

Cynthia Silva Burbach, BS, MPA
Colorado Department of Public Health and Environment, Laboratory Services Division
Telephone: (303) 692-3491 • Fax: (303) 343-3697
8100 Lowry Blvd • Denver, CO 80230

EXPERIENCE

Colorado Department Of Public Health and Environment

Hazardous Materials Waste Management Division – Inspector January 1995 to November 2000

Laboratory Services Division – Forensic Chemist and Director of Toxicology January 1984 to January 1995 and November 2000 to present

Responsible for Forensic Toxicology Analyses. Duties include supervising activities of full service forensic toxicology laboratory, which serves the State of Colorado. Work comprises legal drug screening and blood alcohol determinations for local, county, and state law enforcement agencies as well as methods development. Provide expert testimony in forensic toxicology, standard field sobriety maneuvers, and interpretation of the Colorado Board of Health Rules & Regulations for State and Federal hearings.

EDUCATION

PhD Courses:

The Analytical Basis Of Forensic Toxicology, University of Colorado Health Science Center, School of Pharmacy, Fall 2006.

Topics included: Introduction/Fundamentals, Extraction/Fundamentals, Fragmentation Characteristics of Major Functional Groups, Chromatographic Theory, Drugs and Human Performance, Clandestine Methamphetamine Manufacturers, Ethanol Methods of measurements, Antibody-Based Methods, Pharmacokinetics, Pharmacodynamics, Instrument Applications

MPA, Public Administration University of Colorado – September 1993 to May 1996

B.S., Biology/Chemistry New Mexico State University – September 1976 to August 1980

PROFESSIONAL MEMBERSHIPS

Society of Forensic Toxicologists
International Association of Chemical Testing
Colorado State Management Association

COMMITTEES

January 1, 2008 to December 31, 2010

Forensic Toxicologist for the Technical Advisory Panel and Highway Safety Committee of International Association of Chiefs of Police

PUBLICATIONS AND RELATED ACTIVITIES

Abstract, Society Of Forensic Toxicologists, October 2005. Dynamic Headspace Extraction as an Alternative to Solid Phase Microextraction for the Analysis of Volatile Organic Compounds at Physiological Levels in Blood. Patrick Ayres, Cynthia Burbach, Ashley Demander, Ed Price, and C. Michael Smith.

Journal Of Analytical Toxicology, Volume 30, Number 2: Page 134, March 2006

Dynamic Headspace Extraction as an Alternative to Solid Phase Microextraction for the Analysis of Volatile Organic Compounds at Physiological Levels in Blood. Patrick Ayres, Cynthia Burbach, Ashley Demander, Ed Price, and C. Michael Smith.

American Academy of Forensic Science

Isotopic Dilution in the Analysis of Cocaine, Cocaethylene, and Benzoyllecgonine in Whole Blood: Comparison of the "Tradition" to the "Direct" Application of Deuterated Drug Analogs.

San Antonio, Texas

February 21, 2007

LECTURES AND PRESENTATIONS

Forensic Toxicology in DUI/DWAI - Case Histories

University Of Colorado, Colorado Springs

Toxicology Perspective in Drug-Facilitated Rape Cases

SANE Nurses/Sex Assault Detectives

Colorado District Attorney's Council

DUI/DUID

Slurring, Swerving and Staggering Prosecuting The Impaired Driver

September 17, 2007

Toxicology Update-DUI/DRE Officers

Colorado State Patrol Academy

Golden, Colorado

September 11, 2007

Toxicology Update-DUI/DRE Officers

Colorado State Patrol Academy

Golden, Colorado

September 11, 2007

Forensic Toxicology Update

Colorado State Patrol Adams County

Broomfield Colorado

August, 2007

Drug Recognition Main School

Forensic Toxicology Review

Golden, Colorado

June 2007

SANE Symposium

Drug Facilitated Sex Assaults & Laboratory Limitations

St. Anthony's Hospital

June, 2007

American Academy of Forensic Science

Isotopic Dilution in the Analysis of Cocaine, Cocaethylene, and Benzoyllecgonine in Whole Blood: Comparison of the "Tradition" to the "Direct" Application of Deuterated Drug Analogs.

