

# Anne C. Mathias

P.E.

Principal, Senior Director - Safety and Risk Assessment



Anne Mathias, P.E., specializes in biomedical and mechanical engineering, including the areas of human factors, accident reconstruction, safety analyses, biomechanics, ergonomics, experimental design, computational modeling and analysis, product and equipment safety, and warnings and instructions.

She has published numerous peer-reviewed articles in engineering journals and has given many technical presentations at peer-reviewed scientific conferences.

Her work includes risk assessments for consumer products, machines, and industrial equipment. She conducts human factors analyses, evaluations of slips, trips, and falls, and biomechanical accident reconstruction involving industrial accidents, human interactions with elevators and stairways, appliances, and children's products.

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## 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

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## Licenses

- State of Arkansas P.E. License 16640
- State of Alabama P.E. License PE51133
- State of Illinois P.E. License 062-062365
- State of Michigan P.E. License 6201055912

## Contact Information

acmathias@engsys.com

(630) 851-3614

## ESi

4215 Campus Drive

Aurora, IL 60504

## Areas of Specialization

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

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## Positions Held

### Engineering Systems Inc., Aurora, Illinois

- Principal, 2021 – Present
- Senior Director – Safety and Risk Assessment, 2025 – Present
- Director – Safety and Risk Assessment, 2018 – 2025
- 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

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## Professional Affiliations/Honors

### ANSI B11 (Safety Standards for Machines)

- Vice Chair, ANSI B11 Standards Development Committee
- Vice Chair, ANSI B11.0 Subcommittee

### American Society of Safety Professionals (ASSP)

- Member
- Alternate Representative to ANSI B11 SDC

### Human Factors and Ergonomics Society (HFES)

- Member
- Co-Chair, "Warnings and Risk Perception" Session, October 2007

### Society of Automotive Engineers (SAE)

- Member

### **Society of Women Engineers (SWE)**

- Member

**Pi Tau Sigma** - International Honor Society for Mechanical Engineers

### **American Society of Mechanical Engineers (ASME)**

- Member

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## **Continuing Education**

- **Passenger Restraint Safety Systems**– University of North Florida Institute for Police Technology and Management (IPTM), 2025
- **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, 2025
- **Neuroradiology 101** – Association for the Advancement of Automotive Medicine, 2021
- Certified Playground Safety Inspector Preparation Course – National Recreation and Park Association, 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, 2014
- Certified Ergonomics Assessment Specialist – The Back School of Atlanta, 2013
- **OSHA 30-Hour** General Industry Safety and Health Course Completion Card, 2008
- Vehicle Accident Reconstruction Methods – SAE, 2007

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## Publications and Presentations

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

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

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

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

"Residential Bunk Bed Child Entrapment Hazard Safety Test Methods," Brickman, Dennis B.; Mohorovic, Joseph P.; **Mathias, Anne C.**; Knox, Erick H.; 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.

"Comparative Lumbar Spine Acceleration Data During Daily and Dynamic Activities, Tasks of Daily Driving, and Low Speed Lateral Vehicle Impacts." Shibata P.A., **Mathias A.C.**, Light A.E., Meza-Arroyo M., Sprague J.K., Stern A.R. 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.

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

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

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

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

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

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

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

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

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

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