

## CURRICULUM VITAE

Name: Patrick M. Harding

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### **Position Description:**

Forensic Alcohol Consultant: Provide consulting services and testimony in non-criminal and criminal cases in which alcohol use is involved.

Retired: Supervisor, Toxicology Section, Wisconsin State Laboratory of Hygiene. Responsible for overall management of Toxicology Section. Retired December 30, 2012. Performed chemical testing on biological materials for alcohol and other substances, DHS alcohol analysis permit #AP-204. Provided research and scientific support for Wisconsin's breath alcohol testing program. Provided expert court testimony and interpretation of blood and breath alcohol results. Provided training and gave seminars and presentations related to alcohol testing.

### **Education:**

University of Southwestern Louisiana, Lafayette, LA, 1970 -1973  
University of Wisconsin - Madison, 1974-1975  
B.S. in Biochemistry, December, 1975

### **Professional Experience:**

Research Assistant, Bjorksten Research Laboratories, 1974-1975  
Chemist, Bjorksten Research Laboratories, 1976-1977  
Chemist, State Laboratory of Hygiene, October 1977 - 2001  
Breath Testing Specialist, 1982 - 2012  
Alcohol Program Coordinator, 1991 - 2001  
Legal Alcohol Proficiency Testing Coordinator, 1990 - 2001  
Toxicology Section Supervisor, 2001 – 2012  
Faculty Member, Lethal Weapon: DUI Homicide Course, National District Attorneys Association, 2000 - 2011  
Robert F. Borkenstein Course on Alcohol and Highway Safety: Testing, Research and Litigation: Faculty December 2002 – Present, Assistant Course Director 2013-present.

Testimony: Expert witness in over 750 trials. Testified in Wisconsin, Michigan, New Jersey and Florida

Selected Professional Training:

- Alcohol Pharmacology, State Laboratory of Hygiene, 1980
- Breathalyzer Technician, Madison, WI April 1982
- Breathalyzer Course, (Theory and Practical Application), Centre of Forensic Science, Toronto, Ontario, June 7-June 17, 1982.
- Basic Training Course for Breath Examiner Specialist, Ashland, WI, September, 1982.
- Technical Supervision of Breath Tests for Intoxication: Indiana University, Center for Studies of Law In Action, Bloomington, IN, February, 1984
- Intoxilyzer 5000, CMI, Minturn, CO, May, 1985
- Intoxilyzer 5000 and 1400 Breath Alcohol Analysis Instrument Operation & Maintenance & Repair, CMI, Madison, WI, February, 1993
- The Effects of Alcohol and Drugs on Human Performance and Behavior, American Academy of Forensic Sciences, Los Angeles, CA, August, 1998
- Intox EC/IR Factory Training, Intoximeters, Inc., St. Louis, MO, September, 1998
- Marijuana: A Forensic Symposium, 51<sup>st</sup> Annual Meeting of the American Academy of Forensic Sciences, Orlando, FL, February 16, 1999
- AAFS Toxicology Section Drugs and Driving Committee Current Topics: Drugs, Driving and Human Performance Testing, 53<sup>rd</sup> Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA, February 20, 2001.
- Is This Driver Impaired by Drugs? Can Blood Drug Concentrations and a DRE Evaluation Answer This Question?, Atlanta, GA, February 12, 2002
- Pharmacology and Toxicology of Brain Drugs, Dearborn, MI, October 14, 2002
- DUID Research to the Courts, Dearborn, MI, October 13, 2002
- Central Nervous System Toxins: Biochemical Mechanisms and Physiological Consequences, Atlanta, GA, February 12, 2002
- Clinical Chemistry and Forensic Toxicology- A Symbiotic Relationship in Death Investigation, Chicago, IL, February 17, 2002
- Antipsychotics: Medicines for the Mind, Chicago, IL, February 18, 2003
- Application of the Principles of Pharmacology and Pharmacokinetics to the Interpretation of Drug Blood Levels, Dallas, TX, February 17, 2004.
- Statistics and Method Validation, FBI Symposium on Forensic Toxicology, Washington, DC, August 30, 2004.
- Human Factors, Performance, and Transportation Safety- The Rest of the Story: Beyond Alcohol and Other Drug Impairment, New Orleans, LA, February 22, 2005
- Blood Alcohol Concentration Extrapolation, Nashville, TN, October 17, 2005.
- Case Studies in DUID: Numbers, Signs, Symptoms and Beyond, Nashville, TN, October 17-18, 2005.
- Standardized Field Sobriety Tests- Principles and Practice, Austin, TX, Society of Forensic Toxicologists-SOFT 2006, October 3, 2006.
- Finding the Needle in the Haystack: Improving the Toxicological Investigation of Drug-Facilitated Sexual Assault and Other Crimes, 59<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences San Antonio, TX, February 20, 2007.
- Blood Drug Concentrations and Driving Symposium. T2007 Joint ICADTS/TIAFT Meeting, Seattle, WA, August 26, 2007.
- Benzodiazepines...The Basics and Beyond, Society of Forensic Toxicologists-SOFT 2007, Raleigh/Durham, NC, October 15, 2007.
- Toxicology Jeopardy – A Practical Approach to DUID Testing, Society of Forensic Toxicologists-SOFT 2007, Raleigh/Durham, NC, October 16, 2007
- Pain Management and Addiction, Society of Forensic Toxicologists-SOFT 2008,