San Antonio, Texas

February 21, 2007

Drug Recognition Main School
Forensic Toxicology Review
Golden, Colorado
August, 2006

Denver Sexual Assault Interagency Council
Drug Facilitated Sex Assault
Denver, Colorado
July, 2006

Forensic Toxicology A Case Review
Forensic Toxicology Master's Program
University Of Colorado Springs
July, 2006

El Paso County District Attorney's Office
Toxicology 101
Colorado Springs, Colorado
March 3, 2006

Jefferson County District Attorney's Office
Driving Under The Influence Of Drugs
Golden, Colorado
March 2006

Drug Recognition Update For Troopers
Colorado State Patrol Academy
Golden, Colorado
December, 2005

Colorado Department Of Transportation
Impaired Driving Program Assessment
Denver, Colorado
October, 2005

Toxicology For The Chemist
American Chemical Society
Regis University
Denver, Colorado
September, 2005

The Colorado Collegiate Impaired Driving Conference
Driving Under The Influence Of Drugs and Alcohol
Denver, Colorado
September, 2005

Toxicology For The Prosecutor
Driving Under The Influence Of Drugs and Alcohol
The Colorado District Attorney's Council
Snowmass, Colorado
September, 2005

Drug Recognition Main School
Toxicology For The Police Officer
Grand Junction Colorado
July, 2005

Toxicology 101-Forensic Toxicology Update
Arapahoe County District Attorney's Office
June, 2005

Toxicology 101
Denver District Attorney's Office
April, 2005
Drug Recognition Main School
Forensic Toxicology Review
Denver, Colorado
January, 2001

Drug Recognition Main School
Forensic Toxicology Aspects
Denver, Colorado
May, 1994

Drug Recognition Main School
Toxicology Update
Pharmokinetics/Pharmodynamics
Denver, Colorado
April, 1993

Drug Recognition Main School
Toxicology Update
Pharmokinetics/Pharmodynamics
Denver, Colorado 1992

Drug Recognition Main School
Forensic Toxicology Review
Denver, Colorado
July, 1991

Drug Recognition Main School
Forensic Toxicology Update
Denver, Colorado
February, 1990

Drug Recognition Main School
Pharmokinetics/Pharmodynamics
Denver, Colorado
March, 1989

Toxicology Update
Interpretive DUID Workshop
Training Seminar-Arapahoe County District Attorney's Office
Littleton, Colorado
April, 1989

Drug Recognition Main School
Toxicology For The Police Officer
Denver, Colorado
April 1988

TRAINING COURSES, WORKSHOPS AND SEMINARS – CONTINUING EDUCATION

Standard Field Sobriety 8 hour update
Denver Police Department
Traffic Investigation Unit
December 19, 2007

Detection Times of D9-Tetrahydrocannabinol (THC)
11-Hydroxy-D9-Tetrahydrocannabinol (11-OH-THC)
and 11 –nor-D9-Tetrahydrocannabinol-9-Carboxylic Acid (THCCOOH)
in Urine from Chronic cannabis Users during Abstinence
Scientific Session #5
SOFT Continuing Education CMTE Workshop
Raleigh-Durham, North Carolina
October 19th, 2007

An Overview of Drug Facilitated Sexual Assaults in New Jersey
SOFT Continuing Education CMTE Workshop
Scientific Session #4
Raleigh-Durham, North Carolina
October 18th, 2007

Age Related Difference in Blood Alcohol Concentration
In Acute Alcohol Intoxication Fatalities
Scientific Session #1
SOFT Continuing Education CMTE Workshop
Raleigh-Durham, North Carolina
October 17th, 2007

Toxicology Jeopardy
A Practical Approach to DUID Testing
SOFT Continuing Education CMTE Workshop
Raleigh-Durham, North Carolina
October 16th, 2007

Benzodiazepines-The Basics and Beyond
SOFT Continuing Education CMTE Workshop
Raleigh-Durham, North Carolina
October 15th, 2007

Hallucinogens-Old, New and Trendy
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
August 2nd, 2007

