



## Steven M. Hall, M.S.E., C.P.S.M.

Director, Human Factors Practice

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## Background

Mr. Steven Hall holds a B.S.E. in Engineering Physics and an M.S.E. in Industrial and Operations Engineering from the University of Michigan. He has expertise in the fields of warnings and instructions design, ergonomics, human factors engineering, and product and occupational safety.

Mr. Hall serves as Chairperson of the American National Standards Institute (ANSI) Z535 Committee on Safety Signs and Colors. This committee establishes national consensus standards for, among other things, product safety labels and safety information in product manuals. He previously served as Chairperson of the ANSI Z535.4 Subcommittee on Product Safety Signs and Labels. He is a member and former Vice-Chairperson of the ANSI Z535.6 Subcommittee on Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials. He is also a member of the ANSI Z535.5 Subcommittee on Safety Tags and Barricade Tapes (for Temporary Hazards) and the Z535.2 Subcommittee on Environmental and Facility Safety Signs. He serves on the U.S. TAG for International Organization for Standardization (ISO) Technical Committee 145 on graphical symbols.

## Professional Experience

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|--|-----------------------|
| • <b>Rimkus</b>                              | <b>2021 – Present</b> |
| • Director, Human Factors                    |                       |
| • <b>Applied Safety and Ergonomics, Inc.</b> | <b>1998 – 2021</b>    |
| • Senior Consultant                          |                       |

## University Activities

- **The University of Michigan - Industrial and Operations Engineering**
  - Instructional Assistant for Safety Management I and II (2002)
  - Advisor to University of Michigan students for capstone Safety Management project (2022, 2023)

## Standards Committee Membership

- ANSI - Chair, Z535 Committee on Safety Signs and Colors, 2020-Present
- ANSI - Chair, Subcommittee Z535.4 - Product Safety Signs and Labels, 2008-2020

- ANSI - Vice-Chair, Subcommittee Z535.6 - Product Safety, Safety Information in Product Manuals, Instructions, and Other Collateral Materials, 2002-2008
- ANSI – Member, Subcommittee Z535.2 – Environmental and Facility Safety Signs, 2010-Present
- ANSI - Member, Subcommittee Z535.4 - Product Safety Signs and Labels, 2004-Present
- ANSI - Member, Subcommittee Z535.5 – Safety Tags and Barricade Tapes (for Temporary Hazards), 2006-Present
- ANSI - Member, Subcommittee Z535.6 - Product Safety, Safety Information in Product Manuals, Instructions, and Other Collateral Materials, 2008-Present
- SPSP - Vice-Chair, Job Analysis Committee, Society of Product Safety Professionals, 2017
- ISO - U.S. Technical Advisory Group (TAG) to International Standards Organization (ISO) Project Committee 243: Consumer Product Safety, 2014
- ISO - U.S. Technical Advisory Group (TAG) to International Standards Organization (ISO) Technical Committee 145: Graphical symbols, 2005-Present

## Education

- **M.S.E Industrial and Operations Engineering**, University of Michigan, Ann Arbor (2002)
- **B.S.E Engineering Physics**, University of Michigan, Ann Arbor (1998)

## Professional Certifications

- **Certified Product Safety Manager (C.P.S.M.)**

## Continuing Education

- **OSHA Training Institute, April 1999 204A:** Machinery and Machine Guarding Standards
- **American Society of Safety Engineers:** Human Error in Occupational Safety Symposium, March 2003

## Publications

- Zendler, J.M., Jadischke, R., Frantz, J., Hall, S.M., Goulet, G.C. (2021). **Emergency Department Visits from 2014 to 2018 for Head Injuries in Youth Non-Tackle Football Compared with Other Sports.** Orthopaedic Journal of Sports Medicine, Vol. 9, No. 1, pp. 1-13.
- Isaacson, J. J., Hall, S. M., and Frantz, J. (2019). **Warning Labels Referring to Electronic Information – Combination Safety Symbol, URL, and QR Code as Supplemental Directive.** Proceedings of the Human Factors and Ergonomics Society 63rd Annual Meeting, pp. 1802-1805.
- Isaacson, J.J., Frantz, J., Hall, S.M., and Burhans, C.G. (2017). **Tools for Symbol Development – Safety Symbol Response Taxonomy and Graphic Compatibility Verification.** Proceedings of the Human Factors and Ergonomics Society 61st Annual Meeting, pp. 489-493.
- Shah, R.J., Hall, S.M., and Diebol, J.K. (2016). **Contextual Considerations for the Development and Assessment of Product Warnings.** Proceedings of the XXVIIIth Annual Occupational Ergonomics and Safety Conference, pp. 120-125.
- Frantz, J.P., Rhoades, T.P., Wise, M.J., Burhans, C.G., Shah, R.J., and Hall, S.M. (2013). **The Effect of Observer Goals on Noticing Static Environmental Features and a Dynamic Character in the Field of View.** Proceedings of the XXV Annual Occupational Ergonomics and Safety Conference, pp. 202-207.

