



# Evan M. Beckett, MPH, CIH

## Current Position

Senior Health Scientist  
Regional Unit Manager

## Discipline Areas

- > Toxicology
- > Industrial Hygiene
- > Risk Assessment
- > Exposure Science
- > Endocrine Disruption

## Years' Experience

6 years

## Joined Cardno

2014

## Education

- > MPH, Environmental Health Sciences: Toxicology; Risk Science and Human Health; University of Michigan, Ann Arbor; 2014
- > BS, Neuroscience; University of Michigan, Ann Arbor; 2010

## Summary of Experience

Mr. Evan M. Beckett is a Senior Health Scientist with Cardno ChemRisk and a Certified Industrial Hygienist (CIH). His principal areas of training and expertise include toxicology, industrial hygiene, exposure science, and health risk assessment. He has been involved in researching, measuring and reconstructing exposure, and assessing risk to workers, consumers, and communities to a variety of agents, such as formaldehyde, asbestos, talc, diacetyl, inorganic lead (Pb<sup>2+</sup>), methyl tert butyl ether (MTBE), ethylene glycol ethers, and perfluorinated chemicals (PFCs). He also has experience in industrial hygiene sampling assessments for various agents, including formaldehyde, diacetyl, and various other volatile organic compounds (VOCs).

Mr. Beckett completed his Master of Public Health (MPH) degree in Environmental Health Sciences with a focus in Toxicology and earned a certificate in Risk Science and Human Health from the University of Michigan School of Public Health Risk Science Center in 2014. He completed a Bachelor of Science (BS) degree in Neuroscience from the University of Michigan in 2010. He also has several years of research and laboratory experience as a technician in the Department of Pediatric Endocrinology at the University of Michigan Medical School, where he studied reproductive and metabolic implications of exposure to androgens and BPA in sheep.

Mr. Beckett has conducted independent research and literature reviews on a variety of topics. He has presented this work at scientific conferences and has published in the peer-reviewed literature. He has also served as a peer reviewer for scientific journals.

## Significant Projects

### Quantitative Exposure Reconstruction / Industrial Hygiene

Conducted and managed various asbestos exposure assessments related to products including but not limited to brakes, clutches, gaskets, insulation materials, cements, and asbestos-containing pipe. Also, conducted and managed exposure assessments to various agents, including diacetyl, formaldehyde, and asbestos, in various occupational, environmental, and consumer product scenarios.

Evaluated exposure to formaldehyde associated with the installation and removal of laminate flooring manufactured in China. Compared formaldehyde concentrations to sensory irritation thresholds and levels of formaldehyde reported to cause cancer. Reviewed toxicological and epidemiological literature related to formaldehyde exposure and the associated health effects. Summarized literature regarding health effects and hazards associated with exposure to formaldehyde.

Evaluated exposure to various volatile organic compounds (VOCs) associated with the installation and use of memory foam mattresses.

Evaluated the association between various health endpoints (neurological, behavioral, gastrointestinal, musculoskeletal, renal and constitutional complaints or symptomology) and current blood lead level.

## Occupational and Environmental Health

Performed extensive research related to employer responsibility pursuant to the Occupational Safety and Health Act.

Evaluated the epidemiological and industrial hygiene/exposure literature related to occupational and consumer exposure to diacetyl. Using published data, conducted an exposure-response assessment for diacetyl and several disease endpoints.

Reviewed and summarized relevant literature involving transfer coefficients of various chemical, biological, and physical elements. The aim of this project was to establish a quantitative measure for hand-to-mouth transfer efficiencies for inorganic lead ( $Pb^{2+}$ ), a common environmental hazard.

Critically reviewed and evaluated inhalation toxicological studies regarding diacetyl, 2,3-pentanedione, glycol ethers, formaldehyde, PFOA, and various asbestos fiber types.

## Litigation Support

### *Asbestos*

Manage litigation support on cases related to potential asbestos exposures from friction products and raw asbestos. Review and interpret relevant asbestos literature and case-specific materials for use in the preparation of expert reports and testimony. Performed quantitative exposure assessments and the assessment of health risks associated with the use of asbestos containing products, including insulation materials, blankets, gaskets, and packing in occupational settings. Identified and incorporated historical asbestos sampling data in an environmental exposure reconstruction.

Provide general litigation support to testifying expert witnesses. Specifically, oversee the process of summarizing health claims and instances of alleged exposures based on information included in deposition testimonies, medical reports, and other relevant case materials. Assess alleged exposures related to a wide variety of exposure scenarios involving primarily chrysotile asbestos-containing products such as phenolic molding compounds, adhesives, mastics, coatings, friction materials (i.e., brakes, clutches, and gaskets), cement pipe, and gaskets and packing.