Dextromethorphan Use and Abuse in DUI Investigations
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
August 2nd, 2007

Sleep Deprivation and the Effects on Driving and SFSTs
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
August 1st, 2007

Working With Difficult DRE Cases
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
August 1st, 2007

Toxicology Support in Impaired Driving Cases
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
August 1st, 2007

Over-the-Counter Drugs and Herbal Products DUI Investigations
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
August 1st, 2007

Inside the Mind of the Marijuana User
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
July 31, 2007

Examining Methamphetamine Dopamine Blues
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
July 31, 2007

Interpretive Toxicology and Drug Impaired Driving
A Case Oriented Approach
The 13th Annual IACP Training Conference on
Drugs, Alcohol and Impaired Driving
July 31, 2007

Newer Analytical Techniques:
Applications in Forensic Toxicology
American Academy of Forensic Sciences Annual Meeting
San Antonio, Texas
February 21st, 2007

Alcohol, Drugs, and Homicide
American Academy of Forensic Sciences Annual Meeting
Scientific Session
San Antonio, Texas
February 21st, 2007

Cocaine Impaired Driving: Evaluation of
Toxicology, Driving Behavior, and Impairment
Symptoms in Arrested Drivers
Scientific Session
American Academy of Forensic Sciences Annual Meeting
San Antonio, Texas
February 20th, 2007

Driving Under the Influence of Methamphetamine: Comparison of
Driving Behavior and Impairment Symptoms in Subjects Arrested for
Driving While Intoxicated
Scientific Session
American Academy of Forensic Sciences Annual Meeting
San Antonio, Texas
February 20th, 2007

Driving Behavior and Impairment
Symptoms in Cannabinoid Positive Subjects
Arrested for Driving Under the Influence of Drugs
American Academy of Forensic Sciences Annual Meeting
San Antonio, Texas
February 20th, 2007

Finding the Needle in the Haystack:
Improving the Toxicological Investigations
Of Drug-Facilitated Sexual Assault and Other Crimes
American Academy of Forensic Sciences Annual Meeting
San Antonio, Texas
February 20th, 2007

Downside of Methamphetamine Impairment
The 12th Annual IACP Training Conference on Drugs,
Alcohol and Impaired Driving
Kansas City, Missouri
June 16th, 2006

Basic Drug and Drug Paraphernalia Identification
The 12th Annual IACP Training Conference on Drugs,
Alcohol and Impaired Driving
Kansas City, Missouri
June 16th, 2006

Drugged Driving: Beyond Illicit Substances
The 12th Annual IACP Training Conference on Drugs,
Alcohol and Impaired Driving
Kansas City, Missouri
June 15th, 2006

The Role of the Toxicologist:
Challenges and Solutions
The 12th Annual IACP Training Conference on Drugs,
Alcohol and Impaired Driving
Kansas City, Missouri
June 15th, 2006

The Pupils: A New and Innovative Look
The 12th Annual IACP Training Conference on Drugs,
Alcohol and Impaired Driving
Kansas City, Missouri
June 15th, 2006

History of DRE and the Expansion to the Midwest
The 12th Annual IACP Training Conference on Drugs,
Alcohol and Impaired Driving
Kansas City, Missouri
June 14th, 2006

SFST/HGN Research
The 12th Annual IACP Training Conference on Drugs,
Alcohol and Impaired Driving
Kansas City, Missouri
June 14th, 2006

The Administration of Standard Field Sobriety Maneuvers
Classroom/Drinking Laboratory (3 day class)
Certification Class
Denver Police Academy
December 2005

A GC-MS Method Development Study for the Determination of
Ketamine or its Metabolites and the Evaluation of the REMEDI
al Urine Samples
Scientific Session
SOFT Continuing Education
Nashville, Tennessee
October 21st, 2005

The Use of LC/MS/MS Technologies for Drug Screening,
Confirmation and Quantification
Scientific Session
SOFT Continuing Education
Nashville, Tennessee
October 20th, 2005

Cyclobenzaprine (Flexeril) Concentration in Postmortem Cases
Scientific Session
SOFT Continuing Education
Nashville, Tennessee
October 20th, 2005

