

Subodh R. Medhekar, Ph.D., P.E., CRE
Principal Engineer

Professional Profile

Dr. Subodh Medhekar is a Principal Engineer in Exponent's Engineering Management Consulting practice. Dr. Medhekar's practice focuses on addressing risk and reliability issues. Dr. Medhekar specializes in evaluating technologies and manufacturing operations, and reviewing process/product designs for the purpose of proactive reduction of failures and hazards. He conducts FMEA, PHA, HAZOP, MTBF, reliability, root cause, fault tree, event tree, and uncertainty analyses.

Over the last 10 years, Dr. Medhekar has provided risk assessment and management consulting services to various Automotive OEM's and Tier 1 suppliers, Semiconductor, Medical and Biomedical, Chemical/Petrochemical, Nuclear Power, and various other Manufacturing facilities. He has authored or coauthored more than 50 technical publications/reports and presented a number of papers and short courses with topics ranging from performing complex reliability investigations, identifying and managing risks under PSM/OSHA Act, practical FMEAs for product design, performing risk and reliability assessments for automotive, semiconductor, biomedical, and process industries, pipeline risk assessments, fault tree analysis, source term modeling, and Bayesian uncertainty analysis.

Dr. Medhekar also uses his expertise as a chemical engineer in the investigation and prevention of accidents, with particular emphasis on safety and risk. He provides consulting services to the chemical and petrochemical process (LNG/NG and Refinery sector) industries, specializing in the safety/risk-based evaluation/investigation of process failures, such as process upsets/explosion/fire incidents, at chemical processing and petroleum refining facilities. Dr. Medhekar's projects have involved a wide range of equipment including chemical reactors and separation systems; pressure vessels, piping, pumps and compressors; furnaces and heat exchangers; railcars and tanker trucks; and pressure relief valves and emergency relief systems.

Prior to joining Exponent, Dr. Medhekar held a variety of consulting and engineering positions with companies that include PLG, Inc. in Newport Beach, California; the Center for Risk Studies and Safety in Santa Barbara, California; Indian Oil Refinery in Baroda, India; and Union Carbide in Thane, India.

Academic Credentials and Professional Honors

Ph.D., Chemical Engineering, University of California, Santa Barbara, 1991
M.S., Chemical Engineering, University of California, Santa Barbara, 1988
B.Tech., Chemical Engineering, Indian Institute of Technology, New Delhi, 1984

Outstanding Achievement Award, PLG, Inc.; UC Regents Scholarship; Tata Endowment Scholarship; Aryabhata Science Talent Award; Ramanujam Math Talent Award; Best Paper Award, Society of Plastics Engineers, Inc.

Licenses and Registrations

Registered Professional Chemical Engineer, California, #CH6087
Certified Reliability Engineer, American Society for Quality, Certificate #5469

40-Hour OSHA Certification, Hazardous Waste Operations and Emergency Response
Reliability Centered Maintenance Analyst Course, Naval Air Systems Command, Jan 2001
RAM-W Certification, Sandia National Labs, AWWA, Haestad Methods, June 2002
SIL-LOPA Certification, March 2005

Publications

Roy C, Fessler J, Medhekar SR. Managing post-production change, materials and processes for medical devices conference. St. Paul, MN, August 25–27, 2004.

Medhekar SR, Caligiuri RD, Moalli J. Practical risk analysis as a tool for minimizing plastic product failures. Proceedings, Society of Plastics Engineers, ANTEC 2000.

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Medhekar SR, Amarasooriya WH, Theofanous TG. Integrated analysis of steam explosions. Proceedings, 4th International Topical Meeting on Nuclear Reactor Thermal Hydraulics, pp. 319–326, Karlsruhe, Germany, October 10–13, 1989.

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Presentations

Medhekar SR, Caligiuri R. Complex reliability investigations. Presented at Lyondell 2005 Worldwide Reliability Forum, Channelview, TX, February 28–March 2, 2005.