- Hall, S.M., Isaacson, J.J., Burhans, C.G., Frantz, J.P., Rhoades, T.P., Shah, R.J., and Young, S.L. (2012). **New Editions of ANSI Standards for Warnings**. Proceedings of the 2012 IEEE International Symposium on Product Compliance Engineering (ISPCE 2012), pp. 1-4.
- Hall, S.M., Young, S.L., Frantz, J.P., Rhoades, T.P., Burhans, C.B., and Adams, P.S. (2010). **“Clarifying the Hierarchical Approach to Hazard Control,”** 3rd International Conference on Applied Human Factors and Ergonomics, Miami, Florida, July 17-20, 2010.
- Wisniewski, E.C., Isaacson, J.J., and Hall, S.M. (2007). **Comprehension testing of product safety symbols: Lessons learned**. Proceedings of the Human Factors and Ergonomics Society 51st Annual Meeting, pp. 1020-1024.
- Wisniewski, E.C., Isaacson, J.J., and Hall, S.M. (2007). **Development and evaluation of safety symbols for landscaping products**. Proceedings of the Human Factors and Ergonomics Society 51st Annual Meeting, pp. 1109-1113.
- Wisniewski, E.C., Isaacson, J.J., and Hall, S.M. (2006). **Techniques for Assessing Safety Symbol Comprehension: Web-based vs. Oral-based Questionnaire Administration**. Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting, pp. 2207-2211. Santa Monica, CA: HFES.
- Shaver, E.F., Young, S.L., Frantz, J.P., Rhoades, T.P., Hall, S.M., and Shah, R.S. (2006). **Comparison of ANSI and ISO standard formats on people’s response to product warnings**. Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting, pp. 2197-2201. Santa Monica, CA: HFES.
- Hall, S.M. (2006). **ANSI Z535.6: A New Standard for Safety Information in Product Manuals, Instructions, and Other Collateral Materials**. The Product Safety Engineering Newsletter. Vol. 2, No. 2. pp. 12-17, IEEE Product Safety Engineering Society. June 2006.
- Young, S.L., Frantz, J.P., Rhoades, T.P., and Hall, S.M. (2006). **Development and Objectives of the ANSI Z535 Series of Standards for Safety Signs and Colors: A Historical Perspective**, In Wogalter, M.S. (Ed.), Handbook of Warnings, pp. 445-454, Lawrence Erlbaum Associates, Mahwah.
- Young, S.L., Shaver, E.F., Grieser, B.C., and Hall, S.M. (2006). **Hazard Analysis as Part of the Safety Information Development Process**, In Wogalter, M.S. (Ed.), Handbook of Warnings, pp. 431-436, Lawrence Erlbaum Associates, Mahwah.
- Hall, S.M. (2006). **New Standard for Safety Information**. Cleaner Times. Vol. 18, No. 7. July 2006.
- Frantz, J.P., Rhoades, T.P., Shah, R.J., Hall, S.M., Isaacson, J.J., and Burhans, C.G. (2005). **ANSI Z535 signal words and the ability to infer hazard and consequence information — 1992 versus 2004**. Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting, pp. 1790-1794. Santa Monica, CA: HFES.
- Frantz, J.P. and Hall, S.M. (2005). **Development, status and implications of ANSI Z535.6 – a new standard for safety information in product-accompanying literature**. Proceedings of the 2005 ASSE Professional Development Conference, June 12-15, New Orleans, Louisiana, Session No. 728.
- Young, S.L., Frantz, J.P., Rhoades, T.P., and Hall, S.M. (2002). **Considerations for developing a consensus standard for safety information in product-accompanying literature**. Proceedings of the Human Factors and Ergonomics Society 46th Annual Meeting, pp. 900-904. Santa Monica, CA: HFES.
- Hall, S.M. (2001). **Revision of ANSI Lockout/Tagout Standard Adds Design, Warning and Instruction Requirements for Product Manufacturers**. Safety News, Newsletter of the Safety Technical Group in the Human Factors and Ergonomics Society, November 2001, p. 7.

