

7-Hydroxymitragynine (7-OH)

Pharmacology and Toxicology Concerns

Proponent In Person Testimony

Dr. David Kuntz

Background

The latest substance being associated with opioid misuse is 7-OH, an over-the-counter product currently sold in gas stations, convenience stores, and vape shops. 7-OH (7-hydroxymitragynine) is a potent psychoactive and analgesic compound originally derived from the leaves of *Mitragynia speciosa*, a tree native to Southeast Asia.

The parent drug, Kratom, is known as the crude plant material - typically dried leaves that are ground into a powder and consumed as a powder, capsule, or liquid. 7-OH is the powerful psychoactive metabolite of the Kratom parent drug, mitragynine. However, chemists are now able to isolate and synthetically bulk produce 7-OH in concentrated form. In laboratory studies, it has demonstrated opioid-like activity and 13-times greater potency than morphine.

7-OH products are marketed for pain relief, mood enhancement, or recreational use. They may be labeled under alternative names such as 7-Hydroxy, 7-OHMG, 7-HMG, or simply “7.”

Kratom has been available in the United States for many years, and several states have restricted or banned its sale due to concerns about safety and addiction potential. With the increasing availability of concentrated 7-OH products in retail stores and online, concerns about misuse and dependence have grown. These products are sold in various forms—including tablets, gummies, drink mixes, and energy-style beverages—and are easily accessible to both adolescents and adults.

Effects on the Body

7-OH has been evaluated primarily in laboratory settings and limited animal models to better understand its mechanism of action. Because one of the primary claimed uses of 7-OH is pain relief, most research has focused on its analgesic effects. Like morphine and other opioids, 7-OH has a strong affinity for the μ -opioid receptor, which plays a central role in modulating pain perception.

In rodent studies, both rats and mice demonstrated a preference for 7-OH over morphine, suggesting a high reinforcing potential. As with all analgesic drugs that act on the μ -opioid receptor, repeated use leads to tolerance, reducing effectiveness over time and increasing the risk of addiction. This pattern mirrors that of other opioids such as oxycodone and hydrocodone and is associated with both physical and psychological dependence.

7-OH is also associated with the well-known adverse effects of opioids, including respiratory depression. At high doses, it can suppress or stop breathing, which may be fatal without intervention. As with other opioids, Naloxone is required to displace 7-OH from the μ -opioid receptor and reverse life-threatening overdose effects.

To date, no controlled human clinical studies of 7-OH have been conducted. Given its addictive potential, any evaluation of safety or therapeutic benefit would require carefully designed and regulated clinical trials. Current evidence is limited to laboratory studies using isolated tissues and preclinical animal models.

Prevalence in Workplace Drug Testing

Clinical Reference Laboratory (CRL) is a privately owned laboratory located in Lenexa, Kansas and is accredited by the federal government and by the College of American Pathologists (CAP) to conduct workplace drug testing. As part of our continued involvement in drug testing, a pilot program for testing 7-OH was undertaken. Last fall, CRL tested 1000 random urine samples for the presence of mitragynine and 7-OH. The study found a 1.09% positive rate. Since November 2025 additional testing has been specifically requested by client due to the concern over the safety of their employees in safety/sensitive jobs. The positive rate continues at 1%.

The positivity rate for 7-OH is higher than the combined positive rate for oxycodone, hydrocodone, and fentanyl.

Summary

7-OH is a highly potent opioid analgesic with effects that exceed those of morphine. It carries a significant risk of addiction and overdose, and there does not appear to be a therapeutic benefit unique to 7-OH that cannot already be achieved with existing opioid medications. The United States has seen a dramatic decrease in the number of overdose deaths to fentanyl and other opioids, including heroin. 7-OH is staged and promoted to be the next fentanyl or heroin for opioid seeking individuals. Restrictions need to be established immediately to prevent further abuse of a non-evaluated chemical. Physicians have dramatically decreased the prescribing of opioids due to addiction and have found that opioid use of 1-2 days is sufficient in most injury/surgery pain treatments with ibuprofen replacing opioids and other narcotics for moderate pain relief. It appears that 7-

OH is primarily being used by individuals seeking opioid effects, often outside of medical supervision, which raises significant safety concerns and supports the need for regulatory control.

References

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- <https://www.investigatetv.com/2026/02/10/pills-gummies-sold-gas-stations-could-pose-addiction-risks/>
- <https://www.dshs.texas.gov/news-alerts/serious-illnesses-associated-7-oh-use?utm>
- <https://mattersnetwork.org/kratom-byproducts-7-oh-and-mp/?utm>

CURRICULUM VITAE

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EDUCATION

1987-1988
Postdoctoral Fellow
College of Pharmacy, University of Utah

1987
Postdoctoral Fellow
College of Pharmacy, Washington State University

1983-1987
Ph.D., Pharmaceutical Sciences
College of Pharmacy, North Dakota State University

1981-1983
M.S., Pharmaceutical Sciences
College of Pharmacy, Oklahoma University Health Sciences Center

1972-1975
B.S., Pharmacy
College of Pharmacy, North Dakota State University

1970-1972
Pre-Pharmacy
Dickinson State College

EMPLOYMENT

August 2006 – Present
Executive Director of Analytical Toxicology
SAMHSA Co-Laboratory Director
Director of the LC/MS/MS Bioanalytical Laboratory
CAP Scientific Director
Clinical Reference Laboratory, Lenexa, KS

November 2005 – August 2006
Laboratory Director (Forensic Workplace Testing for Urine, Hair, Oral Fluids, and Blood;
Federal Railroad Post-Accident Testing)
Northwest Toxicology, now a part of Quest Diagnostics, Salt Lake City, UT

March 2004 – November 2005

Laboratory Director (Forensic Workplace Testing for Urine, Hair, Oral Fluids, and Blood; Federal Railroad Post-Accident Testing)

Northwest Toxicology, a division of LabOne, Salt Lake City, UT

August 2001-February 2004

Laboratory Director (Forensic Workplace Testing for Urine, Hair, Oral Fluids, and Blood; Federal Railroad Post-Accident Testing)

Northwest Drug Testing

NWT Inc., Salt Lake City, UT

November 1994-August 2001

Laboratory Director (Workplace, Military, and Federal Railroad Post-Accident Testing)

Northwest Drug Testing

NWT Inc., Salt Lake City, UT

August 1993-November 1994

Director of Technical Operations

Occupational/Forensic Toxicology

Northwest Toxicology, Salt Lake City, UT

September 1992-November 1994

Co-Responsible Person

Occupational/Forensic Toxicology

Northwest Toxicology, Salt Lake City, UT

June 1988-1993

Associate Director

Occupational/Forensic Toxicology

Northwest Toxicology, Salt Lake City, UT

February 1987 – May 1988

Postdoctoral Fellow

College of Pharmacy, Washington State University and University of Utah

1983-1987

Graduate Assistant

College of Pharmacy, North Dakota State University, Fargo, ND

1980-1983

Graduate Assistant

College of Pharmacy, Oklahoma University Health Sciences Center, Oklahoma City, OK

Staff Pharmacist, University Hospital, Oklahoma City, OK

1979-1980

Chief Pharmacist/Assistant Manager

White Drug Enterprises, Fargo, ND

1976-1979

Chief Pharmacist

White Drug Enterprises, Fargo, ND

1975-1976

Staff Pharmacist

White Drug Enterprises, Bismarck, ND

RESEARCH INTERESTS

1. Metabolism and Pharmacokinetics of Drugs of Abuse

2. Quantitation of Drugs and Metabolites in Physiological Specimens
3. Identification Techniques in Urine Specimen Adulteration

PROFESSIONAL LICENSES/MEMBERSHIPS/CERTIFICATIONS

Awards/Certificates of Appreciation

SAMHSA Certification of Appreciation of Service, Division of Workplace Program
October 28, 2023.

