FACS
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J. David Krause, PH.D., MSPH, CIH

Director, Southeast Operations

EDUCATION

Ph.D., Environmental & Occupational Health, Univ. of South Florida, Tampa, Florida, 2005
MSPH, Master of Science in Public Health (Toxicology), Univ. of South Florida, Tampa, Florida 1999
B.S., Biological Sciences, Florida State University, Tallahassee, Florida 1989

CERTIFICATIONS & REGISTRATIONS

- Certified Industrial Hygienist (CIH), American Board of Industrial Hygiene, No. 16442
- Licensed Mold Assessor, Florida Department of Business and Professional Regulation, No. MRSA482
- 40-Hour HAZWOPER Certified

PROFESSIONAL EXPERIENCE

Dr. Krause has 22 years of experience in industrial hygiene, environmental science and public health, with particular emphasis in the areas of occupational health, industrial hygiene, toxicology, indoor air quality, potable water quality, and litigation support. Prior to joining FACS, Dr. Krause was the State Toxicologist for the Florida Department of Health (DOH).

Experience Related to Water Contaminants

Legionnaires disease investigations (2000 to 2016) – Investigated and consulted on numerous assessments of Legionnaires' Disease (LD) sources. Investigations have included single sporadic community acquired cases, single occupational cases, healthcare acquired cases, and outbreaks. Performed source assessments of building water systems, hot tubs, ships, industrial processes, cooling towers, and decorative water fountains. Provided ongoing consultation for building owners during remediation efforts, long term monitoring, and oversight of construction projects that raised risks of exposure to *Legionella*. Worked along with water service providers and public health officials to manage occupant exposure risks. In eight of the cases I was retained as a testifying expert witness.

Lead in Water at a Child Development Center (2011 to 2012) – Provided primary consultation and technical expertise on the measurement of lead in drinking water and compliance with US EPA guidelines for testing child care facilities. I worked in conjunction with the builder, plumber, the US Army Corps of Engineers, and the US Air Force Environmental Health Section to determine the cause of elevated lead in water. Elevated levels of lead in the new construction, despite using brass fixtures that met US Safe Drinking Water Standards confounded all parties. By implementing a focused testing strategy, we were able to determine which plumbing component was the major contributor to elevated lead levels in the water. Procedures and criteria were put into place to avoid this problem in future construction.

Arsenic in Residential Well Water (2009) – While serving as the State Toxicologist for the Florida Department of Health I consulted on several incidences where elevated levels of Arsenic were detected in the water of residential drinking water wells. Because background levels of Arsenic are relatively high in Florida's geology, drinking water can sometimes reflect the local geology. However sometimes it was the result of past industrial or agricultural practices that lead to the contamination of ground water and drinking water. Frequently, the issue was that changing health guidelines had triggered the "exceedance" of arsenic limits. In 2006 the maximum contaminant level (MCL) was lowered from 50 parts per billion (ppb) to 10 ppb as a public health measure to reduce the risk of lung and bladder cancer. This administrative tightening of standards resulted in many wells that had previously been in considered "safe" to suddenly exceed public health limits.

Pesticides in Residential Well Water (2011) – The long standing need for pesticides in Florida has resulted in the use of numerous persistent pesticides for the past 100+ years in Florida. Because many pesticides were required by the Florida Department of Agriculture the state has a robust program to test and mitigate private drinking water wells. When routine monitoring of residential wells revealed the presence of banned pesticides the State Toxicologist would be requested to perform a risk assessment. In several communities we had to evaluate the risk from consuming water that contained dieldrin, a pesticide used in agriculture and termite treatments up until the 1980's. As part of our involvement DOH toxicologists would frequently be asked to evaluate the effectiveness of water treatment systems.

Trihalomethanes generated by residential well water treatment systems (2010) – During the evaluation of a cancer cluster in a large south Florida community the Florida Department of Health assessed the results of drinking water wells for carcinogens. The only carcinogenic substances found were Trihalomethanes. While not linked to the cancers being investigated, these findings did highlight the need for homeowners to understand and rigorously maintain and operate their drinking water treatment systems. Over chlorination combined with elevated levels of organic debris lead to the generation of low levels of Trihalomethanes. Guidance was communicated to the community in public meetings and educational materials on how to avoid this situation.

Industrial Hygiene Experience

- Evaluated worker exposure and indoor contamination of an aircraft maintenance and repair operation for hexavalent chromium. Delineated the extent of contamination and prepared a remediation specification. Oversaw the successful remediation and performed post-remediation clearance testing.