- Phoenix, AZ, October 28, 2008.
- Overview of Biomarkers of Alcohol Testing, Society of Forensic Toxicologists-SOFT 2008, Phoenix, AZ, October 27, 2008.
  - Pharmacology and Pharmacokinetics for Forensic Toxicologists, American Academy of Forensic Sciences, AAFS 61<sup>st</sup> Annual Meeting, Denver, CO, February 17, 2009.
  - Bridging the Gap in Postmortem Laboratory Practices and Case Interpretations, Society of Forensic Toxicologists-SOFT 2009, Oklahoma City, OK, October 20, 2009.
  - Newer Prescription Drugs: Impairment Potential & Identified Polypharmacies, Society of Forensic Toxicologists-SOFT 2009, Oklahoma City, OK, October 20, 2009.
  - Navigating the World of Forensic Journals & Forensic Information- American Academy of Forensic Sciences- AAFS 62<sup>nd</sup> Annual Meeting, February 23, 2010.
  - Marijuana Pharmacology- Practical Applications for the Forensic Toxicologist. Society of Forensic Toxicologists-SOFT 2010, Richmond, VA, October 18, 2010.
  - Elemental Analysis and Interpretation of Findings. Society of Forensic Toxicologists-SOFT 2010, Richmond, VA, October 19, 2010.
  - To Err is Human...to Identify it is Devine. Society of Forensic Toxicologists-SOFT 2010, Richmond, VA, October 19, 2010.
  - Blood Alcohol Concentration (BAC) Evidence: Extrapolation, Interpretation, and Testimony in the Post-NAS Era. AAFS 63<sup>rd</sup> Annual Meeting, Chicago, IL, February 22, 2011
  - Using Pharmacokinetics to Analyze Forensic Toxicology Cases. AAFS 64<sup>th</sup> Annual Meeting, Atlanta, GA. February 20, 2012.
  - Deadly by Design: Forensic Toxicology, Adverse Effects of Synthetic Cannabinoids, and Novel Designer Drugs (Bath Salts). AAFS 64<sup>th</sup> Annual Meeting, Atlanta, GA. February 20, 2012.
  - Contemporary Issues in Drunk Driving and Driving Under the Effects of Drugs. Society of Forensic Toxicologists- SOFT 2012, Boston, MA, July 3, 2012.
  - Ethanol Facilitated Sexual Assault. Society of Forensic Toxicologists- SOFT 2013, Orlando, FL. October 28, 2013.
  - Marijuana: Old Drug, New Data. Society of Forensic Toxicologists- SOFT 2013, Orlando, FL. October 29, 2013.
  - The Robert F. Borckenstein Course on the Effects of Drugs on Human Performance and Behavior, Sacramento, CA, November 3-8, 2013.
  - Implementing the DUID Laboratory Recommendations (SOFT/AAFS Drugs and Driving Committee Workshop)- SOFT 2014, Grand Rapids, MI October 20, 2014.
  - A Practical Approach to Calculating and Reducing Uncertainty of Measurement in the Laboratory (SOFT Young Forensic Toxicologists Committee Workshop) SOFT 2014, Grand Rapids, MI, October 20, 2014.
  - Postmortem Interpretive Toxicology, Philadelphia, PA, January 26-30, 2015.
  - The Role of Benzodiazepines in DUID (SOFT/AAFS Drugs and Driving Committee Workshop) SOFT 2015, Atlanta, GA, October 19, 2015.