Medhekar SR. MEMS reliability—Issues and characterization. Presented at the 2002 Microelectronics Reliability and Qualification Workshop, December 3, 2002.

Medhekar SR, Roy C. High pressure fab-tools: Identifying and managing risks. Presented at the High Pressure Workshop, Austin, TX, October 16, 2002.

Medhekar SR, Lormon J. Identifying and managing risk under OSHA and the Clean Air Act. Presented at the Ridgehaven Conference Center, Sponsored by City of San Diego Department of Environmental Services, San Diego Unified Port District, County of San Diego, Dept of Environmental Health, San Diego, CA, May 3, 2002.

Medhekar SR. Chemical and petrochemical facilities risk assessment. Presented at UCI Extension Course, Irvine, CA, May 13, 1996.

Medhekar SR, Marston T, Gekler WC, Kenyon R. Improving refinery operation with a Tenets of Operation program. Presented at American Institute of Chemical Engineers, 25th One-Day Meeting, Anaheim, CA, April 30, 1996.

Medhekar SR, Kim Y, Dykes RA. PSM Seminar. Presented to Pohang Steel and Iron Company, Seoul, Korea, March 5, 1996.

Medhekar SR, Gekler WC. Risk-based pipeline rehabilitation and maintenance projects. Presented to Pipeline Regulatory Compliance Group, Bakersfield, CA, September 14, 1995.

Medhekar SR, Dykes RA, Landman RA, Lopez C. Afloat preposition ship lighting preliminary hazards analysis. Presented at the 13th International System Safety Society Conference, San Jose, CA, July 14, 1995.

Medhekar SR, Hou HM. HAZOP leader training for process hazard analysis. Presented at Kaohsiung, Taiwan, April 17–19, 1995.

Medhekar SR. Risk-based pipeline rehabilitation and maintenance projects. Presented at AIChE 24th One-Day Technical Meeting, Anaheim, CA, November 9, 1994.

Mikschi TJ, Medhekar SR, Roy CM. RISKMAN[®] and QCRR software training seminar. Presented to Korea Gas Corporation, Seoul, Korea, August 16–19, 1994.

Medhekar SR. Risk-based technical specifications at South Texas Project—Insights for future applications. Presented to Korea Atomic Energy Research Institute, Seoul, Korea, August 1994.

Medhekar SR, Gekler WC. Fault Tree analysis. Presented to Unocal Corporation, Los Angeles, CA, June 30, 1994.

Medhekar SR, Kindinger JP, MacFarlane DR. Source term analysis for high-level waste storage accidents. Presented at PSAM-II, San Diego, CA, March 20–25, 1994.

Medhekar SR, Gekler WC. Chemical process risk assessment. Presented at PSAM-II Short Course, San Diego, CA, March 20–25, 1994.

Medhekar SR, Moncarz P. Decision analysis for planning, development, and siting of petrochemical facilities. Presented to Menlo Park, CA, September 17, 1993.

Medhekar SR, Smith MJ, Gekler WC. MMM Sakhalin project offshore pipeline configuration selection preliminary risk assessment. Presented to MMM Project Team, Houston, TX, June 15, 1992.

Medhekar SR, Kaplan S. Bayesian uncertainty analysis for finite populations. Presented at the Society for Risk Analysis 1991 Annual Meeting, Baltimore, MD, December 8–11, 1991.

Medhekar SR, Amarasooriya WH, Saito M, Theofanous TG. Steam explosions a transient three fluid model. Presented at International Colloquium on the Dynamics of Explosions and Reactive Systems, MI, July 23–28, 1989.

Reports

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Medhekar SR. KGC-SE-2110-002 hazard and operability study for KHURAI Gas Plant. Prepared for Foster Wheeler & Hyundai Engineering & Construction Co., Ltd., Exponent Failure Analysis Associates, Inc., April 4, 2007.

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Medhekar SR. Fault Tree Analysis of HASBRO Nitro XRC Vehicles. Prepared for Adler Pollock & Sheehan P.C., Exponent Failure Analysis Associates, Inc., July 24, 2006.