### *Flavorings (Diacetyl, 2,3-Pentanedione, 2,3-Hexanedione)*

Provide support in cases involving potential exposure to diacetyl, a compound used in microwave popcorn production and food flavoring manufacturing industries. Reviewed and interpreted scientific literature and case materials for use in preparation of expert reports and testimony.

Utilized benchmark dose (BMD) modeling of exposure-response data derived from a 2-year animal inhalation study for a flavorings chemical in order to derive an eight-hour time-weighted average (TWA) occupational exposure limit (OEL) for use in industries in which airborne flavoring chemicals may be present. This project required extrapolation of rodent inhalation toxicology data to human-equivalent concentrations (HECs) using a computational fluid dynamics – physiologically-based pharmacokinetic (CFD-PBPK) model to account for various interspecies dosimetry differences.

#### *Formaldehyde*

Provide support in cases involving potential exposure to formaldehyde associated with consumer products. Reviewed and interpreted scientific literature and case materials for use in preparation of expert reports and testimony.

#### *Inorganic Lead (Pb<sup>2+</sup>)*

Provide support in cases involving potential occupational exposure to inorganic lead (Pb<sup>2+</sup>). Reviewed and interpreted scientific literature and case materials for use in preparation of expert reports and testimony.

#### *Ethylene Glycol Ethers*

Provide support in cases involving potential occupational exposure to ethylene glycol ethers. Reviewed and interpreted scientific literature and case materials for use in preparation of expert reports and testimony.

#### Previous Research

##### *Laboratory Research Technician Associate – University of Michigan Medical School*

Conducted research related to the effects of native (testosterone) and environmental endocrine disruptors, such as bisphenol A (BPA) on adult reproductive disorders, such as polycystic ovarian syndrome (PCOS) and chronic adrenal hyperplasia (CAH). Individual research focus involved an assessment of the effects of steroids, insulin, and BPA exposure on placental differentiation and reproductive physiology.

#### Certifications

- > Certified Industrial Hygienist (CIH) by the American Board of Industrial Hygiene (ABIH) – Credential #11900

#### Professional Honors/Awards

- > Award Recipient from 94<sup>th</sup> Annual Meeting and Expo of The Endocrine Society (2012):
  - > “Outstanding Abstract” Award. Abstract #851844 – Developmental programming: prenatal and postnatal contribution of androgen and insulin in the reprogramming of pubertal onset in prenatal testosterone-treated sheep.
- > University of Michigan School of Public Health (SPH) Deans Award Recipient (2012-2013; 2013-2014)

#### Membership to Professional Societies

- > Society of Toxicology (SOT) [2014 – present]
  - > Risk Assessment Specialty Section (RASS)
  - > Exposure Specialty Section (ESS)

- > American Industrial Hygiene Association (AIHA) [2019 – present]
- > Society of Environmental Toxicology and Chemistry (SETAC) [2014 – present]
- > Society for the Study of Reproduction (SSR) [2010 – 2012]

## Publications

### Peer-Reviewed Publications

- > Beckett, E.M., W.D. Cyr, A. Abelmann, A.D. Monnot, S.H. Gaffney, and B.L. Finley. 2019. Derivation of an occupational exposure limit for diacetyl using dose-response data from a chronic animal inhalation exposure study. *J Appl Tox.* 39(5):688-701.
- > Pierce, J.S., A. Abelmann, J.T. Lotter, P.S. Ruestow, K.M. Unice, E.M. Beckett, H.A. Fritz, J.L. Bare, and B.L. Finley. 2016. An assessment of formaldehyde emissions from laminate flooring manufactured in China. *Reg Tox Pharm.* 81: 20-32.
- > Cardoso R.C., A. Veiga-Lopez, J. Moeller, E. Beckett, A. Pease, E. Keller, V. Madrigal, G. Chazenbalk, D. Dumesic, V. Padmanabhan. 2016. Developmental Programming: Impact of Gestational Steroid and Metabolic Milieus on Adiposity and Insulin Sensitivity in Prenatal Testosterone-Treated Female Sheep. *Endocrinology.* 157(2):522-35.
- > Sahmel, J., E.I. Hsu, H.J. Avens, E.M. Beckett, K.D. Devlin. 2015. Estimation of hand-to-mouth transfer efficiency of lead. *Ann Occup Hyg.* 59(2):210-220.
- > Padmanabhan, V., A. Veiga-Lopez, C. Herkimer, B. Abi Salloum, J. Moeller, E. Beckett, R. Sreedharan. 2015. Developmental programming: prenatal and postnatal androgen antagonist and insulin sensitizer interventions prevent advancement of puberty and improve LH surge dynamics in prenatal testosterone-treated sheep. *Endocrinology.* 156(7): 2678-2692.
- > Veiga-Lopez, A., E.M. Beckett, B. Abi Salloum, W. Ye, V. Padmanabhan. 2014. Developmental programming: Prenatal BPA treatment disrupts timing of LH surge and ovarian follicular wave dynamics in adult sheep. *Toxicol Appl Pharmacol.* 279(2):119-128.
- > Beckett, E.M., O. Astapova, T.L. Steckler, A. Veiga-Lopez, V. Padmanabhan. 2014. Developmental programming: impact of testosterone on placental differentiation. *Reproduction.* 148(2): 199-209.