Professional Organizations:

- **National Safety Council Alcohol, Drugs and Impairment Division:** Voting Member, 1987- Present; Chair, 2002-2004; Vice Chair, 2000-2001; Executive Board, 1995 - Present; Co-Chair, Subcommittee on Alcohol: Technology, Pharmacology and Toxicology, 1995 - 1999; 2007-2012.
- **International Association for Chemical Testing:** Emeritus 2013-present; Full Member,

1988 - 2012; Board of Directors, 2000-Present; Chair, Publications Committee, 1990 - 2000; Editor, IACT Newsletter, 1990 - 2000.

- **Society of Forensic Toxicologists:** Full Member, 2002-Present
- **American Academy of Forensic Sciences:** Associate Member, 2003-2004. Member 2005-2011, Fellow 2012- Present
- **Canadian Society of Forensic Science:** Member, 2012-Present. Member, Alcohol Test Committee, 2012-Present.

#### Awards and Recognition

- **Kurt M. Dubowski Award, International Association for Chemical Testing.** April 2005
- **Robert F. Borkenstein Award, National Safety Council,** February 20, 2007
- **Ray Abernethy Award, American Academy of Forensic Sciences Toxicology Section,** February 2013.
- **Emeritus Director, University of Wisconsin, WI State Laboratory of Hygiene Toxicology Section,** January 2015

#### Publications:

Harding, P. and Field, P.H., "Breathalyzer Accuracy in Actual Law Enforcement Practice: A Comparison of Blood- and Breath-Alcohol Results in Wisconsin Drivers," *Journal of Forensic Sciences*, Vol. 32, No. 5, Sept. 1987, pp. 1235-1240.

Harding, P., Laessig, R. and Field, P., "Field Performance of the Intoxilyzer 5000: A Comparison of Blood- and Breath-Alcohol Results in Wisconsin Drivers," *Journal of Forensic Sciences*, Vol. 35, No. 5, Sept. 1990, pp. 1022-1028.

Harding, P.M., McMurray, M.C., Laessig, R.H., Simley II, D.O., Correll, P.J., and Tsunehiro, J.K., "The Effect of Dentures and Denture Adhesives on Mouth Alcohol Retention," *Journal of Forensic Sciences*, Vol. 37, No. 4, July 1992, pp. 999-1007.

Harding, P., "Methods for Breath Analysis," in *Medicolegal Aspects of Alcohol*, Third Edition, James C. Garriott, Editor, Tucson, AZ, Lawyers & Judges Publishing Company, Inc., 1996, pp. 181-217.

Harding, P., "Interpreting Alcohol Results," in *Alcohol Toxicology for Prosecutors- Targeting Hardcore Impaired Drivers*, American Prosecutors Research Institute, July 2003, pp. 5-28.

Harding, P., "Methods for Breath Analysis," in *Medicolegal Aspects of Alcohol*, Fourth Edition, James C. Garriott, Editor, Tucson, AZ, Lawyers & Judges Publishing Company, Inc., 2003, pp. 185-211.

Harding, P. and Liddicoat, L.J.; "Forensic Toxicology Program: Alcohol and Drug Testing in Wisconsin Drivers," *Wisconsin Medical Journal*, Vol. 102, No. 6, 2003, pp. 79-83.

Cochems, A., Harding, P. and Liddicoat, L., "Dextromethorphan in Wisconsin Drivers," *Journal of Analytical Toxicology*, Vol. 31, May 2007, pp. 227-232.

Harding, P. and Zetl, J.R. "Methods for Breath Analysis," in *Medicolegal Aspects of*

*Alcohol*, Fifth Edition, James C. Garriott, Editor, Tucson, AZ, Lawyers & Judges Publishing Company, Inc., 2008, pp. 185-211.

Jones, AW. and Harding, P. "Driving Under the Influence with Blood Alcohol Concentrations over 0.4 g%," *Forensic Science International*, Vol. 231, 2013, pp. 349-353.