Sue Clark Award of Excellence. CCDAPP Certification Program. October 2023.

HHS Certificate of Appreciation Comprehensive Review Working Group. October 20,
2022.

National Guard Bureau Certificate of Appreciation January 21, 1999.

Licenses

Registered Pharmacist (North Dakota and Oklahoma)

Memberships

American Academy of Forensic Sciences

Society of Forensic Toxicologists (Emeritus)

American Association for Clinical Chemistry

Society of Hair Testing

Certifications

Fellow-American Board of Forensic Toxicology (#228)

Diplomate – American Board of Forensic Toxicology (#228)

Diplomate - Forensic Toxicologist Certification Board (#044)

NLCP Inspector (Team Leader)

CAP Inspector (#1021856)

CAP Scientific Director

Laboratory Director for New York State (Certificate Number KUNTD1)

Clinical Toxicology

Forensic Toxicology

Clinical Chemistry (SVT)

Therapeutic Substance Monitoring/Quantitative Toxicology

Laboratory Director for Nevada (License Number 16409DIR-2)

Florida Lab Director

CLIA Qualified Clinical Laboratory Consultant

Radiation Safety Officer (Utah)

Committees

NLCP Alternative Technology Working Group (2025)

Comprehensive Review: Federal Drug Testing Program (2022)

NDASA Council of Laboratories (2021-Present)

NLCP Oral Fluid Drug Testing Working Group (2019-Present)

Medical Review Officer Certification (MROCC) Advisory Council (2019-Present)

CAP Toxicology Resource Committee (2019-Present)

SAMHSA MRO Manual for Urine/Oral Fluid Working Group (2012-15)

Medical Review Officer Certification Council Exam Development Committee (2011-14)

Clinical & Forensic Toxicology New (CFTN) Editorial Advisory Board (2010-2014)

NLCP MSMS Standards Working Group (2008-2010)

Drug Testing Advisory Board (2004-2008)

Drug Testing Advisory Board for Adulteration Testing (2001)

MRO Manual for Hair Testing Interpretation (2001)
Hair Testing Working Group for Laboratory Standards (1999-present)
Sweat Testing Working Group for Laboratory Standards (1999-2000)

Contracts

Project Coordinator NIDA N01DA-7-8074 Analytical Services Center for Medications Development (1997)

Principal Investigator NIDA N01DA-1-2200 Clinical Trials Network Pharmacy and Clinical Support (2001)

Principal Investigator NIDA N01DA-3-8829 Analytical Services to Medication Development Program (2003)

Principal Investigator NIDA N01DA-1-2204 Clinical Trials Network Pharmacy and Clinical Support (2004)

Principal Investigator NIDA N01DA-4-2206 Clinical Trials Network Clinical Laboratory Services (2004)

Principal Investigator NIDA N01DA-5-2008 Clinical Trials Network Clinical Laboratory Services (2006)

Principal Investigator Performance Evaluation of DAT Oral Fluid Assays, Phase 1 on Roche Hitachi, cobas, and Olympus 5400 Systems Study No: CIM RD000824 (2009)

Principal Investigator Performance Evaluation of DAT Oral Fluid Assay Phencyclidine on Roche Hitachi, cobas, and Olympus 5400 Systems Study No: CIM RD000957 (2010)

Principal Investigator Performance Evaluation of DAT Oral Fluid Assay Cocaine on Roche Hitachi, cobas, and Olympus 5400 Systems Study No: CIM RD001061 (2010)

Principal Investigator Performance Evaluation of DAT Oral Fluid Barbiturates and Cannabinoids on Roche Hitachi, cobas, and Olympus 5400 Systems (2010)

Comprehensive Review: Federal Drug Testing Program. Working Group 2-Scientific and Laboratory Issues. 2022

NLCP Alternate Technology Working Group 2025

Patent

David Day, David J. Kuntz, Michael Feldman. Oral detection test for cannabinoid use. United States Patent Number 7,465,586. December 16, 2008.

Podcast

Cannabinoids, Opiates, and Fentanyl – Oh My! What’s New in Workplace Drug Testing . American Association of Occupational Health Nurses (AAOHN), <https://sites.libsyn.com/400046/cannabinoids-opiates-and-fentanyl-oh-my-whats-new-in-workplace-drug-testing>. December 1, 2022.

Publications

Dustin Lee, C. Austin Zamarripa, Tory Spindle, Ruth Winecker, Ron Flegel, David Kuntz, Ed Cone, Ryan Vandrey. Chronic Oral Dosing of Cannabidiol (CBD) With and Without low Doses of Delta-9-Tetrahydrocannabinol (Δ -9-THC). Drug and Alcohol Dependence 267:111614, February 2025, DOI:10.1016/j.drugalcdep. 2024.111614.

C. Austin Zamarripa, Tory Spindle, Destiny Schriefer, Edward Cone, Ruth Winecker, Ronald Flegel, Eugene Hayes, Lisa Davis, David Kuntz, Ryan Vandrey. A within-subject cross-over trial comparing the acute effects of oral delta-8-tetrahydrocannabinol and

delta-9-tetrahydrocannabinol in healthy adults. *Drug and Alcohol Dependence*, Vol 272, 1 July 2025.

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Dennis J. Sholler, Tory R. Spindle, Edward J. Cone, Elia Goffi, David Kuntz, John M. Mitchell, Ruth E. Winecker, George E. Bigelow, Ronald R. Flegel, Ryan Vandrey. Urinary Pharmacokinetic Profile of Cannabidiol (CBD), Δ 9-Tetrahydrocannabinol (THC), and their Metabolites Following Oral and Vaporized CBD and Vaporized CBD-Dominant Cannabis Administration. **J. Anal. Toxicol.** 2022,46, 494-503. (doi.org/10.1093/jat/bkab059) June 18, 2021.

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Abstracts

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Melissa Beals, Michael Clark, Martin Jacques, Rebecca Henkhaus, David Kuntz. Trends in Fentanyl Analysis in Workplace Urine Drug Testing at CRL. Poster P7. SOFT Annual Meeting, St Louis, MO October 2024.

David Kuntz, Michael Clark, Martin Jacques, Melissa Beals, Rebecca Henkhaus. Δ -8- and Δ -9-THC-Carboxy Metabolites in Urine Drug Testing Specimens at CRL from April 2023 to January 2024. Poster P6. SOFT Annual Meeting, St Louis, MO October 2024.

Dustin Lee, C. Austin Zamarripa, Tory Spindle, Ruth Winecker, Ron Flegel, David Kuntz, Edward Cone, and Ryan Vandrey. Chronic Oral Dosing of Cannabidiol (CBD) With and Without Low Doses of Tetrahydrocannabinol (Δ -9-THC). CPDD 86th Annual Scientific Meeting, Montreal, Canada, June 15-19, 2024.

Brittany DeWitt, Jarod Rowland, Sarah Small, Barbara Rowland, Brett Oswald, Diane Moore, David Kuntz. Changing Specimen Validity Ranges (SVT) for Non-Regulated Urine Testing SOFT 2023, Denver Colorado

David Kuntz, Sarah Small, Tobin Kocour, Martin Jacques, Melissa Beals, Barbara Rowland, Brett Oswald, Brittany DeWitt. Δ 8-THC Impact on Non-Regulated Marijuana Confirmation Testing Rates. SOFT 2023, Denver Colorado.