## Presentations

### Conference Abstracts – Podium Presentations

- > Mundt, K.A., E.M. Beckett. 2019. Global old and emerging issues: The epidemiology of it all – Asbestos/Silica/Tuberculosis. Joint Congress of the South African Society of Occupational Medicine (SASOM) and the International Scientific Association for Occupational and Environmental Health in the Production and Use of Chemicals (MEDICHEM). July 31-August 3, 2019. Kempton Park, Gauteng, South Africa.

- > Fritz, H.A., J. Lotter, A. Abelmann, P.S. Ruestow, E.M. Beckett, K.M. Unice, J.L. Bare, and J.S. Pierce. 2016. Evaluation of Diurnal Variations in Formaldehyde Concentrations Following Installation of Laminate Flooring Using Real-Time Sampling. American Industrial Hygiene Conference & Exposition (AIHce). May 21-26, 2016, Baltimore, MD.
- > Lotter, J., K.M. Unice, P.S. Ruestow, A. Abelmann, H.A. Fritz, E.M. Beckett, J.L. Bare and J.S. Pierce. 2016. Formaldehyde Emissions from Small Chamber Testing of Laminate Flooring and Comparison to Exposure Modeling. American Industrial Hygiene Conference & Exposition (AIHce) May 21-26, 2016, Baltimore, MD.
- > Veiga-Lopez, A., E.M. Beckett, V. Padmanabhan. 2013. Developmental Programming: Prenatal Intervention with an Antiandrogen Prevents Luteal and Follicular Dysfunction in Prenatal Testosterone-Treated Sheep. The 46<sup>th</sup> Annual Meeting of the Society for the Study of Reproduction. July 22-26, 2013. Montreal, Quebec, Canada.

#### Conference Abstracts – Poster Presentations

- > Beckett, E.M., S.E. Brown, D.R. Cheatham, H.A. Reamer, and M.L. Kreider. 2020. Weight-of-Evidence Analysis to Assess the Potential of PFOA to Act as an Endocrine Disruptor via Eight Distinct Modes-of-Action. Accepted abstract for Society of Toxicology 59th Annual Meeting; March 15-19, Anaheim, California (conference cancelled due to COVID).
- > McEwen, A.R., A.S. Riordan, N.S. Egnot, E.M. Beckett, J.S. Pierce. Evaluation of Potential Exposure-Response Relationships between Intravaginal Talc Exposure and Ovarian Cancer Risk. American Industrial Hygiene Conference & Exposition (AIHce) May 28-22, 2019, Minneapolis, MN.
- > Riordan A.S., A.R. McEwan, N.S. Egnot, E.M. Beckett, J.S. Pierce. 2019. Evaluation of the association between intravaginal talcum powder exposure and ovarian cancer. American Industrial Hygiene Conference & Exposition (AIHce) May 28-22, 2019, Minneapolis, MN.
- > Beckett, E.M., S.E. Brown, D.R. Cheatham, H.A. Reamer, M.L. Kreider. 2019. Weight-of-evidence analysis to assess the potential of PFOA to act as steroidogenesis inducer and inhibitor. The 58th Annual Meeting of the Society of Toxicology. March 11-14, 2019. Baltimore, MD.
- > Beckett, E.M., Cheatham, D.R., Reamer, H.A, Brown, S.E., Kreider, M.L. 2018. Weight-of-evidence analysis to assess the potential of PFOA to act as an estrogen receptor agonist. The 57th Annual Meeting of the Society of Toxicology. March 12-15, 2018. San Antonio, TX.
- > Monnot, A., Miller, E., Garnick, L., Beckett, E., Perez, A., Scott, P.K., Zisook, R. 2017. An Evaluation of Federal and State Perfluorooctanoic acid (PFOA) Drinking Water Standards in the US (Abstract ID 10146). DIOXIN 2017 Symposium. August 24, 2017. Vancouver, British Columbia, Canada.