- Evaluated multiple chemical and biological contaminants in a 100-year-old university science center, to include organochlorine pesticides, PCBs, metals, mold, bacteria, and allergens. Evaluated air flow dynamics complicated by chemistry flow hoods and general building exhaust. Documented contaminant dust loading in occupied areas of the building that included DDT and other banned pesticides, PCBs, lead and arsenic from old taxidermy mounts. Evaluated airborne exposures of persistent chemical contaminants and communicated results to professional and academic staff throughout the project in writing and at open meetings.
- Evaluated the content and emissions of mercury from resilient gymnasium flooring in Central Florida. Prepared a remediation specification and consulted on the successful abatement and disposal of the flooring.
- Consulted on a US Air Force Environmental Child Development Center to determine the cause of elevated lead levels in a newly constructed facility. Developed procedures and criteria to avoid this problem in future construction and comply with the US EPA Lead and Copper Rule.
- Provided consultation and technical expertise on the measurement of lead in drinking water and US Environmental Protection Agency (USEPA) guidelines for testing child care facilities.
- Modeled indoor air concentrations of lead from burning a lead-containing candle and resulting child blood lead levels using the IEUBK model.
- As State Toxicologist for the Florida Department of Health, reviewed and approved health consultations on lead and other soil contaminants in a Miami City Park.
- Performed employee exposure reconstruction modeling for hydrogen sulfide during product transfer operations of shale oil crude.
- Evaluated community exposure to hydrogen sulfide from a sewage lift station in Key Biscayne.
- Performed sulfuric acid testing in an office building after a large battery leak event. Followed up with post-cleaning testing to ensure that residual levels in dust would not cause employee illness or equipment damage.
- Lead the State of Florida's investigation of corrosive emissions from Chinese wallboard. Evaluated the health risk of hydrogen sulfide and other reduced sulfur compounds, to residential occupants and remediation workers. Worked with Federal, State and local authorities to estimate the extent of impacted homes and to recommend interim and long term mitigation strategies.
- Conducted a site investigation to assess migration of hydrogen sulfide emissions from an oil recycling facility to neighboring manufacturing plant, causing odor complaints from workers.
- Designated as the subject matter expert for the Florida Emergency Operation Center to advise local emergency responders and hazardous materials teams on chemical response operations.
- Served as the Florida DOH representative on the Pesticide Review Council for the Florida Department of Agriculture and Consumer Services.
- Performed employee exposure monitoring at a natural gas power plant (Arva Hopkins Power Plant).
- Investigated the death of an employee in support of litigation at a boat manufacturing plant in Sarasota, Florida.

- Performed an assessment of sources for Legionnaires' Disease on a coal freighter at the TECO Big Bend Power Plant.
- Co-authored the Florida Guidelines on Legionnaires' Disease.
- Performed mold assessments, moisture damage and remediation oversight of US Air Force military facilities under construction for the US Army Corps of Engineers and Whitesell-Greene.
- Responsible for developing the FL DOH Respiratory Protection Program for public health workers.
- During the Deep Water Horizon response, served as the toxicology subject matter expert for the Florida State Emergency Response Team (SERT) and developed the protocol for Community Air Sampling; risk-based contaminant values for swimmers and beach sediment; and risk-based seafood contaminant values.

PROFESSIONAL AFFILIATIONS & HONORS

- Member, American Industrial Hygiene Association (AIHA)
- Member, American Board of Industrial Hygiene (ABIH)

PUBLICATIONS

- Krause, J.D., Marcham, C., et al. 2015. Laminate Flooring Outgassing: Technical Guidance. American Industrial Hygiene Association (AIHA Falls Church, VA) May.
- Krause, J.D., Kerbel, W., Shelton, B.G., and Springston, J.P. The New Age of Legionella; AIHA Publishes Guidance on Assessing Water Systems in Buildings. The Synergist. June/July 2015.
- Kerbel, W., Krause, J.D., Shelton, B.G., and Springston, J.P., et al. 2015. Recognition, Evaluation, and Control of Legionella in Building Water Systems. American Industrial Hygiene Association (AIHA Falls Church, VA) May.
- Marcham, C., Springston, J., Rosner, A., Bergner, M., Krause, D., et. al. 2014. White Paper: Electronic Cigarettes in the Indoor Environment. American Industrial Hygiene Association (AIHA Falls Church, VA) October.
- Bodager, D., K. Goodin, S. Grubbs, R. Hammond, D. Krause, R. Lowe, A. Ourso, A. Pragle, T. Wallace, and K. Van Zile. 2009. Guidelines for the Surveillance, Investigation, and Control or Legionnaires' Disease in Florida. Florida Department of Health. Bureau of Environmental Public Health Medicine. Tallahassee, FL.
- Salazar, R., D. Krause, and C. Eldredge. 2009. Comparison of Methods Utilized by Commercial Laboratories for Analyses of Bulk Drywall Samples. Poster Presentation at Technical Symposium on Corrosive Imported Drywall in Tampa, Florida. Nov 5-6.
- Krause, D., C. Eldredge, and R. Salazar. 2009. Results of Indoor Air Testing in Two Homes Experiencing Copper Corrosion Associated with Corrosive Imported Drywall. Poster Presentation at Technical Symposium on Corrosive Imported Drywall in Tampa, Florida. Nov 5-6.
- Shaughnessy, R.J., J.D. Krause, and L.B. Ball. 2006. Assessing Potential Health Effects and Establishing Ozone Exposure Limits for Ozone-Generating Air Cleaners. Contract Technical Report for the US Consumer Product Safety Commission. September 26.
- Krause, J.D. 2005. Generation of Carbon Dioxide and Mobilization of Antimony Trioxide by Fungal Decomposition of Building Materials. Doctoral Dissertation & Defense before the University of South Florida, College of Public Health. March 25.