Michael Clark, Martin Jacques, Melissa Beals, David Kuntz. Determination of 18 Cannabinoids in Urine with Separation of 11-OH-THC Metabolites by UHPLC-MS/MS. SOFT 2023, Denver Colorado.

Melissa Beals, Martin Jacques, Michael Clark, David Kuntz. Separation of 11-Hydroxy-THC Metabolites and Quantitation of 18 Total Cannabinoids in Whole Blood by UHPLC-MS/MS. SOFT 2023, Denver Colorado

Michael Clark, Martin Jacques, Zayne Williams, Melissa Beals, David Kuntz. Analytical Method for the Determination of 15 Cannabinoids in Urine by UHPLC-MS/MS. SOFT 2022, Cleveland.

Jarod Kabulski, David Kuntz, Sarah Small, Joseph McCrary, Kyle Bockenstedt, Steve Huffman, Richard Hewitt. The Unseen Impact of Δ 8-THC Products on the Regulated Drug Testing Industry. SOFT 2022, Cleveland.

Michael Clark, Martin Jacques, Melissa Beals, Bengi Oguz, David Kuntz. Identification and Quantitation of Benzodiazepines and Designer Benzodiazepines in Urine by UHPLC-MS/MS. SOFT 2022, Cleveland.

Melissa Beals, Martin Jacques, Michael Clark, David Kuntz; Identification and Quantitation of 13 Cannabinoids in Whole Blood by UHPLC-MS/MS. SOFT 2022, Cleveland.

Martin Jacques, Michael Clark, Melissa Beals, Brian Dorsey, David Kuntz. Analytical Method for the Identification and Quantitation of 21 Cannabinoids in Neat Oral Fluid by UHPLC-MS/MS. SOFT 2022, Cleveland.

Wolinsky D, Zamarripa CA, Spindle T, Cone E, Winecker R, Glegel R Kuntz D, Vandrey R. Chronic Oral Dosing of Cannabidiol (CBD) with and Without Low Doses of Delta-9-Tetrahydrocannabinol (THC). College on Problems of Drug Dependence (CPDD). Minneapolis, June 11-15, 2022.

Dennis J. Sholler, Tory R. Spindle, Cecilia L. Bergeria, Edward J. Cone, Elia Goffi, David Kuntz, John M. Mitchell, Ruth E. Winecker, George E. Bigelow, Ronald R. Flegel, Ryan Vandrey. Pharmacokinetic Profile of Cannabidiol (CBD), Δ 9-Tetrahydrocannabinol (THC), and Their Metabolites in Blood and Urine Following Oral and Vaporized CBD and Vaporized CBD-Dominant Cannabis Administration. College on Problems of Drug Dependence to annual meeting. Boston, MA. June 2021.

Winecker, RE, Cone EJ, Kuntz DJ, Flegel RR, Hayes ED. (2021, February 18). The Prevalence of Cannabidiol (CBD) and Tetrahydrocannabinol (THC) in Federally Regulated Workplace Drug Testing Urine Specimens. Presented at AAFS 73rd annual scientific meeting, (virtual due to COVID-19).

Ruth E. Winecker, Edward J. Cone, David J. Kuntz, Brian Dorsey, Martin Jacques, Melanie Senter, Ronald R. Flege⁴, and Eugene D. Hayes. Prevalence of Cannabidiol and Tetrahydrocannabinol in Non-Regulated Workplace Drug Testing Urine Specimens. **Virtual SOFT Annual Meeting**, San Diego, CA. September 2020

Edward J. Cone, Tory R. Spindle, George E. Bigelow, Ruth E. Winecker, John M. Mitchell, David Kuntz, Ronald R. Flegel and Ryan Vandrey. Cannabidiol (CBD) Does Not Convert to Delta-9-Tetrahydrocannabinol (Delta-9-THC) in the Body But the THC-Contaminated CBD May Produce Positive Marijuana Drug Tests. **Virtual SOFT Annual Meeting**, San Diego, CA. September 2020.

Martin Jacques and David J. Kuntz. Identification and Separation of Opioid Metabolites in Urine by LC-MS/MS. **SOFT Annual Meeting**, Minneapolis, MN. October 7, 2018.

Michael J. Herrera, David J. Kuntz, and Martin E. Jacques. Determination of an Alternate Source of Methcathinone in a Patient Sample. **SOFT Annual Meeting**, Atlanta, GA. October 21, 2015.

Michael Herrera and David Kuntz. Novel Conversion of an Extraction Method to Dilute and Shoot Procedure for the Quantitation of 16 Benzodiazepines in Human Urine Using UPLC/MS/MS. **SOFT Annual Meeting**, Orlando, FL October 30, 2013.

Michael Herrera and David J. Kuntz. Quantitative Chiral Determination of the *d*- and *l*-Enantiomers of Amphetamine & Methamphetamine in Oral Fluid using HPLC/MS/MS. **SOFT Annual Meeting**, Boston, MA July 4, 2012.

D. Kuntz, M. Meixner, and M.J. Coffing. Performance Evaluation of DAT Oral Fluid Barbiturate Assay on Roche Hitachi. **AACC Annual Meeting**, Atlanta, GA July 24-28, 2011.

MJ Coffing, D. Kuntz, M. Meixner, K. Armstrong, B. Masters. Performance Evaluation of DAT Oral Fluid Amphetamine, Methamphetamine, Opiates, and PCP. **SOFT Annual Meeting**, Richmond, VA October 2010.

D. Kuntz, M. Meixner, K. Armstrong, and MJ Coffing. Performance Evaluation of DAT Amphetamine, Methamphetamine, and Opiates Assays on Roche Hitachi. **AACC Annual Meeting**, Anaheim, CA, July 2010.

A. Gantverg, D. Kuntz, M. Feldman, and L. Wang. Ethylglucuronide and Ethyl Sulfate as Markers of Ethanol Consumption. **S.O.F.T. Meeting**, Austin, TX, October 3-7, 2006.

C. Moore, M. Feldman, N. Giorgi, W. Ross, E. Harrison, D. Irvan, D. Kuntz, A. Agrawal, S. Rana, M. Vincent, and J. Soares, Methamphetamine and Metabolites in Hair, Oral Fluid and Urine, **S.O.F.T. Meeting**, Nashville, TN, October 17-21, 2005.

C. Moore, M. Feldman, E. Harrison, D. Irvan, D. Kuntz, W. Ross, N. Giorgi. A. Agrawal, S. Ranal, M. Vincent, and J. Soares, Cocaine and Metabolites in Hair, Oral Fluid, and Urine, **S.O.F.T. Meeting**, Nashville, TN, October 17-21, 2005.

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A. Gantverg, M. Feldman, D. Kuntz, and L. Wang. Simultaneous screening of 26 drugs in urine by Liquid Chromatography – Tandem Mass Spectrometry. **S.O.F.T. Meeting**, Nashville, TN, October 17-21, 2005.

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Confirmation Testing Evolution: GC/MS to LC/MS/MS. SAPAA Annual Conference, Henderson, NV. September 13, 2013.

Drug Trends and Laboratory Update. DOT Drug & Alcohol Regulations Seminar. Wichita, KS. August 21, 2013.

Investigating Oral Fluid Matrices with No Sample Prep for Drugs of Abuse Analysis on the AB SCIEX QTrap 6500 System. AB Sciex User's Meeting. Hyatt Regency, Minneapolis, MN. June 9, 2013.

Testing for Synthetic Cannabinoids: Prevalence in a Workplace Population. Midwest Medical Directors Annual Meeting. Kansas City, MO. May 3, 2013.

A Day in the Life of a Urine Specimen. DATIA 2013 Annual Conference. Orlando, FL. April 11, 2013.