Canfield, D.V., Dubowski, K.M., Cowan, M. and Harding, P.M. "Alcohol Limits and Public Safety," *Forensic Science Review*, Vol. 26, No. 1, January 2014, pp. 10-22.

Harding, P. and Zettl, J.R. "Methods for Breath Alcohol Testing," in *Garriott's Medicolegal Aspects of Alcohol*, Sixth Edition, Yale Caplan and Bruce Goldberger, Editors, Tucson, AZ, Lawyers & Judges Publishing Company, Inc., 2015, pp. 229-252.

### **Selected Presentations:**

- "Principles of Breath Testing for Alcohol," Circuit Court Judges Seminar, June 7, 1984, Eau Claire, WI.
- "Breath Testing Methodology," Traffic Court Seminar, June 20, 1985, La Crosse, WI.
- "The Intoxilyzer 5000: How It Works," Wisconsin Supreme Court Workshop, October 17, 1985, Eau Claire, WI.
- "Breathalyzer Accuracy in Actual Law Enforcement Practice: A Comparison of Breath- and Blood-Alcohol Results in Wisconsin Drivers," American Academy of Forensic Sciences, February 10-15, 1986, New Orleans, LA
- "Scientific Aspects of OWI Cases," Municipal Judges Seminar, March 20, 1987, Milwaukee, WI.
- "Blood Versus Breath Ethanol Testing," Intoxilyzer 5000 Users Group, September 1-3, 1987, La Crosse, WI.
- "Dealing With Defense Experts", WI District Attorneys Conference, January 26, 1988, Madison, WI.
- "Field Performance of the Intoxilyzer 5000," American Academy of Forensic Sciences, , Philadelphia, PA, February 1989.
- "Alcohol, Drugs and Traffic Safety," Police Management Training Seminars, January 11, February 15, March 1, March 22, July 26, 1989, Stevens Point, WI.
- "Alcohol, Drugs and Traffic Safety," Police Management Training Seminars, February 1, May 10, June 21, 1989, Wausau, WI.
- "Alcohol Pharmacokinetics and Interpretation," Wisconsin Department of Transportation, State Patrol Chemical Test Section Area Coordinators Training Course, July 19-20, 1989, Madison, WI.
- "Denture Adhesives and Alcohol Retention," Intoxilyzer 5000 Users Group, August 7-10, 1989, Green Bay, WI.
- "Court Case on Ratio Used for Breath Testing (State v. Downey)," International Association for Chemical Testing March 28, 1990, St. Louis, MO.
- "Mouth Alcohol Retention International Association for Chemical Testing," March 31, 1992, Sparks, NV.
- "Pharmacology and Physiology of Alcohol and Other Drugs," Governor's Conference on Impaired Drivers, September 1, 1992, Stevens Point, WI. (Co-presented with Christine Goodall).