## Lectures and Presentations

- Isaacson, J.J., Hall, S.M., and Frantz, J. (February, 2025). **ANSI Z535.7 and Beyond – New Standard for Safety Information in Electronic Media.** Poster presentation at the 2025 International Consumer Product Health and Safety Organization Annual Meeting and Training Symposium, Orlando, FL, February 19-22, 2025.
- Hall, S.M., and Frantz, J. (2024). **“Case Studies in Human Factors,”** 2024 Consumer Product Safety Meeting Professional Certification Program, Society of Product Safety Professionals and Virginia Tech Continuing and Professional Education, September 17, 2024.
- Hall, S.M., Isaacson, J.J., Shah, R.J., Ward, A.C., and Frantz, J. (February 2024). **Consumer expectations for owner’s manuals—safety information & online availability.** Poster presentation at the 2024 International Consumer Product Health and Safety Organization (ICPHSO) Annual Meeting and Training Symposium, Orlando, Florida, February 19-22, 2024.
- Hall, S.H. (2024). **“The Digitization of Warnings and Instructions,”** Panelist, DRI Product Liability Conference, Denver Colorado, February 9, 2024.
- Huntley-Fenner, G., Hall, S.M. and Ross, K. (2023). **Warnings update including ANSI Z535.4.** Society of Product Safety Professionals Webinar. October 11, 2023.
- Hall, S.M. and Frantz, J. (2023). **“What is Safe? Case Studies in Human Factors,”** 2023 Consumer Product Safety Professional Certification Program, Society of Product Safety Professionals and Virginia Tech Continuing and Professional Education, April 13, 2023.
- Hall, S.M. (2022). **“Selecting Safety Interventions,”** University of Wisconsin – Madison 34th Annual Product Liability Conference, Madison, Wisconsin, October 12, 2022.
- Hall, S.M., Isaacson, J.J., Shah, R.J., and Ward, A.C. (2022). **Consumer expectations for owner’s manuals—safety information & online availability.** Poster presentation at the 13th International Conference on Applied Human Factors and Ergonomics. New York, NY. July 27, 2022.
- Hall, S.M. and Frantz, J. (2022). **“What is Safe? Case Studies in Human Factors,”** 2022 Society of Product Safety Professionals Consumer Product Safety Professional Certification Program, July 20, 2022.
- Hall, S.H. (2022). **“Hand and Power Tools & Recreational Products SLGs – Panel Discussion on Electrification of Recreational and Other Consumer Products.”** DRI Product Liability Conference, Las Vegas, Nevada, February 2-4, 2022.
- Hall, S.H. (2021). **“Re-Clarifying the Hierarchical Approach to Hazard Control.”** DRI Product Liability Conference, Nashville, Tennessee, August 19-21, 2021.
- Hall, S.H. (2021). **We Provided a Warning, the User Didn’t Follow It - Open and Shut Case, Right?,** Panelist, DRI Product Liability Conference, Nashville, Tennessee, August 20, 2021.
- Frantz, J.P., and Hall, S.M. (2021). **Human Factors in Incident Investigations: Response and Communication.** Presentation to the 2019 Consumer Product Safety Certification Program, Chaifetz School of Business: Saint Louis University, April 29, 2021.
- Hall, S.M.. (2020). **“Auditing Your Product Safety Management System Before It’s Too Late,”** University of Wisconsin – Madison 32nd Annual Product Liability Conference, Madison, Wisconsin, October 1, 2020.
- Hall, S.M., Frantz, J., Goulet, G.C., and Zendler, J.M. (2019). **Xenith Non-Tackle Football Headgear Presents Safety Information about Protective Limitations.** Poster presentation at 4th Annual Chronic Traumatic Encephalopathy Conference. November 24-25, 2019. Boston, MA.
- Hall, S.M. (2019). **Selecting Safety Interventions,** Lecture in: Human Factors/Ergonomics, San Jose State University, November 20, 2019.