Advantages and Disadvantages of Testing in Alternative Matrices. Drug Free Sport, Kansas City, MO. January 30, 2013.

Review and Laboratory Testing of Synthetic Cannabinoids, Bath Salts, & Other Synthetic/Natural Products. AAMRO's MRO Training & Certification 2012. Las Vegas, NV. December 1, 2012.

Advances in Oral Fluid Testing. AAMRO's MRO Training & Certification 2012. Las Vegas, NV. November 30, 2012.

Latest Drug Testing Techniques and Industry Developments. International Forum for Drug & Alcohol Testing. Rome, Italy, November 9, 2012.

Review and Laboratory Testing of Synthetic Cannabinoids, Bath Salts, & Other Synthetic/Natural Products. 41st Annual Iowa Governor's Safety & Health Conference. Altoona, IA. November 2, 2012.

Latest Drug Testing Techniques and Innovations. RYAN Associates' 26th Annual National Conference. Chicago, IL October 9, 2012.

Research in Oral Fluid as a Matrix for Drug Testing including Chiral Amphetamines Using LC/MS/MS. AB Sciex Users Group, Boston, MA July 4, 2012.

Laboratory Testing of K2, Bath Salts, & Adulteration Update. 11th Annual Railroad Roundtable. Denver, CO. May 30, 2012.

Research in Oral Fluid as a Matrix for Drug Testing including Chiral Amphetamines Using LC/MS/MS. AB Sciex Users Group, Vancouver, BC. May 20, 2012.

Laboratory Testing of K2, Bath Salts and Other Synthetic Drugs. National webinar, Lenexa, KS. March 14, 2012.

Workplace Drug Testing – What you Need to Know for Policy and Testing. Heartland Paralegal Association. Overland Park, KS. March 13, 2012.

Laboratory Testing of K2, Bath Salts and Other Synthetic Drugs. eScreen National Sales Meeting, Clearwater, FL. January 17, 2012.

LC/MS/MS Testing of Synthetic Cannabinoids and Bath Salts. Fundamentals of LC/MS in Clinical Diagnostics. Waters Corporation Workshop. Kansas City, MO. December 13, 2011.

Laboratory Testing: Drugs and Specimen Validity. AAMRO Medical Review Officer Training Program, Las Vegas, NV. November 11, 2011.

Spice, Bath Salts and Other Laboratory Information. DOT Drug & Alcohol Regulations Seminar. Pipeline Testing Consortium, Inc. Wichita, KS. October 5, 2011.

Laboratory Based Testing of Oral Fluids. Workshop presentation. SOFT Annual Meeting, San Francisco, CA. September 26, 2011.

Research into Oral Fluid and Testing for K2 Spice and Bath Salts Using LC-MS/MS. AB SCIEX User Meeting. Framingham, MA . June 21, 2011.

Spice and Bath Salts. Air Transportation Association. Seattle, WA. May 18, 2011.

Lab Testing for Alcohol & Drugs Abused by Professionals. 2011 SOOHP Annual Spring Conference. Dublin, OH. March 31, 2011

Spice, Baths Salts, and Alcohol Abstinence. National Organization of Alternative Programs (NOAP). West Palm Beach, FL March 11, 2011.

Lab Testing for Alcohol & Drugs Abused by Professionals. DATIA Webinar. Lenexa, KS March 9, 2011.

Analytical Toxicology. Collin County Bench/Bar Foundation. Dallas, TX. April 16, 2010.

Drug and Alcohol Detection in Professional Programs. California Board of Registered Nursing. San Diego, CA. November 17-18, 2009.

Laboratory Testing Overview for Drugs of Abuse. Fall Seminar of the Oklahoma Safety Management Council. Tulsa, OK. October 23, 2009.

Drug Testing Options Beyond the DOT 5-Panel. DATIA 2009 Annual Conference. Mohegan Sun Resort and Casino, CT. May 15, 2009.

Laboratory-Inside Edition. ADTS 8th Annual Rail Conference. Las Vegas, NV. March 11, 2009.

Laboratory Director Panel Discussion on 10 CFR Part 26. Nuclear Energy Institute Part 26 Implementation Workshop. Las Vegas, NV, January 14, 2009.

Drug Testing Options Beyond the DOT 5-Panel. SAPAA 2008 Annual Conference. St. Louis, MO. September 18, 2008.

Laboratory Perspective on Additional Drug Testing and Associated Costs. Exploring the Science and Experience of Testing for Prescription Drugs in the Non-Regulated Workplace. DTAB Meeting, Rockville, MD August 20, 2008.

Laboratory Testing for Alcohol Metabolites, Opiates, and SVT. Intermountain Health Services to Business/WorkMed Annual Conference. Salt Lake City, UT. May 9, 2008.

Ethyl Glucuronide & Ethyl Sulfate Metabolites for Alcohol Abstinence Monitoring. AAMRO Training Course, Las Vegas, NV. November 10, 2007.

Workplace Laboratory Findings and Trends. AAMRO Training Course. Las Vegas, NV. November 9, 2007.

Laboratory Testing for Alcohol and Drugs Abused by Medical Professionals. Administrators in Medicine (AIM) Western and Central Regional Meeting. Jackson Hole, WY. October 25, 2007.

SVT Testing: Substitution, Adulteration (pH and Oxidants), and Invalid Results; SVT Data/Case Review; SVT Data Review/Discussion. NLCP Review Course. Center for Forensic Sciences, RTI International and SAMHSA. June 22-24, 2006.

Adulterants - What Works and What Doesn't. National Bureau of Controlled Drugs, Department of Health, Hualien, Taiwan. November 2, 2005.

Hair as Alternative Specimen in Workplace Drug Testing. National Bureau of Controlled Drugs, Department of Health, Taipei, Taiwan. November 3, 2005.

Quality Control and Management of a High-Volume Hair Drug Testing Laboratory. National Bureau of Controlled Drugs, Department of Health. Kaohsiung, Taiwan. November 5, 2005.

Adulterants – What Works and What Doesn't. Substance Abuse Program Administrators Association, Kansas City, MO. September 22, 2005.

Workplace Drug Testing, Urine, Hair, and Ethyl Glucuronide, Logan Regional Hospital, Logan, UT. September 21, 2005.

Drug Testing in 2005 and Beyond. Air Force Alcohol and Drug Abuse Prevention and Treatment Demand Reduction Conference. St. Louis, MO. May 25, 2005.

Specimen Validity Testing. Air Force Alcohol and Drug Abuse Prevention and Treatment Demand Reduction Conference. St. Louis, MO. May 25, 2005

Adulterants and Trends. Midwest Association for Toxicology and Therapeutic Drug Monitoring. Kansas City, MO. May 19, 2005.

Lab Overview: Specimen Validity Testing; Alternative Testing Methodologies. Department of Interior Drug and Alcohol Training Conference. Miami, FL. April 5, 2005.

Ethyl Glucuronide - The New Metabolite for Monitoring Alcohol Consumption. Utah Society for Clinical Laboratory Science. Ogden, UT. April 8, 2005.

Urine Adulteration Trends from 2001-2003. AAMRO Drug Testing Symposium. Quadrangle Research, LLC. Las Vegas, NV. October 8-10, 2004.

Ethyl Glucuronide: The New Urine Metabolite for Monitoring Alcohol Consumption. AAMRO Drug Testing Symposium. Quadrangle Research, LLC. Las Vegas, NV. October 8-10, 2004.

Drug Testing Round Table Discussion. AAMRO Drug Testing Symposium. Quadrangle Research, LLC. Las Vegas, NV. October 8-10, 2004.

Workplace Drug Testing. Utah State Bar Paralegal Division Annual Seminar. Salt Lake City, UT. June 14, 2004.

