

JOE H. PAYER, Ph.D.

Chief Scientist of National Center for Education and Research for Corrosion
Research Professor Corrosion and Reliability Engineering
The University of Akron

Dr. Joe H. Payer is Chief Scientist of National Center for Education and Research on Corrosion and Materials Performance (NCERCAMP) and Research Professor of Corrosion and Reliability Engineering. He is an internationally recognized expert in corrosion and materials performance. He directed the University Corrosion Collaboration at UAkron for the U.S. DoD Office of Corrosion Policy and Oversight. At Case Western Reserve University, Dr. Payer directed the U.S. Department of Energy, multi-university, Corrosion and Materials Performance Cooperative for improved performance assessment for long-term disposal of spent nuclear fuel, and he is former director of the Yeager Center for Electrochemical Sciences at Case. Dr. Payer is Fellow and past president of NACE International, a Fellow of ASM International, received the ASTM Sam Tour Award for Distinguished Contributions to Research, Development and Evaluation of Corrosion Testing Methods.

As Chief Scientist of NCERCAMP and Head of the Corrosion and Reliability Engineering program at UAkron, Dr. Payer has directed efforts in corrosion risk management for enhanced reliability, safety and performance of our nation's aging infrastructure. The overarching research theme is to (a) advance risk management for corrodible structures, (b) reduce the risks of technological hazards, and (c) lower the costs of corrosion to our society. Applications for enhanced performance assessment and integrity management range from macro systems—bridges and highways, pipelines, electric powers and chemical plants to Microsystems—biomedical, sensors and batteries. A thrust of the research is to develop quantitative knowledge for the evolution of corrosion damage through collaborative computational modeling and experimental measurement.

He is a leader in the analysis and advancement of materials performance and corrosion for the long-term disposal of spent nuclear fuel. In support of the proposed high-level waste repository at Yucca Mountain, Dr. Payer directed the U.S. Department of Energy, multi-university, Corrosion and Materials Performance Cooperative. Findings from this 5-year, nearly \$10M program enhanced the technical basis and improved performance assessment for the long-term disposal of spent nuclear fuel for time periods of 10,000 years and beyond.

Safety, reliability and performance assessment to evaluate current status and future performance of aging structures and equipment is paramount to the U.S. Dr. Payer was a member of an Independent Review Panel for BP America to make recommendations for improving the corrosion inspection, monitoring and prevention program in place at Prudhoe Bay and in other BP-operated Alaska oil fields. Dr. Payer's work on sensors, monitors and materials performance supports system reliability models for optimal strategies of inspection, maintenance and replacement.

Dr. Payer's expertise includes materials selection, failure analysis, development and verification of corrosion control methods, advances to test methods and monitoring systems and determination of degradation mechanisms. His work has focused on localized corrosion of highly corrosion resistant materials; gas and oil pipeline integrity; the effects of manufacturing processes on performance and reliability of materials in service; coatings and surface treatments;

hydrogen/materials interactions; coating systems for autos, appliance and construction; electronics and communication; fuel cells and advanced power systems.

Corrosion impacts public safety, the environment, and the economy. Dr. Payer has been a principal investigator in two major studies to determine the costs of corrosion to the U.S. A Congressionally mandated study, *Corrosion Costs and Preventive Strategies in the United States*, issued in 2002 found that corrosion costs the U.S. Economy over \$276 Billion per year in direct costs. This amounts to about \$1,000 for every person in the U.S. per year. In 1978, Dr. Payer was a Principal Investigator for *Determination of the Economic Effect of Corrosion in the U.S.* This study for the U.S. Congress is a landmark and definitive study of the cost of corrosion to a developed country.

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College of Engineering
The University of Akron, Akron, OH 44325-9006

Tel: 330-972-2806
Email: jpayer@uakron.edu

EDUCATION

Ph.D. 1971 Metallurgical Engineering Ohio State University
B.S. 1966 Metallurgical Engineering Ohio State University

EXPERIENCE

Mar 2012-present	Chief Scientist of National Center for Education and Research for Corrosion and Materials Performance, University of Akron
July 2009-present	Research Professor of Corrosion and Reliability Engineering University of Akron
July 1985-June 2009	Professor of Materials Science, Dept. of Matls. Sci. & Engr Case Western Reserve University
Jan 2009-June 2009	Director, Case Materials Performance and Reliability Program
June 2004-Nov 2008	Director, DOE Corrosion and Materials Performance Cooperative Case Western Reserve University
Oct 2000-July 2004	Director, Yeager Center for Electrochemical Sciences Case Western Reserve University
Jan 1992-Jan 1996	Professor and Chairman, Dept. of Matls. Sci. & Engr. Case Western Reserve University
1984-July 1985	Manager and Associate Manager of Corrosion Section, Battelle Columbus Laboratories; Columbus, Ohio
1983-1984	Manager of Materials Technology Battelle Houston Operations; Houston, Texas
1974-1983	Research Scientist and Associate Manager of Corrosion Section, Battelle Columbus Laboratories; Columbus, Ohio
1971-1974	Senior Research Engineer, Coated Products Division Inland Steel Research Laboratory; East Chicago, Indiana

RESEARCH AREAS OF INTEREST

Corrosion, electrochemistry, hydrogen effects on materials, integrity/reliability, life prediction, life cycle costs, risk management, surface treatments, protective coatings, failure analysis, materials selection, cathodic protection, sensors and monitoring devices, amorphous metals/bulk metallic glasses

HONORS, AWARDS & PROFESSIONAL ACTIVITIES

Wittke Award for Distinguished Undergraduate Teaching, CWRU
Plenary Lecture, "Role of Corrosion Science in Long-Term Performance Assessment", NACE 2006
Corrosion Conference and Exposition
President, National Association of Corrosion Engineers 1986-87

Fellow, American Society for Metals

Fellow, National Association of Corrosion Engineers

ASTM Sam Tour Award for Distinguished Contribution to Research, Development
and Evaluation of Corrosion Testing Methods, 1980

Distinguished Alumnus Award, Ohio State University, College of Engineering, 2004

President of 12th International Corrosion Congress, Houston, 1993