- > Finley, B.L., M.E. Glynn, W.D. Cyr, E.M. Beckett, S.H. Gaffney, A. Monnot, A. Abelman, A. Parker, A. Maier. 2017. Derivation of an occupational exposure limit for diacetyl: a preliminary analysis. The 56th Annual Meeting of the Society of Toxicology. March 13-16, 2017. Baltimore, MD.
- > Ruestow, P.S., J. Lotter, A. Abelman, H.A. Fritz, E.M. Beckett, J.S. Pierce. 2016. Time trends in formaldehyde emissions from laminate flooring products after installation. American Industrial Hygiene Conference & Exposition (AIHce) May 21-26, 2016, Baltimore, MD.
- > Pierce, J.S., A. Abelman, P.S. Ruestow, J. Lotter, E.M. Beckett, H.A. Fritz. 2016. Assessment of indoor formaldehyde concentrations following the installation and removal of laminate flooring. American Industrial Hygiene Conference & Exposition (AIHce). May 21-26, 2016. Baltimore, MD.
- > Adams, R.E., M.E. Glynn, E.M. Beckett, P.K. Scott, J.S. Pierce, B.L. Finley. 2016. Influence of breathing pattern on derivation of human equivalent concentrations of inhaled diacetyl for deep lung effects in rodents. The 55th Annual Meeting of the Society of Toxicology. March 14-17, 2016. New Orleans, LA.
- > Glynn, M.E., R.E. Adams, E.M. Beckett, P.K. Scott, J.S. Pierce and B.L. Finley. 2016. Human equivalent concentrations for diacetyl based on minimal bronchiolar respiratory effects observed in animals: a refined analysis using current toxicology data and dosimetry models. The 55th Annual Meeting of the Society of Toxicology. March 13-17, 2016. New Orleans, LA.
- > Pierce, J.S., A. Abelman, P.S. Ruestow, J. Lotter, E.M. Beckett, H.A. Fritz, J.L. Bare, K.M. Unice. 2016. Assessment of indoor formaldehyde concentrations following the installation and removal of laminate flooring. The 55th Annual Meeting of the Society of Toxicology. March 14-17, 2016. New Orleans, LA.
- > Beckett, E.M., M.E. Glynn, R.E. Adams, J.S. Pierce, P.K. Scott, and B.L. Finley. 2015. Refined derivation of a human equivalent concentration for hyperplasia of bronchiolar epithelium following airborne diacetyl exposure. The 54th Annual Meeting of the Society of Toxicology. March 22-26, 2015. San Diego, CA.
- > Glynn, M.E., R.E. Adams, E.M. Beckett, J.S. Pierce, P.K. Scott, B.L. Finley. 2015. Derivation of a human equivalent concentration for chronic inflammation in the bronchial and bronchiolar epithelium of the lung following inhalation exposure to diacetyl. The 54th Annual Meeting of the Society of Toxicology. March 22-26, 2015. San Diego, CA.
- > Veiga-Lopez A, B. Abi Salloum, A.F. Williams, C. Herkimer, E.M. Beckett, V. Padmanabhan. Developmental programming: prenatal and postnatal contribution of androgen and insulin in the reprogramming of pubertal onset in prenatal testosterone-treated sheep. The 94<sup>th</sup> Annual Meeting and Expo of The Endocrine Society. June 23-26, 2012. Houston, TX. *Received Outstanding Abstract Award.*

- > Veiga-Lopez A, E.M. Beckett, V. Padmanabhan. 2012. Prenatal BPA Exposure Disrupts Ovarian Follicular Wave Dynamics in Adult Sheep. The 45<sup>th</sup> Annual Meeting of the Society for the Study of Reproduction. August 12-15, 2012. The Pennsylvania State University, State College, PA.
- > Beckett, E.M., A. Veiga-Lopez, A.M. DeHaan, and V. Padmanabhan. Developmental programming: role of androgen and insulin in advancing placentome differentiation in testosterone-treated sheep. The 44th Annual Meeting of the Society for the Study of Reproduction. July 31-August 4, 2011. Portland, OR.