Drug Testing – New Developments. IHC WorkMed Regional Employer Conference. Provo, UT. March 18, 2004.

Drug Testing – New Developments. IHC WorkMed Regional Employer Conference. Ogden, UT. March 24, 2004.

Drug Testing – New Developments. IHC WorkMed Regional Employer Conference. Salt Lake City, UT. March 29, 2004.

Drug Testing – New Developments. IHC WorkMed Regional Employer Conference. Logan, UT. April 6, 2004.

Hair and Oral Fluids Matrix. Primary Children's Hospital. Salt Lake City, UT. January 28, 2004.

Drug Testing Round Table Discussion. AAMRO Drug Testing Symposium. Quadrangle Research, LLC. Las Vegas, NV. December 5-6, 2003.

Testing Methodology in Adulteration. National Association of Pretrial Services Agencies. Broomfield, CO, October 13, 2003.

Drugs of Abuse Detection: Parents, Children and Home. Idaho Drug Endangered Children. Boise, ID. July 9, 2003.

Adulterant Update and Other Lab Issues. Second Annual Railroad Substance Abuse Testing Programs. Fort Worth, TX. May 13, 2003.

Drug Testing Infants and Children: What Specimen Should We Collect. Utah's 1st Annual Drug Endangered Children Conference. Salt Lake City, UT. March 28, 2003.

Testing Methodology in Adulteration. Pretrial and Drug Court Services. Salt Lake City, UT. February 14, 2003.

Testing for Drugs and Adulteration. Air Force Substance Abuse Conference. San Diego, CA. July 15, 2003.

Testing for Drugs of Abuse in Hair Air Force Substance Abuse Conference. San Diego, CA. July 15, 2003.

Panel Member: Workplace Urine Specimen Validity Testing Colloquium. Biomedical Sciences Research Laboratory. Tampa, FL. February 4-6, 2003.

Drugs of Abuse Detection in Children: Are We Collecting the Correct Sample Matrix. 6th Annual Critical Issues Facing Children & Adolescents. Salt Lake City, UT. November 7, 2002.

Workplace Drug Testing in Urine, Hair, and Oral Fluids. Department of Interior Drug/Alcohol Testing Conference. Fort McHenry, MD. September 19, 2002.

Illegal Drugs in the Workplace. Utah Army National Guard. St. George, UT. September 21, 2002.

Toxicology Overview. Air Force Substance Abuse Conference. Denver, CO. August 20, 2002.

Laboratory Intervention in Adulteration Testing. Amtrak. Salt Lake City, UT. July 23, 2002.

Adulteration Testing. 1st Annual Department of Transportation Customer Meeting. Salt Lake City, UT. May 16, 2002.

Testing for Drugs and Adulteration. Federal Air Surgeon's Management Team Meeting. Costa Mesa, CA. April 18, 2002.

Hair and Bodily Fluids, Lab Overview and Testing for Other Drugs. Department of Interior Drug/Alcohol Testing Program Training Conference. Miami, FL. March 14, 2002.

Beating the People Trying to Beat the (Urine) Test. Utah Correctional Association Fall Conference. Salt Lake City, UT. October 15, 2001.

Workplace Drug Testing Review. HealthONE Occupational Drug and Alcohol Testing Workshop. Thornton, CO. September 27, 2001.

Laboratory Specimen Validity Testing – Procedures and Adulterants of Interest. Department of Transportation Workshop. Washington, DC. September 25, 2001.

Illegal Drugs. Navigating the Workers' Compensation Maze (University of Utah). Salt Lake City, UT. September 20, 2001.

The Laboratory Process. Federal Bureau of Investigation. Quantico, VA. June 10, 2001.

Drug Facilitated Sexual Assault. 8th Annual Pharmacology Conference, Salt Lake City, UT. June 2, 2001.

Integrity Testing of Urine Samples in the Drug Testing Industry. Utah Society for Clinical Laboratory Science. Ogden, UT. March 29, 2001.

Selecting a Program for Drug Testing. Southern Idaho Human Resources/Safety Workshop. Burley, ID. February 23, 2001.

Overview of Herbal Ecstasy and Club Drugs. Salt Lake County Sheriff's Office. Salt Lake City, UT. February 5, 2001.

Drug and Adulteration Testing. IHC WorkMed. Ogden, UT. January 19, 2001.

Drug Testing Overview. Defense Logistics Agency. Ft. Belvoir, VA. November 2000.

Testing Methodology in Adulteration. Drug Testing Symposium Technical Applications, Policies and Business Strategies. Washington, DC. December 7, 2000.

Drug Facilitated Sexual Assault. New Drugs and Law Update 2000. College of Pharmacy, University of Utah, Salt Lake City, UT. September 23, 2000.

Urinalysis Testing and Results. Southern Section, Child Protection Division. Cedar City, UT. September 14, 2000.

Drug Testing Adulteration Methods. IHC WorkMed and Provo Chamber of Commerce. Provo, UT. September 7, 2000.

Workplace Drug Testing Overview. HealthONE Drug and Alcohol Testing Seminar. Denver, CO. November 4, 1999.

Alibis & Adulterants Used in Workplace Drug Testing. Davis County Employer Committee. Kaysville, UT. September 29, 1999.

Drug Testing Overview. Administrative Law Judges of Salt Lake City. Salt Lake City, UT July 29, 1998.

Adulteration Update. AAMRO MRO Training Program. Las Vegas, NV. October 19, 1996.

Continuing Education

Society of Forensic Toxicology Annual Meeting. October 27-31, 2025, Portland, Oregon.

NLCP Lab Director Meeting. October 26, 2025. Portland, Oregon.

Drug Testing Advisory Board (DTAB) Meeting. Webinar, December 3, 2024.

SOFT Annual Meeting. October 28-November 1, 2024. St Louis Mo.

SOFT Workshop 9: Recent Research on the Semi-Synthetic Cannabinoids Delta 8-THC, THCO, and HHC. October 29, 2024. SOFT Annual Meeting, St Louis, MO.

SOFT Workshop 1. Psychedelics: Promising Treatment Applications and Concerns for Impaired Driving. October 28, 2024. SOFT Annual Meeting. St Louis MO.

SOFT Workshop 7. Are We Entering the Post-fentanyl Era – Or Have We Already Entered It? October 28, 2024. SOFT Annual Meeting. St Louis MO.

Smith vs. Arizona: A Discussion for Forensic Toxicologists. October 1, 2024. Webex
Drug Testing Advisory Board. Rockville, MD. June 4, 2024. Webex.

Module 4: Validating Specimen Collection Devices for Oral Fluid Drug Testing used in HHS-Certified Drug Testing Laboratories. RTI International. February 2, 2024
WebEx.

NPS Discovery Webinar Series – January 2024. January 11, 2024.

NLCP Inspector Training Workshop. Denver, Colorado, October 29, 2023.

SOFT Annual Meeting, Denver Colorado, October 30-November 3, 2023.

TIAFT 60th Annual Meeting, Rome, Italy August 27-31, 2023.

NLCP Inspector Training Workshop. RTI, Raleigh NC, June 2-5, 2022.

SAMHSA Drug Testing Advisory Board Meeting. WebEx. December 7, 2021.

Oral Fluids for Federal Drug Testing & CBD and Δ8-THC impacts on Drug Testing. 2021 Annual DATI Symposium, Colorado Springs, CO. June 24, 2021.

Developing an Oral Fluid Drug Testing Program – Basic Considerations, Guidelines, and Implementation Strategies. SOFT Annual Meeting (Virtual), September 15, 2020.

SOFT Annual Meeting (Virtual). September 2020.

