prior to joining the FDA, she worked in the private sector for Nestle, Dole Packaged Foods, and John Labatt, LLC. Ms. Cassens holds a Bachelor of Science Degree from the Iowa State University. She is active in the Western Association of Food and Drug Officials, the Association of Food and Drug Officials, the Institute of Food Technologists and the International Association for Food Protection.

Roberto DiLorenzo, Ph. D., Staff Scientist, Food and Beverage, Global Technical Marketing Team, SCIEX

With BSc and MSc degrees in chemistry from the University of Toronto and a PhD in analytical chemistry from Memorial University, Robert has been developing methods to analyze many small and large molecules from PFAS to biopolymers in various environmental and food matrices for over a decade. During his PhD, Robert used targeted and non-targeted approaches with high-resolution mass spectrometry for the characterization of complex mixtures (i.e. biomass burning aerosols). Robert then completed a post-doc at the Hospital for Sick Children to develop high-throughput exposomic screening methods for identifying the role of contaminants on fetal development. Robert joined SCIEX in 2017 as an application scientist for the environmental, food, beverage and *Cannabis* markets and has recently joined the Global Technical Marketing team as a Staff Scientist for Food and Beverage.



Gordon Walker, Ph.D., Gordon Walker Consulting



Dr. Walker has worked in the wine industry and related industries since 2007. He earned his BS in Biochemistry and Molecular Biology from UC Santa Cruz in 2008 and his Ph.D. in Biochemistry, Molecular, Cellular, Developmental Biology at UC Davis in 2016. He is a current Postdoctoral Scholar in Viticulture & Enology/Chemical Engineering, at the University of California, Davis. He is the author or co-author of numerous peer reviewed publications and presentations.

Steven Sommer, Ph.D., Director Viticulture and Enology Research Center CA State University, Fresno

Dr. Sommer joined California State University Fresno as the Director of the Viticulture and Enology Research Center (VERC) in Spring 2019. As Director of VERC, he provides research and administrative leadership by planning, promoting, and administering all viticulture and enology research programs. Responsibilities involve collaboration with other research centers within the Jordan College and the University, the Department of Viticulture and Enology, other institutions, as well as the grape and wine industry.

Prior to joining Fresno State's viticulture and enology team, Dr. Sommer was the academic program director and an Assistant Professor of Fermentation Sciences at Appalachian State University in Boone, NC. He also brings more than eight years of industry experience in various fields of beverage production including wineries, sparkling wine companies, breweries, table water production, and related fields including industrial flavor production.



Dr. Sommer received his Engineering diploma in Beverage Technology, Hochschule Geisenheim University, Germany and his Ph.D. in Microbiology and Wine Science at Gutenberg University Mainz, Germany.

Peyman Fatemi, Ph.D., IEH Laboratories and Consulting Group



Dr. Fatemi earned his PhD from The Pennsylvania State University in Food Science and Technology. He received his MS also in Food Science and Technology and his BS in Microbiology from the University of Georgia. Dr. Fatemi career spans nearly 20 years working with within multiple food and beverage categories as well as with diagnostic kit manufacturers and reference food safety laboratories. As a strategic consultant, he has advised companies on conducting risk assessments, including development of supply chain programs, environmental control programs, including environmental monitoring that are impacted by risks associated with the supply chain, as well as sanitation programs and helping companies respond to crisis situations. He is an active member of the food safety community and is serving on advisory panels and editorial boards of Food Protection Trends (FPT), Journal of Food Protection (JFP), International Association for Food Protection (IAFP) and the executive leadership board of the Food Microbiology Division of the Institute of Food Technologists (IFT- FMD). He is also on the expert review panel of the AOAC for official method approval of microbiological methods.

Ruth Timme Ph. D., Research Microbiologist, FDA Center for Food Safety and Applied Nutrition

Dr. Ruth Timme is a Research Microbiologist at the FDA's Center for Food Safety and Applied Nutrition. She received her Ph.D. in 2006 in Plant Biology at The University of Texas at Austin, where she utilized comparative genomics and phylogenetics methods to test hypotheses in plant evolution. At the FDA her research focus includes *Salmonella* phylogenetics and the validation of genomic methods for public health application. She also runs the FDA's genomic epidemiology program, GenomeTrakr, for foodborne pathogen surveillance.



Zach Eisenberg, VP & COO, ANRESCO Laboratories

Zachary Eisenberg is the VP and COO of Anresco Laboratories, an analytical laboratory providing comprehensive sampling and testing services to food, cannabis, and related industries. As the grandson of the founder, he grew up around the company



and accrued knowledge of different aspects of its operation from a young age. After receiving his MBA from the Ross School of Business (U of Michigan) in 2015, he returned to the company and spearheaded efforts to broaden its scope of services and modernize its operations. He is Co-Chair of the ACIL-CWG (American Council of Independent Laboratories – Cannabis Working Group), which now includes over 100+ organizations.

Peter Palmer, Ph.D., San Francisco State University

Pete Palmer received a B.S. in Chemistry from Canisius College and a Ph.D. in Analytical Chemistry from Michigan State University. His previous positions include work for Proctor & Gamble designing and developing laboratory robotics systems, and for NASA Ames Research Center where he led efforts to apply Mass Spectrometry to life support, atmospheric, and ecosystems monitoring applications. Pete is currently a Professor in the Department of Chemistry and Biochemistry at San Francisco State University (SFSU), Co-Director of SFSU’s Mass Spectrometry Facility, and Science Advisor for the FDA. He has performed numerous case studies on the determination of pesticide contamination on Native American artifacts, and pioneered the use of X-Ray Fluorescence Spectrometry for rapid screening of toxic elements in consumer products. Pete received the Jefferson Award in 2005 for community service in applying chemical analysis to serve the public interest.

