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ANNE MATHIAS, P.E.

PRINCIPAL, DIRECTOR OF SAFETY AND RISK ASSESSMENT

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Ms. Mathias is Director of Safety and Risk Assessment at ESi. She specializes in biomedical and mechanical engineering, including the areas of human factors analyses (product safety labeling, warnings, and instructions), accident reconstruction, safety analyses, biomechanics, ergonomics, experimental design, and computational modeling and analysis.

Areas of Specialization

Safety and Risk Assessment
Biomechanics
Human Injury Analysis
Product Safety and Design
Accident Reconstruction
Warnings and Instructions
Slips and Falls
Human Factors and Ergonomics

Education

M.S., Biomedical Engineering, University of Michigan, 2005
M.S.E., Mechanical Engineering, University of Michigan, 2005
B.S., Mechanical Engineering, University of Notre Dame, 2003

Licensed Professional Engineer (P.E.)

State of Illinois License No. 062-062365
State of Michigan..... License No. 6201055912
State of Arkansas..... License No. 16640
State of Alabama..... License No. PE51133

Professional Affiliations/Honors

American Society of Mechanical Engineers (ASME)
Member

Society of Women Engineers (SWE)
Member

Pi Tau Sigma

Human Factors and Ergonomics Society (HFES)

Co-Chair, "Warnings and Risk Perception" Session, Human Factors and Ergonomics Society 51st Annual Meeting, October 2007.

Society of Automotive Engineers (SAE)

Member

ANSI B11 (Safety Standards for Machines)

ANSI B11 Standards Development Committee, Vice Chair
ANSI B11.0 Working Group Vice Chair

American Society of Safety Professionals (ASSP)

Member

Alternate Representative to ANSI B11 ASC

Positions Held

Engineering Systems Inc., Aurora, Illinois

Principal, 2021- Present
Director of Safety and Risk Assessment, 2018 - Present
Senior Managing Consultant, 2018- 2020
Senior Consultant, 2016 - 2017
Senior Staff Engineer, 2010 – 2015

Packer Engineering, Inc., Naperville, Illinois

Senior Staff Engineer, Biomechanics and Human Factors, 2007 – 2010

Miller Engineering, Ann Arbor, Michigan

Consult Project Engineer, 2005– 2007

Biomechanics Research Laboratory, University of Michigan, Ann Arbor, Michigan

Graduate Student Research Assistant, Department of Mechanical Engineering, 2004 – 2005

Zimmer, Warsaw, Indiana

Mechanical Engineering Intern, 2002

Continued Education

"Certified Playground Safety Inspector", National Recreation and Park Association (NRPA) 2023.
Certification No. 59409-1226

"Walkway Auditor Certificate Holder", National Floor Safety Institute (NFSI) (2022)

"Neuroradiology 101", Association for the Advancement of Automotive Medicine (AAAM) (2021)

"Certified Playground Safety Inspector Preparation Course", National Recreation and Park Association (NRPA) (2020)

"Effectively Conducting Remote Risk Assessments," Human Factors and Ergonomics Society, (2020)

"Human Factors in Traffic Crash Reconstruction", Institute of Police Technology and Management, (2017)

"Understanding Bloodstain Pattern Analysis", Bevel Gardner & Associates, (2017)

"Driver Distraction from Electronic Devices; Insights and Implications," SAE (2017)

"Diagnostic Imaging of the Cervical Spine: Essentials for the Autonomous Physical Therapist," APTA, (2017)

Forklift Operator Safety Training and Certification, Aurora, IL.

XL Tribometrist (CXLt), Excel Tribometers, LLC. Certification

Certified Ergonomics Assessment Specialist; via The Back School of Atlanta (2013)

OSHA 30-Hour General Industry Safety and Health Course Completion Card

"Vehicle Accident Reconstruction Methods," Troy, MI; Sponsored by SAE (2007)

Publications/Presentations

Mathias, A., Chan, H., Kruger, D., Stern, A., Fortenbaugh, D., & Plichta, R. (2025). Advanced Camera Matching Techniques and Human Factors Methodologies for Pedestrian Fall Analysis and Investigation. Proceedings of the Human Factors and Ergonomics Society Annual Meeting.

A.C. Mathias, G.A. Hazime, H. Chan, J.M. Roberts, M.E. Kelley. "Elevator Passenger Accelerations During Emergency Stops, Normal Elevator Travel, and Everyday Activities." Biomedical Sciences Instrumentation, 62nd Annual Rocky Mountain Bioengineering Symposium, St. George, UT. April 2025. Biomedical Sciences Instrumentation Journal, Volume 61(1).