NLCP Inspector Training Workshop. Webex. September 20, 2020.

DTAB Meeting. Webex Teleconference presentation. Rockville, MD. September 1, 2020.

Responsible Person Responsible Technician Training. NLCP Web Training. Lenexa, KS, December 18, 2019.

SOFT Annual Meeting. San Antonio, TX, October 13-17, 2019.

Oral Fluid/Toxicology (Workshop #12), SOFT Annual Meeting, San Antonio, TX, October 15, 2019.

CBD and Hemp (Workshop #4), SOFT Annual Meeting, San Antonio, TX October 14, 2019.

NLCP Inspector Training. SOFT Annual Meeting, San Antonio, TX, October 13, 2019.

European Workplace Drug Testing Society (EWDTS). London, England. May 8-10, 2019.

MoCannBizCon. St. Louis, MO, March 11-12, 2019.

Symposium on Novel Psychoactive Substances. Science History Institute, Philadelphia, PA. November 13-14, 2018.

North American Association of Racetrack Veterinarians. Annual Meeting and Symposium. Lexington, KY. November 6, 2018.

NLCP Inspector/Lab Director Training. Minneapolis, MN. October 7, 2018.

SOFT Annual Meeting. Minneapolis, MN. October 8-11, 2018.

Risky Business: The Dance Between ISO/IEC 17025:2017's Risk Based Requirements and Forensic Toxicology Laboratories – Workshop #6. SOFT Annual Meeting, Minneapolis, MN. October 9, 2018.

How to Navigate Your Way through the Epidemic of Emerging Drugs - Workshop #1. SOFT Annual Meeting, Minneapolis, MN. October 8, 2018.

Forensic Toxicology Board Certification Preparation Course. The Center for Forensic Science Research and Education. 16 week webinar, September 28, 2018.

IFDAT 2018 Annual Meeting. Dublin Ireland. September 3-4, 2018.

2018 Focus on Compliance Implementing a New Test: It is More Than the Signature. CAP Webinar, Lenexa, KS. May 16, 2018.

SOFT-TIAFT 2017 Annual Meeting. Boca Raton, FL January 7-10, 2018.

Workshop #13 Screening by LC-MS/MS. SOFT-TIAFT 2017 Annual Meeting. Boca Raton, FL, January 8, 2018.

Workshop #3 Prevalence of NPS. SOFT-TIAFT 2017 Annual Meeting. Boca Raton, FL, January 7, 2018.

Workshop #8 Synthetic Cannabinoids, SOFT-TIAFT 2017 Annual Meeting. Boca Raton, FL, January 7, 2018.

IFDAT Annual Meeting. Clearwater Beach, FL. October 23-24, 2017.

NLCP Inspector/Lab Director Workshop. Lenexa, KS September 15, 2017.

Identify Synthetic Opioids using Ambient Ionization TOF-MS. Webinar July 19, 2017.

DATIA 2017 Annual Meeting. Orlando, FL. May 16-18, 2017.

European Workplace Drug Testing Society (EWDTs) annual Meeting. Torino, Italy. May 4-5, 2017.

Is this What the Doctor Ordered? Medical Marijuana Update (SOFT Workshop #10). SOFT Annual Meeting, Dallas, TX. October 18, 2016.

Toxicology of Designer Benzodiazepines and Opioids (SOFT Workshop #5). SOFT Annual Meeting, Dallas, TX, October 17, 2016.

Alcohol Concentration Extrapolation (SOFT Workshop #4). SOFT Annual Meeting. Dallas, TX, October 17, 2016.

2016 NLCP Inspector/Lab Director Workshop. Dallas, TX October 16, 2016.

IFDAT Annual Meeting. Stavanger, Norway August 24-26, 2016.

Screening solution for forensic toxicology: Which technology is best for your laboratory? Webinar by Sciex. Lenexa, KS January 26, 2016.

SOFT Annual Meeting. Atlanta, GA. October 20-24, 2015.

Pharmacognosy for the Forensic Toxicologist. SOFT Annual Meeting. Atlanta, GA. October 20, 2015.

Pharmacology and Toxicology of Synthetic Cathinones and Phenylethylamines. SOFT Annual Meeting. Atlanta, GA. October 19, 2015.

2014 NLCP Inspector/Lab Director Workshop. forensicED Webinar. April 21, 2015

New Developments in Clinical Research and Forensic Toxicology Using LC/MS/MS. Lenexa, KS October 7, 2014.

International Drug & Alcohol Testing (IFDAT). Belfast, Northern Ireland, September 11-12, 2014

International Drug & Alcohol Testing (IFDAT). Coral Gables, FL. November 4-5, 2013.

SOFT Annual Meeting. Orlando, FL. October 27-November 1, 2013.

NLCP Laboratory Inspector Training. Orlando, FL. October 26, 2013.

Hair Testing Update. Drug Testing Advisory Board Meeting. Videoconference. Rockville, MD July 15, 2013.

Determination of Opiates and Opioids in Dried Blood Spots using Novel Flow-Through Technology Coupled to LCMSMS. Agilent/RTI Sponsored Online Course. Lenexa, KS. April 19, 2013.

New Developments in Clinical Research and Forensic Toxicology Using LC/MS/MS. AB SCIEX Continuing Education Program. Kansas City, KS. March 27, 2013

Developments in Emerging and Designer Drug Markets 2013. AAFS 65th Annual Scientific Meeting, Washington, DC. February 19, 2013.

Drug Testing Advisory Board (DTAB) Meeting. Video-teleconference. Lenexa, KS. February 11, 2013.

Analytical Methods in Workplace Drug Testing – Mass Spectrometry. Webinar by RTI. October 27, 2012.

Analytical Methods in Workplace Drug Testing – Chromatography. Webinar by RTI. October 27, 2012.

Analytical Methods in Workplace Drug Testing – Sample Preparation. Webinar by RTI. October 27, 2012.

Analytical Methods in Workplace Drug Testing – Immunoassay. Webinar by RTI. October 27, 2012.

SOFT Annual Meeting, Boston, MA July 1-6, 2012.

Drug Screening Using Liquid Chromatography Time of Flight Mass Spectrometry (LC-TOF/MS). SOFT 1012 Annual Meeting, Boston, MA July 2, 2012.

NLCP Update Meeting, Boston, MA July 1, 2012.

DTAB Advisory Board Meeting. Teleconference. Rockville, MD. February 1, 2012.

SOFT-TIAFT Annual Meeting. San Francisco, CA. September 26-30, 2011.

High Resolution Accurate Mass Spec (HRAM) in Forensic and Clinical Toxicology. SOFT Annual Meeting workshop. San Francisco, CA. September 27, 2011.

Analytical Advances in Oral Fluid Drug Testing. SOFT Annual Meeting workshop, San Francisco, CA. September 26, 2011.

Applications of Oral Fluid Drug Testing. SOFT Annual Meeting workshop, San Francisco, CA. September 26, 2011.

Introduction to the National Laboratory Certification Program (NLCP). Webinar RTI. September 22, 2011.

NLCP Manual and Checklist Changes – On Demand. Webinar RTI. September 21, 2011.

CAP 2011 Laboratory Accreditation Program Audioconference: Checklist Updates: What and Why, Lenexa, KS September 21, 2011.

Analytical Methods for Specimen Validity Testing. Webinar RTI. June 15, 2011.

New Developments in Forensic Toxicology and Clinical Research Using LC/MS/MS. AB SCIEX User Meeting. Lenexa, KS May 26, 2011.

Specimen Validity Testing: The Experience in the U.S. Workplace Drug Testing. RTI On-Line Course. April 21, 2011.