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Medhekar SR. Vinotheque Wine Cellar Leak Inspection Report. Prepared for Fireman's Fund, Exponent Failure Analysis Associates, Inc., Report, September 10, 2003.

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Medhekar SR, Pettinger A, Pye J. SSD Design Risk Assessment. Prepared for Space Systems LORAL, Exponent Failure Analysis Associates, Inc., June 2000.

Medhekar SR, Almaula S, Wagner A, Jewett C. HTO Process Tool Evaluation – Summary Report. Prepared for Applied Materials, Exponent Failure Analysis Associates, Inc., November 2000.

Medhekar SR, Fessler J. 42-Volt System Risk Assessment – Summary Report. Prepared for Delphi Automotive Systems, Exponent Failure Analysis Associates, Inc., February 2000.

Medhekar SR, Roy C, Kim S, Ahn S, Kim Y. Hazard and Operability Study for CPC RFCC Project. Prepared for LG Engineering and Construction Company, Ltd., Exponent, EQE, and U&P, December 1999.

Medhekar SR, Roy C, Baik J, Kim S, Ahn S, Han E. Hazard and Operability Study for NODCO Refinery Expansion Project (Area 3). Prepared for LG Engineering and Construction Company, Ltd., Exponent, EQE, and U&P, November 1999.

Medhekar SR, Fessler J. Preview Project – Safety Report. Prepared for Allison Transmission, Exponent Failure Analysis Associates, Inc., Report, September 24, 1999.

Medhekar SR, Almaula S, Fessler J. Risk and Reliability Assessment for Frontier Communications – San Francisco Operations Facility. Prepared for Frontier Communications, Exponent Failure Analysis Associates, Inc., Report, September 17, 1999.

Medhekar SR. Supplemental Report on Tri-Valley Grower’s Off-Flavor Olives. Prepared for Factory Mutual, Exponent Failure Analysis Associates, Inc., Report, June 25, 1999.

Medhekar SR, Taylor P. Summary Report of Philip Morris’s FMEA Review. Prepared for Philip Morris, Exponent Failure Analysis Associates, Inc., Report, June 15, 1999.

Medhekar SR. Summary Conclusion on Tri-Valley Grower’s Ultra-Filtration/Reverse Osmosis Project. Prepared for Factory Mutual, Exponent Failure Analysis Associates, Inc., Report, August 18, 1998.

Medhekar SR, Fessler J. Methane Risk Assessment Summary Report. Prepared for SEATAC, Exponent Failure Analysis Associates, Inc., Report, June 3, 1998.

Medhekar SR, Manuel L, Caligiuri RD. Root Cause Analysis of Short Duration Inadvertent Deployments of Supplemental Inflatable Restraint Systems. Prepared for General Motors, Exponent Failure Analysis Associates, Inc., Report SF-25947-98-06-LM001, June 3, 1998.

Medhekar SR, Reza A. A Comparison of TRW 1990–1994 Injury and Fatality Data against Other Industries. Prepared for Snell & Wilmer L.L.P., Exponent Failure Analysis Associates, Inc., Report, May 29, 1998.

Medhekar SR, Dykes R. Risk-Based Technology Analysis of an Afloat Preposition Ship’s Cargo Hold Lighting. Prepared for U.S. Coast Guard, PLG, Inc., PLG-1110, March 1996.

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Medhekar SR, Kim ES, Pasma WD. Hazard and Operability Study for Unit 100 Reformulated Fuels Program Modifications. Prepared for 76 Products Company, PLG, Inc., PLG-1014, August 1994.

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Professional Affiliations

- American Institute of Chemical Engineers (member)
- Southern California Society for Risk Analysis (Councilor)
- Computational Project, NSF Supercomputer, San Diego, California (Principal Investigator)
- Graduate Student Association, UCSB (Administrative Vice President)
- Chemical Engineering Society, IIT, New Delhi, India (President)