Brickman, D.B., Mohorovic, J.P., Zakutansky, K.B., **Mathias, A.C.**, Shibata, P.A., "Aboveground Swimming Pool Child Access Prevention Through Product Design," Proceedings of the XXXVIth Annual International Occupational Ergonomics and Safety Conference, Denver, CO, August 5-6, 2024.

A. C. Mathias, W. Wong, J. C. Smolka, J. P. Mohorovic and E. H. Knox, "Risk Assessment: When have you reached acceptable risk?," 2024 IEEE International Symposium on Product Compliance Engineering (ISPCE), Chicago, IL, USA, 2024, pp. 1-4, doi: 10.1109/ISPCE61193.2024.10541214.

Brickman, Dennis B.; Mohorovic, Joseph P.; **Mathias, Anne C.**; Knox, Erick H.; "Residential Bunk Bed Child Entrapment Hazard Safety Test Methods," Proceedings of the XXXVth Annual International Occupational Ergonomics and Safety Conference, Munich, Germany, October 9-10, 2023.

"Safety Program for Machine Safeguarding," chapter in *The ASSP Study Guide for the ASP Examination: ASP10 Blueprint*, American Society of Safety Professionals, 2020

Shibata P.A., **Mathias A.C.**, Light A.E., Meza-Arroyo M., Sprague J.K., Stern A.R. "Comparative Lumbar Spine Acceleration Data During Daily and Dynamic Activities, Tasks of Daily Driving, and Low Speed Lateral Vehicle Impacts." Biomedical Sciences Instrumentation, 55(2):316-323 (2019).

Presented at the 56th Annual Rocky Mountain Bioengineering Symposium and 38th IEEE Great Lakes Biomedical Conference, Milwaukee, Wisconsin, April 2019

Shibata P.A., **Mathias A.C.**, Light A.E., Meza-Arroyo M., Sprague J.K., Stern A.R. "Head Acceleration Measurements During Vehicle Driving Tasks and Lateral Impacts Relative to Head Accelerations During Daily and Dynamic Activities." Biomedical Sciences Instrumentation, 55(2):277-284 (2019)

Brickman, D.B., **Mathias, A.C.**, Roberts, J.M. "Stump Grinder Accident Reconstruction and Design Testing Methodologies" Proceedings of the XXXth Annual Occupational Ergonomics and Safety Conference, Pittsburg, PA. June 7-8, 2018

Mathias, A.C., Brickman, D.B. "Aboveground Swimming Pool Ladder Safety: The Application of Child Resistance to a Consumer Product Used by Children." Proceedings of the 59th Human Factors and Ergonomics Society Annual Meeting, 2015, pp. 966-970

Knox, E.H., **Mathias, A.C.**, Stern, A.R., Van Bree, M.P., Brickman, D.B. "Methods of Accident Reconstruction: Biomechanical and Human Factors Considerations," IMECE2015, Proceedings of the ASME 2015 International Mechanical Engineering Congress and Exposition. Houston, TX: November 13-19, 2015

Mathias, A.C., and D.B. Brickman. "Human Factors Case Study of Child Product Safety Test Approach Through Long Term Observations of Live Infant Interaction." Proceedings of the 3rd Annual World Conference of the Society for Industrial and Systems Engineering, San Antonio, TX. October 20-22, 2014

Mathias, A.C., Shibata, P.A., and Sprague, J.K. A Link Between Occupant and Vehicle Accelerations During Common Driving Tasks. Biomed Sci Instrum, 50:197-204 (2014). Presented at the 51st Annual Rocky Mountain Bioengineering Symposium, Denver, Colorado, April 2014

Brickman, Dennis B., and **Anne Mathias**. "Product Warning Label Development for Blade Strike Fire Hazard." Proceedings of the 2nd Annual World Conference of the Society for Industrial and Systems Engineering, Las Vegas, NV. November 5-7, 2013

Brickman, Dennis B., Gary Novak and **Anne Mathias**. "Crib Mattress Support Collapse Accident Reconstruction." The XXV Annual Occupational Ergonomics and Safety Conference, Atlanta, GA. June 6-7, 2013

Mathias, Anne, David G. Curry, Conor Donnelly and Luke Drendel. "Slip Sliding Away II – Slip Resistance of Dress Socks on Indoor Flooring." Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 2010, vol. 54: pp. 1382-1386

Curry, David G., **Anne Mathias** and Valerian A. Skawinski. "Slip Sliding Away – Slip Resistance of Athletic Socks on Indoor Flooring." Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 2009, vol. 53: pp. 568-571