Pathophysiology of Pain: Mechanisms and Manifestations. AAPM Annual Meeting, National Harbor, MD, March 25, 2011.

American Academy of Pain Management 27th Annual Meeting. National Harbor, MD March 24-27, 2011.

AAFS Annual Meeting. Chicago, IL, February 23-25, 2011.

K2 and Beyond: A Synthetic Cannabinoid Primer, Workshop #18. AAFS Annual Meeting, Chicago, IL, February 22, 2011.

SOFT Annual Meeting Richmond, VA October 18-22, 2010.

Marijuana Pharmacology. SOFT Annual Meeting, October 18, 2010.

NLCP Manual and Checklist Changes Effective October 1, 2010. Audioconference, Lenexa, KS September 28 2010.

CAP Current Concepts and Practical Solutions for Successful Document Control, Audioconference, Lenexa, KS June 16, 2010.

CAP Accreditation Checklist Redesign, Audioconference, Lenexa, KS May 26, 2010.

American Academy of Forensic Sciences 62nd Annual Meeting, Seattle, WA Feb. 22-27, 2010.

Forensic Journals & Forensic Information. AAFS 62nd Annual Meeting, Seattle, WA February 23, 2010.

Neonatal, Pediatric, & Geriatric Deaths. AAFS 62nd Annual Meeting, Seattle, WA February 22, 2010.

American Academy of Pain Medicine 26th Annual Meeting, San Antonio, TX February 3-6, 2010.

Newer Prescription Drugs: Impairment Potential & Identified Polypharmacies. SOFT Workshop. Oklahoma City, OK. October 20, 2009.

Toxicology of Opiate Overdose: Strategies for Analysis & Interpretation. SOFT Workshop. Oklahoma City, OK. October 19, 2009.

SOFT 2009 Annual Meeting. Oklahoma City, OK. October 18-23, 2009.

NLCP Inspector Workshop. Oklahoma City, OK. October 18, 2009.

Handling OSHA Inspections During the Obama Years. Audio Conference. Lenexa, KS. July 14, 2009.

DATIA 2009 Annual Conference. Mohegan Sun Resort and Casino, CT. May 13-15, 2009.

Federation of State Physician Health Programs Annual Meeting and Conference. New Orleans, LA. April 27-30.

SOP Writing for ISO 17025 Accreditation. RTI and National Institute of Justice Audioconference. Lenexa, KS. February 10, 2009.

Nuclear Energy Institute Part 26 Implementation Workshop. Las Vegas, NV. January 13-15, 2009.

To Hell and Back: The Ethics of Stewardship and the Stewardship of Ethics. RTI and National Institute of Justice Audioconference. Lenexa, KS. December 4, 2008.

Laboratory General Checklist: Safety for Laboratory Workers. CAP Audioconference, Lenexa, KS. November 19, 2008.

Pain Management and Addiction. SOFT Workshop, Phoenix, AZ October 28, 2008.

Overview of Biomarkers of Alcohol Testing: Emerging Trends and Foreseen Applications. SOFT Workshop, Phoenix, AZ October 27, 2008.

NLCP Inspector/Lab Director Workshop. SOFT Annual Meeting, Phoenix, AZ, October 26, 2008.

SOFT 2008 Annual Meeting. Phoenix, AZ October 26-31, 2008.

Laboratory General Checklist: Personnel Issues in the Clinical Laboratory. CAP Audioconference, Lenexa, KS. October 15, 2008.

Good Laboratory Practices 21 CFR Part 58 Subparts C-E. Inhouse Training, Lenexa, KS. October 2, 2008.

Comprehensive Online Team Leader Self-Study. CAP WebTraining course #0013060208. October 2, 2008.

Drug Testing Advisory Board Meeting. Teleconference. September 29, 2008.

ICS2000: IC Theory Operation and Maintenance. Lenexa, KS. September 24-25, 2008.

Exploring the Science and Experience of Testing for Prescription Drugs in the Non-Regulated Workplace. DTAB Meeting, Rockville, MD August 19-20, 2008.

21CFR 11 Training. In house training by CRL. Lenexa, KS. July 8, 2008.

Opioids and Pain Management. RTI and National Institute of Justice Audioconference. Lenexa, KS. June 19, 2008.

The Laboratory General Checklist. CAP Audioconference, Lenexa, KS. June 18, 2008.

56th ASMS Conference on Mass Spectrometry and Allied Topics. Denver, CO June 1-5, 2008.

Patient Safety and the Laboratory. CAP Audioconference. Lenexa, KS. May 21, 2008.

Z Drugs, From Analysis to Interpretation. RTI and National Institute of Justice Audioconference. Lenexa, KS. May 15, 2008

Expert Testimony for the Prosecutor and Scientist II. RTI and National Institute of Justice Audioconference. Lenexa, KS. May 14, 2008

Bioanalytical Training. Society of Quality Assurance, Memphis, TN. April 21, 2008.

Avoiding the Most Common Deficiencies. CAP Audioconference. Lenexa, KS. April 16, 2008.

Inspection Techniques. CAP Audioconference. Lenexa, KS. March 19, 2008.

Performing Effective Self-Inspections. CAP Audioconference. Lenexa, KS. November 14, 2007.

AAMRO's Annual Drug Testing Symposium. Las Vegas, NV. November 9-11, 2007.

Society of Forensic Toxicology Annual Meeting. Raleigh, NC. October 15-19, 2007.

LC-MS in the 21st Century - Workshop. Raleigh, NC. October 16, 2007.

Solid Phase Extraction in Forensic Toxicology: Principle and Applications – Workshop. Raleigh, NC. October 15, 2007.

NLCP Inspector Training. Raleigh, NC. October 14, 2007.

Introduction to LCMSMS Technology. Lenexa, KS. September 2007.

A Systematic Approach to Reducing Matrix Effects in LC/MS/MS Analyses. Lenexa, KS. September 2007.

Crucial Compliance Communications. CAP Audioconference, Lenexa, KS. April 18, 2007.

Conducting Portions of GLP Studies in GMP Laboratories: Similarities, Differences, & Solutions. FDA*news* presentation. Audiconference, Lenexa, KS. March 28, 2007.

Crucial Compliance Communications. CAP Audioconference. Lenexa, KS. April 18, 2007.

Checklist Updates. CAP Audioconference, Lenexa, KS. March 21, 2007.

Update on Unannounced Inspections. CAP Audioconference, Lenexa, KS. February 21, 2007.

Getting the Most Out of Your Proficiency Testing. CAP Audioconference, Lenexa, KS, January 24, 2007.

Drug Testing Advisory Board Meeting. SAMHSA Building, Rockville, MD, December 12-13, 2006.

CAP Regulatory Accreditation Issues. Audioconference, Lenexa, KS, October 18, 2006.

NLCP Inspector/Laboratory Director Update Meeting. Austin, TX October 6, 2006.

Society of Forensic Toxicologists Annual Meeting. Austin, TX. October 2-6, 2006.

NLCP Review Course. Center for Forensic Sciences, RTI International and SAMHSA. June 22-24, 2006.

Secrets and Developments in GC and GC/MS. Agilent Technologies, Salt Lake City, UT. February 28, 2006.

Postmortem Toxicology Interpretation. Society of Forensic Toxicologists. Nashville, TN. October 18, 2005.

The Postmortem “Blood Drug Screen”: Analytical and Managerial Approaches. Society of Forensic Toxicologists. Nashville, TN. October 17, 2005.

Oral Fluids – Research and Applications. Society of Forensic Toxicologists. Nashville, TN. October 17, 2005.

Alternative Matrix Testing. California Association of Toxicologists. Las Vegas, NV. August 26-27, 2005.