- Hall, S.M. (2019). **“Safety in the Product Development Process: Evolutionary and Revolutionary Approaches,”** University of Wisconsin 31st Annual Product Liability Conference, Madison, Wisconsin, September 24-26, 2019.
- Hall, S.M. (2019). **“Selecting Safety Interventions,”** 2019 Advanced Product Safety Management Course, John Cook School of Business at Saint Louis University, September 23, 2019.
- Hall, S.M. (2019). **Job Hazard Analysis**, Lecture In: Work Methods Design and Measurement, San Jose State University, April 30, 2019.
- Frantz, J.P., and Hall, S.M. (2019). **Human Factors in Incident Investigations: Response and Communication.** Presentation to the 2019 Consumer Product Safety Certification Program, Chaifetz School of Business: Saint Louis University, April 12, 2019.
- Shah, R.S., Hall, S.M., and Faust, K.R. (2019). **Recent Approaches to Communicating Information about Per- and Polyfluoroalkyl Substances (PFAS).** Poster presentation at Society for Chemical Hazard Communication Spring Meeting. March 19-20, 2019. Las Vegas.
- Hall, S.M. (2019). **Beyond Compliance - The Warnings Development Process.** Society of Product Safety Professionals Webinar. February 12, 2019.
- Hall, S.M., Frantz, J., Goulet, G.C., and Zendler, J.M. (2018). **Xenith Presents Safety Messages Using Multi-Channel Approach.** Poster presentation at 3rd Annual Chronic Traumatic Encephalopathy Conference. October 24-25, 2018. Boston, MA.
- Hall, S.M. (2018). **“Selecting Safety Interventions,”** 2018 Advanced Product Safety Management Course, John Cook School of Business at Saint Louis University, September 24, 2018.
- Hall, S.M. (2018). **Job Hazard Analysis**, Lecture In: Work Methods Design and Measurement, San Jose State University, April 24, 2018.
- Hall, S.M. (2017). **Human Factors, Controls, and Product Safety**, Lecture In: Introduction to Human Factors, San Jose State University, December 5, 2017.
- Hall, S.M. (2017). **“Human Error and Selecting Safety Interventions,”** 2017 Advanced Product Safety Management Course, John Cook School of Business at Saint Louis University, September 25, 2017.
- Hall, S.M. (2017). **“Predicting the Unexpected - How to Foresee Misuse,”** University of Wisconsin 29th Annual Product Liability Conference, Madison, Wisconsin, September 19-21, 2017.
- Hall, S.M. (2017). **“Human Error, Human Factors, and Safety Communications,”** 2017 Product Safety Management Certificate Course, John Cook School of Business at Saint Louis University, May 19, 2017.
- Hall, S.M. (2016). **“Human Factors and Communications,”** 2016 Advanced Product Safety Management Course, John Cook School of Business at Saint Louis University, September 26, 2016.
- Hall, S.M. (2016). **“Human Error, Human Factors, and Safety Communications,”** 2016 Product Safety Management Certificate Course, John Cook School of Business at Saint Louis University, May 20, 2016.
- Hall, S.M. (2016). **Job Hazard Analysis**, Lecture In: Work Methods Design and Measurement, San Jose State University, May 11, 2016.
- Hall, S.M. (2015). **“Safety Hierarchy and Warnings.”** In V. Kulkarni (moderator), “The Safety Hierarchy: Design, Guard, Warn: Which One, When and How?” Presentation at 2015 ICPHSO Northwest Regional Product Safety Training Workshop, Wayne, NJ, June 18, 2015.
- Hall, S.M. (2015). **Hazard Analysis Techniques in Occupational & Product Safety**, Lecture In: Work Methods Design and Measurement, San Jose State University, May 5, 2015.
- Hall, S.M. (2015). **Use of Experimental Methods in Human Factors and Product Safety Consulting**, Lecture In: Human Factors Experiments, San Jose State University, April 22, 2015.