- “Expert Witness Testimony,” UW Law School Trial Advocacy Course, November 10, 1992, Madison, WI.
- “Study of Breath Alcohol Tests Under Variable Conditions,” International Association for Chemical Testing, March 22, 1993, Louisville, KY.
- “Speculative Retrograde Extrapolation - Fact or Fantasy?,” International Association for Chemical Testing, April 12-15, 1994, Denver, CO (co-presented with Chester Flaxmayer).
- “Intoxilyzer 5000 Non-Specificity: A Defense and Prosecution Perspective,” Wisconsin State Bar Association, September 20, 1994, Milwaukee, WI.
- “Report on the Specificity of Breath Alcohol Analysis,” National Safety Council, Committee on Alcohol and Other Drugs, October 23, 1994, San Diego, CA.
- “Taking Laboratory Results to Court--The Expert Witness,” UW-Environmental Toxicology Course November 15, 1994, Madison, WI.
- “IACT/DOT Research Project,” International Association for Chemical Testing, April 3-6, 1995, Milwaukee, WI. (With co-presenters).
- “Specificity of the Intoxilyzer 5000,” Intoxilyzer 5000 User’s Group, September 11-14, 1995, Wilmington, NC.
- “Challenges to the Intoxilyzer,” 2<sup>nd</sup> Annual Traffic & Impaired Driving Law Program, April 18, 1996, Stevens Point, WI.
- “Alcohol Physiology,” 3<sup>rd</sup> Annual Traffic & Impaired Driving Law Program, April 29-30, 1997, Stevens Point, WI.
- “How to Prepare a Paper –a Layman's Guide,” International Association for Chemical Testing, May 5-9, 1997, Missoula MT.
- “Mouth Alcohol Retention,” Intoxilyzer 5000 users group, September 5-9, 1997, Honolulu, HI.
- “Report on the IACT/DOT Breath Alcohol Research Project,” International Association for Chemical Testing, April 20-23, 1998, Las Vegas, NV. (With co-presenters).
- “Interpretation of Alcohol & Drugs in Drivers,” Medical College of Wisconsin, December 18, 1998, Milwaukee, WI.
- “Interpretation of Alcohol & Drugs in Drivers,” University of Wisconsin Department of Pathology & Laboratory Medicine, January 20, 1999, Madison, WI. (Co-presented with Christine Goodall).
- “Toxicology & Forensic Evidence,” 5<sup>th</sup> Annual Traffic & Impaired Driving Law Program, April 13 & 14, 1999, Appleton, WI.
- “Alcohol Expert Testimony,” Circuit Court Traffic Seminar, May 18, 1999, Eau Claire, WI.
- “ABCs of Breath Testing/Breath Test Challenges,” National District Attorneys Association, September 20, 1999, National Advocacy Center, Columbia, SC.
- “Toxicology Issues in OWI Prosecution,” Office of Prosecutor’s Education & Training, November 11, 1999, Elkhart Lake WI.
- “Toxicology of Drugs and Alcohol,” 6<sup>th</sup> Annual Traffic & Impaired Driving Law Program, April 11-12, 2000, Wausau, WI. (Co-presented with Laura Liddicoat).
- “Forensic Alcohol Testing,” Wisconsin Society for Clinical Laboratory Science 2001 Spring Meeting, April 11-12, 2001, Madison, WI.
- “Alcohol Toxicology,” National District Attorneys Association, Lethal Weapon-Homicide DUI, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, National Advocacy Center, Columbia, SC.
- “Alcohol Curves, Charts and Calculations,” International Association for Chemical Testing 14<sup>th</sup> Annual Conference, April 22-26, 2001, Williamsburg, VA.