Midwest Association for Toxicology and Therapeutic Drug Monitoring Annual Scientific Meeting. Kansas City, MO. May 18-19, 2005.

AAMRO Drug Testing Symposium. Quadrangle Research. Las Vegas, NV. October 8-10, 2004.

National Laboratory Certification Lab Director Workshop. Research Triangle Institute. Washington, DC. August 28, 2004.

Forensic Toxicology. FBI and National Institute of Justice. Washington, DC August 29-30, 2004.

Annual Meeting. SOFT-TIAFT. Washington, DC. August 31-September 3, 2004.

SOHT Annual Conference. Society of Hair Testing. Chicago, IL May 23-25, 2004.

AAMRO Drug Testing Symposium. Quadrangle Research. Las Vegas, NV. December 5-6, 2003.

Feeling Blue? Antidepressant Workshop! Society of Forensic Toxicologists. Portland, OR. October 21, 2003.

Practical Applications for LCMS in Routine Toxicology Testing. Society of Forensic Toxicologists. Portland, OR. October 20, 2003.

Forensic Toxicology of Metals. Society of Forensic Toxicologists, Portland, OR. October 20, 2003.

Society of Forensic Toxicologist Annual Meeting, Portland, OR. October 18-24, 2003.

Workplace Urine Specimen Validity Testing Colloquium. Biomedical Sciences Research Laboratory. Tampa, FL. February 2-4, 2003.

National Laboratory Certification Lab Director Workshop. Research Triangle Institute. Washington, DC. August 28, 2003.

CAP/FUDT Inspector Training. The College of American Pathologists. Dearborn, MI. October 12, 2002.

National Laboratory Certification Lab Director Workshop. Research Triangle Institute. Dearborn, MI. October 12, 2002.

Pharmacogenomics. Society of Forensic Toxicologists. Dearborn, MI. October 12, 2002.

Aspects of Human Growth and Development. Society of Forensic Toxicologists, Dearborn, MI. October 2002.

Club Drugs & Drug-Facilitated Sexual Assault. Society of Forensic Toxicologist, Dearborn, MI. October 2002.

Society of Forensic Toxicologists Annual Meeting. Society of Forensic Toxicologists. Dearborn, MI. October 13-17, 2002.

Workplace Drug Testing Update. Drug Testing Advisory Board. Bethesda, MD. March 13, 2002.

NLCP Inspector Training. Research Triangle Institute. Research Triangle Park, NC. November 7, 2001.

Automation of Micro-Plate Enzyme Immunoassay Systems. Society of Forensic Toxicologists. Milwaukee, WI. October 2000.

Pharm & Tox: Drugs Used in Treatment of Infectious Disease. Society of Forensic Toxicologists. Milwaukee, WI. October 2000.

Pharmacology Reviews II: Cardiovascular Tox Cardiogenomics. Society of Forensic Toxicologists. Milwaukee, WI. October 2000.

Forensic Applications of LC/MS. Society of Forensic Toxicologists. Milwaukee, WI. October 2000.

NLCP Inspector Workshop. Research Triangle Institute. Research Triangle Park, NC. October 2, 2000.

Contemporary Practice in Clinical Toxicology. American Academy Clinical Chemistry. Alexandria, VA. June 9-11, 2000.

Annual Meeting. American Academy of Forensic Sciences. Reno, NV. February 21-26, 2000.

Forensic Toxicology of Opiate Alkaloids and Synthetic Analgesics. American Academy of Forensic Sciences. Reno, NV. February 2000.

DOT/HHS Laboratory Directors' Meeting. Research Triangle Institute. Arlington, VA. December 13-14, 1999.

HHS/NLCP Update. Research Triangle Institute. Puerto Rico. October 10, 1999.

Annual Meeting. Society of Forensic Toxicologists. Puerto Rico. October 9-14, 1999.

Pharmacology Reviews: Selected New Drugs. Society of Forensic Toxicologists. Puerto Rico. October 9-14, 1999.

On-Site Drug Testing Working Group. SAMHSA. Chevy Chase, MD. October 5-6, 1999.

Annual Meeting. American Academy of Forensic Sciences. Orlando, FL. February 15-20, 1999.

Post Mortem Pediatric Forensic Toxicology – Issues in Childhood Poisoning. American Academy of Forensic Sciences. Orlando, FL. February 15, 1999.

Marijuana: A Forensic Symposium. American Academy of Forensic Sciences. Orlando, FL. February 15, 1999.

Annual Meeting. SOFT-TIAFT 1998. Albuquerque, NM. October 5-9, 1998.

NLCP Inspector Workshop. Research Triangle Institute. Albuquerque, NM. October 4, 1998.

CAP Forensic Urine Drug Testing Inspector Training Seminar. Albuquerque, NM. October 3, 1998.

Practical Aspects of CI/MS for Drugs. SOFT-TIAFT. Albuquerque, NM October 1998.

Pharmacology and Anal. Tox. of Drugs of Abuse. SOFT-TIAFT. Albuquerque, NM October 1998.

The Effects of Alcohol and Drugs on Human Performance and Behavior. American Academy of Forensic Sciences. Los Angeles, CA. August 20-22, 1998.

Annual Meeting. American Academy of Forensic Sciences. San Francisco, CA. February 9-14, 1998.

Medical, Scientific, and Legal Aspects of Ethanol in Forensic Casework. American Academy of Forensic Sciences. San Francisco, CA. February 9, 1998.

Tryptamines: Natural and Synthetic. Clandestine Laboratory Investigating Chemists Association. San Francisco, CA. February 10, 1998.

Methamphetamine: Synthesis, Pharmacology, Analysis and Toxicology. American Academy of Forensic Sciences. San Francisco, CA. February 10, 1998.

Profiles of Common Homicidal Poisons. American Academy of Forensic Sciences. San Francisco, CA. February 10, 1998.

Drug Testing Laboratory Manager's Meeting. Department of Defense Tri-Service. Jacksonville, FL. November 3-7, 1997.

Fundamental of Alcohol Testing and Interpretation. Society of Forensic Toxicologists. Salt Lake City, UT. October 1997.

The Pharmacology of Herbal Preparations. Society of Forensic Toxicologists. Salt Lake City, UT. October 1997.

Fundamental of Forensic Toxicology: A Basic Course. Society of Forensic Toxicologists. Baltimore, MD. October 9, 1995.

Advanced Forensic Toxicology: Analytical Topics. Society of Forensic Toxicologists. Baltimore, MD. October 10, 1995.

Advanced Forensic Toxicology: Pharmacologic and Interpretive Topics. Society of Forensic Toxicologists. Baltimore, MD. October 10, 1995.

Practical Budgeting Skills for Managers. CareerTrak. Salt Lake City, UT April 25, 1995.

Annual Meeting. TIAFT- SOFT. Tampa, FL November 1-4, 1994.

Legal Aspects of Urine, Blood and Hair Testing Workshop. SOFT-TIAFT. Tampa, FL. October 31, 1994.

Human Performance Testing Drugs and Driving Impairment. SOFT-TIAFT. Tampa, FL. October 31, 1994.

Drug Testing in Hair. Society of Forensic Toxicologists. Tampa, FL. October 29-30, 1994.

Human Performance/Drugs and Driving. SOFT-CAT. Phoenix, AZ. October 13, 1993.

Back to Basics Workshop. American Academy of Forensic Sciences. Boston, MA. February 16, 1993.

Laboratory Aspects of Forensic Urine Drug Testing. Center for Human Toxicology. March 10-13, 1992.

Medical Review Officers Seminar. Federal Aviation Administration. Albuquerque, NM. September 14, 1991.