- Krause, J.D., Y.Y. Hammad, and L.B. Ball. 2003. Application of a fluorometric method for the detection of mold in indoor environments. Applied Occupational and Environmental Hygiene 18:499-503.
- Krause, J.D. and Y.Y. Hammad. 2002. Measuring the Efficacy of Mold Remediation on Contaminated Ductwork. Proceedings of Indoor Air 2002. Monterey, CA. June.
- Krause, J.D. 1999. Black Soot and Candles: New Research & Case Studies. Proceedings of the 7th Annual Indoor Environment, IAQ Publications, Inc. Austin, Texas. 157-159.
- Krause, J.D., N. Poor, and R. Harbison. 1999. Characterization of Aromatic Candle Emissions and its Similarity to Diesel Engine Exhaust. The 38th Annual Meeting of the Society of Toxicology, New Orleans, Louisiana. 395.
- Krause, J.D. and R. Bailey. 1998. Determination of Soot Emission Rates From Candles. Final Report of Contracted Research, Indoor Air Solutions, Inc.
- Al-Ahmady, K.K., J. D. Krause, D.E. Hintenlang, and L. Seungsoo. 1997. An Evaluation of Indoor Air Quality Complaint Distribution in A Florida Data Set. Engineering Solutions to Indoor Air Quality Problems, Air & Waste Management Association VIP-75: 223-234.
- Al-Ahmady, K.K. and J.D. Krause. 1997. Development of A Mathematical Framework for Modeling of Black Soot Deposition Problems in Structures. Engineering Solutions to Indoor Air Quality Problems, Air & Waste Management Association VIP-75:189-198.
- Krause, J.D., K.K. Al-Ahmady, and L.A. 1997. Investigations of A Black Soot Phenomenon in Florida Residential Structures Associated with New Installations of Central Heating and Air Conditioning Systems. Engineering Solutions to Indoor Air Quality Problems, Air & Waste Management Association, VIP-75: 463-474.

PRESENTATIONS

- Legionella and Other Waterborne Pathogens: Recognition, Evaluation, and Control. 8-hour Professional Development Course presented at the AIHA conference in Baltimore, MD May 2016.
- Introduction to the AIHA Guideline for the Recognition, Evaluation and Control of Legionella in Building Water Systems: AIHA Sponsored Webinar New York, NY. September 2015.
- Causes of Transient Sensory Irritation Reported by Occupants in Homes With Imported Corrosive Drywall. AIHCe 2010, Denver, CO. May 2010.
- The Complexities of Evaluating Occupant Exposures in Homes with Drywall Associated Corrosion. Tampa, Florida. Technical Symposium on Corrosive Imported Drywall. November 2009.
- Primary Instructor. Mold Contamination of Buildings: Assessment, Remediation, Specifications, Project Oversight, and Post Remediation Assessment. Anaheim, California. 8-Hr Professional Development Course #420. American Industrial Hygiene Association Conference and Exposition 2005. May 2005.
- Advanced Technology for Rapid Detection of Mold. Las Vegas, Nevada. Advanced Perspectives in Mold: Symposium Workshop Verification Testing: How Clean is Clean? November 2004.
- Assessment, Remediation and Post-Remediation Verification of Mold in Single-Family Buildings. Las Vegas, Nevada. Advanced Perspectives in Mold: Symposium on Single Family Residences. November 2004.
- Alternate Methods for Sampling and Analysis of Fungi. Boulder, Colorado. American Society for Testing Materials (ASTM). July 2004.