- “Case History: IV Fluid Contamination of Blood Samples,” International Association for Chemical Testing 14<sup>th</sup> Annual Conference, April 22-26, 2001, Williamsburg, VA..
- “Toxicology Issues: Retesting Samples and Alcohol Curves,” 3rd Annual Prosecutor’s Seminar on OWI, November 15-16, 2001, Elkhart Lake, WI. (Co-presented with Laura Liddicoat).
- “Toxicology Issues: Retesting Samples and Alcohol Curves,” 8<sup>th</sup> Annual Traffic & Impaired Driving Law Program, April 3-4, 2002, Appleton, WI. (Co-presented with Laura Liddicoat).
- “Preparing Scientific Articles: How to Write a Paper,” International Association for Chemical Testing 15<sup>th</sup> Annual Conference, April 14-18, 2002, Austin, TX.
- “Forensic Alcohol Analysis,” MATT 2002 Conference, April 26, 2002, Madison, WI.
- “Analytical Services for Coroners and Medical Examiners,” Wisconsin Coroners and Medical Examiners Association, June 12-13, 2002, Appleton, WI.
- "Toxicology Issues: Anatomy of an Analysis (Following the Paper Trail)," 4th Annual Wisconsin Prosecutor's Seminar on OWI, November 7-8, 2002, Elkhart Lake, W.I (Co-presented with Laura Liddicoat).
- “Alcohol and Drug Testing Issues- 2003,” 5<sup>th</sup> Annual Prosecutor’s Seminar on OWI, November 13-14, 2003, Elkhart Lake, WI. (Co-presented with Laura Liddicoat).
- "Analysis of Defense Challenges to Breath and Blood-Alcohol Testing," Robert F. Borkenstein Course on Alcohol, Drugs and Highway Safety: Testing, Research and Litigation, December 2002 – present (lecture given twice per year), Indiana University, Bloomington, IN.
- "Blood Alcohol Analysis," Robert F. Borkenstein Course on Alcohol, Drugs and Highway Safety: Testing, Research and Litigation, May 10, 2004, December 9, 2008, May 15, 2009, December 7, 2010, December 12, 2012 Indiana University, Bloomington, IN.
- “Integration of Prosecutorial, DRE and Toxicological Resources,” Improving Integration of DRE, Investigative and Toxicological Evidence in DUID Prosecutions, May 23-25, 2004, Seattle, WA. (Session Moderator)
- “Alcohol Curves and Other Defenses,” 10<sup>th</sup> Annual Traffic & Impaired Driving Law Program, April 13-14, 2004, Appleton, WI.
- “A PBT for Drugs? - Rosita2 Research Project,” 30<sup>th</sup> Annual Governor’s Conference on Highway Safety, August 19-20, 2004, Appleton, WI. (Co-presented with Laura Liddicoat).
- “Current Toxicology Issues- Alcohol and Other Drugs in Wisconsin Drivers,” 10<sup>th</sup> Mid-Wisconsin Law Enforcement Symposium, September 28-29, 2004, Green Lake, WI. (Co-presented with Laura Liddicoat).
- “Under the Influence of Alcohol and Drugs- Myths and Reality,” 16<sup>th</sup> Annual Forensic Science Seminar, October 26-27, 2004, Milwaukee, WI. (Co-presented with Laura Liddicoat).
- “Drug Testing and the Practical Ramifications of Act 97-Drug Testing Overview,” 6<sup>th</sup> Annual Prosecutor’s Seminar on OWI, November 11-12, 2004, Elkhart Lake, WI. (Co-presented with William Johnson).
- “Alcohol Curves, Charts and Calculations,” 6<sup>th</sup> Annual Prosecutor’s Seminar on OWI, November 11-12, 2004, Elkhart Lake, WI.
- “The Wisconsin Approach to Retrograde Extrapolation”, Blood Alcohol Extrapolation Workshop, Society of Forensic Toxicologists- SOFT 2005, Nashville, TN, October 17, 2005.
- “Alcohol Curves, Charts and Calculations,” 12th Annual Traffic and Impaired Driving Law Program, April 18-19, 2006, Appleton, WI.

- “The Wisconsin State Laboratory of Hygiene Approach to Retrograde Extrapolation and Analyst Training,” International Association for Chemical Testing 19<sup>th</sup> Annual Conference, Anaheim, CA, April 24-27, 2006.
- “Alcohol Curves and Other Defenses,” 8<sup>th</sup> Annual Prosecutor’s Seminar on OWI, November 16-17, 2006.
- “The Robert F. Borkenstein Course on Alcohol, Drugs and Highway Safety: Testing, Research and Litigation -50 Years of Leadership in Alcohol, Drugs and Traffic Safety at Indiana University,” International Association for Chemical Testing 20<sup>th</sup> Annual Conference, Wilmington, NC, May 7-10, 2007.
- “Blood Alcohol: Analysis and Interpretation,” 15<sup>th</sup> Annual Traffic and Impaired Driving Law Program, April 14-15, 2009, Appleton, WI.
- “The Blood:Breath Alcohol Ratio- Review and Research,” International Association for Chemical Testing 22<sup>nd</sup> Annual Conference, Anchorage, AK, May 3-7, 2009
- “A Retrospective Comparison of Blood- and Breath- Alcohol Results in Wisconsin Impaired Drivers 2001-2007.” American Academy of Forensic Sciences- AAFS 62<sup>nd</sup> Annual Meeting, February 23, 2010.
- “A Retrospective Comparison of Intoximeter EC/IR and Blood Alcohol Results in Wisconsin Drivers 2001-2007. International Association for Chemical Testing- 23<sup>rd</sup> Annual Conference, Dallas, TX April 19-22, 2010.
- “Driving with Extremely High Blood Alcohol Concentrations,” International Association for Chemical Testing 24<sup>th</sup> Annual Conference, Saint Louis, MO, April 17-21, 2011.
- “A Practical Guide to Retrograde Extrapolation,” Alcohol Concentration Extrapolation Workshop, Society of Forensic Toxicologists-SOFT 2016, Dallas, TX, October 17, 2016.

*Revised 3 February 2017*