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EDUCATION

Academic: A.I.S.M. (1962) - Mining Engineering, Indian School of Mines; B.Sc. (Hons.) (1962) - Mining Engineering, Ranchi University; M.S. (1968); Ph.D. (1970) - Mining Engineering, The Pennsylvania State University; Professional: Registered Professional Engineer in PA (1971); Certified Mine Manager under the 1952 Indian Mines Act (1965); Certified Health and Safety Instructor, MSHA, DOL, USA (1981); Certified Mine Safety Professional, International Society of Mine Safety Professionals (2001 - 2006).

PROFESSIONAL EXPERIENCE

September 1966 to Present-The Pennsylvania State University, Research Assistant (1966); Assistant Professor (1970); Associate Professor (1974); Chairman, Mineral Engineering Management Section (1974-2001); Professor (1978-2001); Department Head (1987-1998); Deike Chair (1997-2001); Chairman, Mining Engineering Section (1991-93; 1997-98); Director, Miner Training Program (1992-2001); Co-director, Standard Oil Center for Excellence in Longwall Mining (1983-89); Co-director, Generic Mineral Technology Center for Respirable Dust (1983-2000); Co-director, National Mined Land Reclamation Research Center (1988-1997); Emeritus Professor/Deike Chair (2001-) 1962 to 1966- Bengal Coal Co., Andrew Yule and Co. (now Coal India Ltd.), Graduate engineer, Ventilation officer, Safety officer, Production manager and Mine manager.

TEACHING ACTIVITIES

Undergraduate - Mine ventilation; mineral investment and property evaluation; mine engineering analysis; mine systems analysis; sampling and monitoring of the geo-environment; mine health, safety, and environmental management; quantitative analysis of health and safety systems; Graduate -Mine systems simulation; mine operations analysis; mineral engineering management; mine cost analysis and control; mining geostatistics; mining graduate seminars. Directed over 100 graduate students; Continuing Education: Director of 10 courses and lecturer in 10 more.

RESEARCH ACTIVITIES

Mine health, safety, productivity, environment and management research; Design of mine ventilation systems and innovative mining methods; Flow of gas, dust, water and heat through mining systems/rock strata; Environmental aspects in mine planning and designing air, water, land reclamation, and land use planning; Computer and operations research applications; modeling and analysis of exploration, production systems, and mine investment; Mineral engineering management, mine safety management and cost benefit analysis of training, safety and other human resource development issues. Research funding sources: NSF, USBM, NIOSH, MSHA, DOE, EPA, OSM, PSEF, PEDA, PA DER, and industry. Total Personal Research Funding: $10 million; Project Management Responsibilities [Project Director]: $ 40 million

PROFESSIONAL ACTIVITIES

Chairman, US National Academy of Sciences Comm. on Post Disaster Survival and Rescue, 1979-81; Chairman, International Council for the Application of Computers in the Mineral Industry (APCOM), 1983-87; Member, Society of Mining Engineers of AIME (SME), 1966-; Chairman, Coal Division, 1987; Member, Board of Directors (1987-91; 1994-97); President (1995); Fellow, Mine Ventilation Society of South Africa, 1975 -; Member, Institute for Operations Research and Management Sciences, (1970-93); Chairman, Mineral Engineering Div., Amer. Soc. for Eng. Education, 1978; Member, Board of Trustees, AIME (1994-97); Member, Board of Directors, SME Foundation (1993-); Treasurer (1997-2002); President 2001-2004, Consultant and member of expert panels for US Dept. of the Interior (DOI), US Dept. of Labor (DOL), US Dept. of Energy (DOE), US Dept. of Health and Human Services (HHS), US Dept. of State, PA Dept. of Environmental Resources; the United Nations (UNDP, UNDTCD, DDSMS); National Safety Council (2003-2006) and the World Bank; Member, Secretary of DOL's Advisory Committee on Belt Air Ventilation (1992-93); Member, Secretary of HHS's Advisory Committee on Mine Health Research (1991-1998); Member, US National Academy of Sciences Panel on USBM Health Research, NAS Committee on the research programs of the US Bureau of Mines (1994); Member, Secretary of DOI's Advisory Board to the Director of the US Bureau of Mines (1995); Member, Secretary of DOL's Advisory Committee on Pneumoconiosis Elimination (1996); Member, US NAS Committee on Technologies for the Mining Industries (2000-01); Member, US NAS Committee on Coal Refuse Impoundment Safety (2001-02); Chairman, PA Governor's Commission on Abandoned Mine Voids and Mine Safety (2002); Member, US NAS Committee for the Review of NIOSH Research Programs (2005-10); Chair, US NAS Committee to Review the NIOSH Mining Safety and Health Research Program (2005-07); Member, US NAS Committee on Coal Research, Technology, and Resource Assessments to Inform Energy Policy (2006-07); Member, U.S. NRC Committee on Offshore Oil and Gas Platform Inspection Program of the Mineral Management Service: A Review (2009-), Member/Leader, Penn State AESEDA team for developing post-mining sustainable livelihoods (2004-).

PUBLICATIONS

Over 125 reports on sponsored research; over 200 research papers in technical magazines, and symposiums; co-author of a major text on mine ventilation; edited 15 books and contributed over 25 chapters to 15 others including Encyclopedia Britannica, SME Mining Engineering Handbook, and Encyclopedia on Global Change.

AWARDS

AIME Honorary Member, 2010; 2008 SME President's Citation, 2009; Charles L. Hosler Alumni Scholar Medal, 2006, College of Earth and Mineral Sciences (PSU); Member, National Academy of Engineering, 2005; The Erskine Ramsay Medal, 2005, AIME; The Robert Stefanko Distinguished Achievement Award in Mineral Engineering, 2003, Energy and Geo-Environmental Engineering Department (PSU); The Thorton Medal, 2000, The Institution of Mining and Metallurgy (London, UK); Mineral Industry Education Award, 1999, AIME; Doctor of Science (Honoris Causa), 1997, Indian School of Mines; Howard L. Hartman Award, 1997, SME; George H. Jr. and Anne B. Deike Chair in Mining Engineering, 1997, The Pennsylvania State University; Henry Krumb Lecturer, 1994, AIME; Outstanding Asian American Award, 1994, Pittsburgh Energy Technology Center (DOE) and the Bruceton Asian-American Group; Robert Stefanko Best Paper Award, 1993, SME; Coal Division Distinguished Service Award, 1993, SME; Percy W. Nichols Joint Society Award, 1992, ASME/AIME; Howard N. Eavenson Award, 1991, SME; APCOM Distinguished Achievement Award, 1989, APCOM; SME Distinguished Member, 1989, SME; Fulbright Fellowship to Soviet Union, 1989, CIES; Matthew J. and Anne C. Wilson Outstanding Teaching Award, 1987, The Pennsylvania State University; PCMIA Institute Award (Stephan McCann Award) for Educational Excellence, 1986, Pittsburgh Coal Mining Institute of America; Eminent Scientist Fellowship Award, Japan Society for the Promotion of Science, (JSPS, Japan), 1983; Distinguished Alumni Award, 1978, Indian School of Mines; Graduate Division Best Paper Award, 1968, SME. Other recognitions include visiting professorships at universities in U.S. and abroad, keynote addresses at national and international symposiums, and listings in national and international directories.