- Post Remediation Air Sampling: A Critical Review of Limitations, Biases, Precision and Accuracy for Sampling and Analytical Methods Commonly Used for Fungi. Boulder, Colorado. American Society for Testing Materials (ASTM). July 2004.
- Incorporating Current Guidelines, Standards & Documents into the Planning and Oversight of Mold Projects. Colorado Springs, Colorado. Association of Specialists in Cleaning and Restoration-Solutions Convention. March 2004.
- Dissecting the Practice of Using Bioaerosol Samples for Evaluating Mold Remediation Efficacy. Atlanta, Georgia. American Industrial Hygiene Conference & Expo (AIHce). May 2004.
- Primary Instructor. Mold Contamination: A Hands-on Workshop Addressing Inspection, Remediation, Specifications, Project Oversight, and Post Remediation Assessment. Atlanta, Georgia. 8-Hr Professional Development Course #418. American Industrial Hygiene Association Conference and Exposition 2004. May 2004.
- Establishing Mold Remediation Specifications and Post-Cleaning Assessment Criteria. Orlando, Florida. National QUEST for Uniformity. Symposium sponsored by the ACGIH Bioaerosols Committee. November 2002.
- Mold Remediation Clearance Issues: Clearance Sampling, Pitfalls and Limitation of Air Sampling. Tampa, Florida. Annual Conference of the Florida Environmental Health Association. July 2002.
- Implementing an Indoor Air Quality Management Plan. Daytona Beach, Florida. Contracted Eight Hour Training on In-House IAQ-Related Practices. March 2002.
- Presentation of a DRAFT Standard for Evaluating Air Cleaners. Helsinki, Finland. International Society for Indoor Air Quality (ISIAQ) Healthy Buildings 2000. August 2000.
- Combustion Pollutants and IAQ: An Approach to Diagnosing its Impact on Indoor Air Quality and Human Health. Vancouver, Canada. Canadian Institute of Public Health Inspectors (CIPHI). April 2004.
- Impacts of Fungal Contamination of Indoor Environments on Children. Tampa, FL. Annual Conference of the Florida Environmental Health Association. May 2000.
- Indoor Air Quality Standards: Past Experiences, Current Activities and Future Needs. Dallas, TX. University of Tulsa/US EPA Conference on Asthma. May 2000.
- Impact of Microbials on Indoor Air Quality. Ft. Lauderdale, FL. Annual Meeting of the Chemical Specialties Manufacturers Association (CSMA) Sub-Committee on Indoor Air Quality. December 1998.
- Epidemiology and IAQ: The Role of Epidemiology in the Evaluation and Determination of Indoor Air Quality Problems. Clearwater, FL., Tampa Bay Florida Environmental Health Association. November 1998.
- Interpretation of Indoor Air Monitoring Results. Orlando, FL. 10th Annual Florida Safety and Health Conference, Florida Workers Compensation Institute. July 1998.
- ASCR, NIDR Technical Seminar on Testing: Black Soot Deposition Phenomenon, Sources and Mechanisms. Vancouver, B.C. July 1998.
- Measuring Indoor Air and Interpreting Results, Hands-On Diagnostics. Tampa, FL USF, Sunshine Educational Resource Center. June 1998.
- EPA Orientation to IAQ: Health Effects Related to IAQ. West Palm Beach, FL. April 1998.
- Measuring Indoor Air & Interpreting Results. Tampa, FL. USF, Sunshine Educational Resource Center. March 1998.

- Interpretation of Indoor Air Quality Sampling Results: Florida Environmental Health Association Conference, Clearwater, FL. May 1997.
- EPA IAQ Tools for Schools: Ft. Lauderdale, St. Petersburg, Panama City. November 1996.
- Microbial Growth in Hot & Humid Climates. Air Quality Sciences Atlanta, GA. October 1996.
- State & Local Government IAQ Programs: Indoor Air '96; Baltimore. April 1996.
- State & Local Government IAQ Programs: PACS Premier IAQ Symposium, Orlando, FL. April 1996.
- Health Effects of Combustion Products related to controlled burning. Ft. Myers, FL. March 1995.
- Protocols and Techniques for Conducting Residential IAQ Evaluations. Florida Department of Health, Tallahassee, Ft. Lauderdale, Orlando, FL. June 1995.
- Impacts of Indoor Air Quality. NW Florida ASHRAE Chapter; Ft. Walton Beach, FL. May 1995.
- EPA Orientation to IAQ: Health Effects related to Indoor Air Quality. Miami Beach, FL. November 1994.