- Shah, R.J., Hall, S.M., and Diebol, J.K. (2015). **U.S. Adoption of GHS Creates Unresolved Challenges for Consumer and Occupational Labeling Practices.** Poster presentation at Society for Chemical Hazard Communication Spring Meeting. March 17-18, 2015, San Francisco.
- Hall, S.M. (2013). **“Human Error and Product Safety: Fitting the Intervention to the Error,”** 2013 IEEE Symposium on Product Compliance Engineering, Austin, Texas, October 7-9, 2013.
- Hall, S.M. (2013). **“We’re Only Human: Human Performance and Error in Product Safety,”** University of Wisconsin 25th Annual Product Liability Conference, Madison, Wisconsin, September 17-19, 2013.
- Hall, S.M. (2010). **Mythbusters: Safety Hierarchies,** Lecture In: Safety Management I, The University of Michigan, February 9, 2010.
- Hall, S.M. (2008). **Implementing ANSI Z535.6 in Owner's Manuals. Farm Equipment Manufacturers Association Fall Convention,** Reno NV, November 7, 2008.
- Hall, S.M. (2008). **“Managing Product Safety Information Across Various Media,”** University of Wisconsin 20th Annual Product Liability Conference. Madison, Wisconsin. Sept 10, 2008.
- Hall, S.M. (2008). **“Caution: Your Warnings May Be Dangerous,”** National Electrical Manufacturers Association (NEMA) Product Safety and Liability Conference. Memphis, Tennessee. Sept 30, 2008 (with JK Leonard).
- Wisniewski, E.C., Isaacson, J.J., and Hall, S.M. (2008). **Alternatives to ANSI/ISO Guidelines for Developing Graphical Safety Information.** Poster presentation at Applied Human Factors and Ergonomics 2nd International Conference. July 14-17, 2008, Las Vegas.
- Isaacson, J.J., Hall, S.M., and Wisniewski, E.C. (2008). **Aesthetics and Product Warning Removal.** Poster presentation at Applied Human Factors and Ergonomics 2nd International Conference. July 14-17, 2008, Las Vegas.
- Stetler, K.M, Peckham, G., Frantz, J.P., and Hall, S.M. (2007). **Product Safety-Warning and Instructions. Travelers Insurance,** Risk Control Safety Webinar. October 24, 2007.
- Hall, S.M. (2007). **ANSI/ISO Warnings Standards: A Tutorial.** Institute of Electrical and Electronic Engineers (IEEE) Symposium on Product Compliance Engineering, sponsored by IEEE Product Safety Engineering Society. Longmont, Colorado. October 23, 2007.
- Hall, S.M. (2006). **Development, status and implications of ANSI Z535.6 – a new standard for safety information in product-accompanying literature.** Poster presentation at the Human Factors and Ergonomics Society 50th Annual Meeting.
- Hall, S.M. (2006). **Update on ANSI Z535.6: A New Standard for Safety Information in Product Manuals, Instructions, and Other Collateral Materials.** Society for Technical Communications, Twin Cities Chapter, Newsletter. October 2006.
- Hall, S.M. (2006). **ANSI Z535.6: A New Standard for Safety Information in Product Manuals, Instructions, and Other Collateral Materials.** Association of Equipment Manufacturers (AEM) Product Safety Seminar, April 3-5, 2006, San Antonio, Texas.
- Hall, S.M. (2006). **ANSI Z535.6: A New Standard for Safety Information in Product Manuals, Instructions, and Other Collateral Materials.** Hazard Communications Systems LLC Newsletter. March 2006.
- Hall, S.M. (2005). **Product Instructions,** Goodden & Ross Annual Product Liability Conference, July 15, 2005, Milwaukee, Wisconsin.
- Hall, S.M. (2004). **ANSI Z535.6 Standard Development Update, Product Liability Prevention & Defense,** Fall Workshop, September 2004, Leesburg, Virginia.

- Hall, S.M. (2004). **Development, Status, and Implications of ANSI Z535.6: A New Standard for Safety Messages in Product-Accompany Literature**, Panelist, Human Factors and Ergonomics Society 48th Annual Meeting, September 2004, New Orleans, Louisiana.
- Frantz, J. P., Rhoades, T. P., and Young, S.L., and Hall, S.M. (2002). **Development of an ANSI Z535 standard for safety information in collateral materials**, Presentation to the Human Factors Division of the U.S. Consumer Product Safety Commission, September 2002, Bethesda, Maryland.
- **Lockout/Tagout – A Case Study in Consensus Standards Development**, Lecture In: Safety Management I, The University of Michigan, January 22, 2002.

## Peer Review Activities

- **Proposal Reviewer**, Human Factors and Ergonomics Society, Safety Technical Group
- **Reviewer**, Chapter 56: Environmental and Industrial Safety, In Fundamentals of Manufacturing, Rufe, P. (Ed.)