Zolpidem Impaired Drivers in Wisconsin-A Six Year Retrospective
Scientific Session
SOFT Continuing Education
Nashville, Tennessee
October 20th, 2005

LC/MS/MS Analysis of THC and its Metabolites
Scientific Session
SOFT Continuing Education
Nashville, Tennessee
October 20th, 2005

Central Nervous System Depressants
Case Studies In DUI: Numbers, Signs,
Symptoms and Beyond
SOFT Continuing Education CMTE Workshop
Nashville, Tennessee
October 19, 2005

Drug Combinations & Basic Receptor Theory
SOFT Continuing Education CMTE Workshop
Nashville, Tennessee
October 19, 2005

Interpretive Strategies
The Good, the Bad and the Ugly....
SOFT Continuing Education CMTE Workshop
Nashville, Tennessee
October 19, 2005

Blood Alcohol Concentration Extrapolation
An Approach to Retrograde Extrapolation
SOFT Continuing Education CMTE Workshop
Nashville, Tennessee
October 18, 2005

Stimulants and Driving Impairment
SOFT Continuing Education CMTE Workshop
Nashville, Tennessee
October 18, 2005

The Eleventh IACP DRE Training Conference on
Drugs, Alcohol, and Impaired Driving
Benzodiazepines and Driving
Arlington, VA
August 7, 2005

The Eleventh IACP DRE Training Conference on
Drugs, Alcohol, and Impaired Driving
Marijuana and Driving
Arlington, VA
August 6, 2005

The Eleventh IACP DRE Training Conference on
Drugs, Alcohol, and Impaired Driving
The Dynamics of an Impaired Driving Trial
Arlington, VA
August 6, 2005

The Eleventh IACP DRE Training Conference on
Drugs, Alcohol, and Impaired Driving
Horizontal Gaze Nystagmus Revisited and Revitalized
Arlington, VA
August 5, 2005

The Eleventh IACP DRE Training Conference on
Drugs, Alcohol, and Impaired Driving
Pharmacology Aspects of DRE
Drug Impaired or Medical Rule Out
Arlington, VA
August 5, 2005

The Eleventh IACP DRE Training Conference on
Drugs, Alcohol, and Impaired Driving
Standard Field Sobriety Testing Updates
Arlington, VA
August 5, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Presentation of Expert Testimony
Indiana University, Bloomington, IN
May 20^h, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Analysis of Defense Challenges to Breath-Alcohol Testing
Indiana University, Bloomington, IN
May 19^h, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Legal Aspects—constitutional Issues/Case Law
Indiana University, Bloomington, IN
May 19^h, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Psychomotor Effects and Driving
Indiana University, Bloomington, IN
May 18^h, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Recent Research on Forensic Alcohol Analysis
Indiana University, Bloomington, IN
May 18^h, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Blood Alcohol Analysis
Indiana University, Bloomington, IN
May 18^h, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Theory and Practice of Breath-Alcohol Analysis: Physico-Chemical Aspects
Indiana University, Bloomington, IN
May 17th, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Forensic Alcohol Toxicology Databases and Their
Courtroom Applications
Indiana University, Bloomington, IN
May 17th, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Mathematics of Breath and Blood Alcohol Analyses
Indiana University, Bloomington, IN
May 17th, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Pharmacology of Alcohol-Extrapolation
Indiana University, Bloomington, IN
May 16th, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Breath Alcohol Instrumentation
Indiana University, Bloomington, IN
May 16th, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Theory and Practice of Breath-Alcohol Analysis: Selected
Biological Aspects
Indiana University, Bloomington, IN
May 16th, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
Pharmacology of Alcohol
Indiana University, Bloomington, IN
May 15th, 2005

The Robert F. Borkenstein Course On Alcohol
And Highway Safety: Testing, Research and Litigation
A Career in Forensic Alcohol Toxicology
Indiana University, Bloomington, IN
Dr. Kurt M. Dubowski
May 15th, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Narcotic Analgesics
Spokane, WA
May 3, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Antidepressants
Spokane, WA
May 3, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Antihistamines & NSAIDs
Spokane, WA
May 3, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Hallucinogens
Spokane, WA
May 3, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Psychotics
Spokane, WA
May 3, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Herbal Supplements
Spokane, WA
May 3, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Drugs & Driving Overview
Spokane, WA
May 3, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Forensic Drug Testing Overview
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Pharmacology Overview
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Specimen Preparation
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Instrument Analysis
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Principles of Drug-Drug Interaction
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Alcohol & Volatiles
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Carbon Monoxide & Cyanide
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Stimulants
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Marijuana
Spokane, WA
May 2, 2005

Society Of Forensic Toxicologist
Continuing Education Committee Seminar
Drinking Laboratory with SFST's
Spokane, WA
May 2, 2005

Drinking Laboratory-The Administration of Standard
Field Sobriety Maneuvers-Certification/3 day course
Denver Police Academy
March, 2005

Applications of Liquid Chromatography-Mass Spectrometry
Introductory Course
Agilent Technology
Golden, Golden
arch, 2005

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Amphetamines and their effects on skills related to driving
Indiana University
Bloomington, Indiana
September 22, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Narcotic Analgesics and their effects on skills related to driving
Indiana University
Bloomington, Indiana
September 22, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
A survey of Toxicology Laboratories performing DRE Toxicology
Indiana University
Bloomington, Indiana
September 22, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Analytical Toxicology considerations in drugs and driving cases
Indiana University
Bloomington, Indiana
September 22, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
DUID Testimony for Toxicologists
Indiana University
Bloomington, Indiana
September 22, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Cocaine and its effects on skills related to driving
Indiana University
Bloomington, Indiana
September 21st, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Antidepressants and Driving Impairment
Indiana University
Bloomington, Indiana
September 21st, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Marijuana and Driving performance
Indiana University
Bloomington, Indiana
September 21st, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
PCP and Driving Impairment
Indiana University
Bloomington, Indiana
September 20th, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Selected Central Nervous System Drugs and their effects on driving
(GHB, Soma, Zolpidem, Inhalants)
Indiana University
Bloomington, Indiana
September 20th, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Benzodiazepines: Pharmacology and Psychomotor effect related to driving
Indiana University
Bloomington, Indiana
September 20th, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Assessment of Impaired Drivers-DRE
Indiana University
Bloomington, Indiana
September 20th, 2004

The Effects of Drugs on Human Performance and Behavior
Robert F. Borkenstein Center for Studies of Law in Action
Driving Simulation and On-Road Driving Studies
Indiana University
Bloomington, Indiana
September 20th, 2004

Focus On Quality A Practical QA Program
For Your Laboratory
CLIA
Denver, Colorado
December, 2002

The Seventh IACP DRE, Drugs, Alcohol and Impaired Driving
Training Conference
The Effect Of Low Doses Of Alcohol On Driving-Related Skills
Long Beach, California
June, 2001

The Seventh IACP DRE, Drugs, Alcohol and Impaired Driving
Training Conference
Drugs Of Abuse
Long Beach, California
June, 2001

The Seventh IACP DRE, Drugs, Alcohol and Impaired Driving
Training Conference
The Drug Evaluation and Classification (DEC) Program
Long Beach, California
June, 2001

Current Quality Control Methods
CDC Training
Denver, Colorado
March, 1991

Drug Recognition Expert Training Program
Division Of Highway Safety and NHTSA
Denver, Colorado
November, 1990
A Look at CLIA 88
Colorado Training Network
Denver, Colorado
August 1990

GCMS for the Chromatographer, Hewlett Packard Analytical
Seminar Series
Denver Colorado
May, 1990

Drug Recognition Expert School Main School
Colorado Department Of Transportation-Highway Safety Program
Aurora, Colorado
October, 1987

Drug Recognition Expert School-Pre School
Colorado Department Of Transportation-Highway Safety Program
Aurora, Colorado
October, 1987

DUI Enforcement Course-Standard Field Sobriety Maneuvers,
CDOT Division Of Highway Safety
Denver, Colorado
March 1987