OMESH K. CHOPRA

Risk and Waste Management
Environmental Science Division
Argonne National Laboratory

Education:

Ph.D.	University of Waterloo, Canada, Material Science, 1971
M.A.Sc.	University of Waterloo, Canada, Material Science, 1968
M.E.	Indian Institute of Science, Bangalore, India, Machine Design, 1966
B.E.	Birla Engineering College, Pilani, India, Mechanical Engineering, 1964
B.E.	Allahabad University, Allahabad, India, Mathematics/Physics, 1960

Professional Experience:

2008-Present Senior Metallurgist
Environmental Science Division, Argonne National Laboratory

Responsible for providing technical expertise to the US Nuclear Regulatory Commission (NRC) staff in evaluation of license renewal applications and design certification of new reactors. Recent major responsibilities include review of license renewal applications and audit of Cooper, Kewaunee, and Duane Arnold nuclear power plants and review of the design certification application for the Mitsubishi Heavy Industries, Ltd., Advanced Pressurized Water Reactor. In addition, provide expertise to the Advanced Test Reactor National Scientific User Facility (ATR NSUF) in developing an experimental program that benefits the US NRC research goals; in particular, to address materials degradation issues related to reactor pressure vessel internal components.

Summary of Previous Experience:

1997-2008	Senior Metallurgist, Nuclear Engineering Division, Argonne National Laboratory
1974-1997	Metallurgist, Energy Technology Division, Argonne National Laboratory

Responsible for conducting experimental research programs to facilitate in reviews of licensee submittals and resolution of regulatory issues, as well as the development, validation, and improvement of codes and standards, and NRC regulations. From 1995-2008, managed the NRC sponsored Environmentally Assisted Cracking program at Argonne. Investigated cyclic crack growth and irradiation-assisted stress corrosion cracking behavior, and radiation embrittlement of light water reactor core internal components. Developed experimental data and statistical models for predicting fatigue crack initiation in reactor materials, and incorporating environmental effects into ASME Code fatigue evaluations. Characterized thermal embrittlement of cast stainless steels and developed procedure for estimating fracture properties of these steels in light water reactor service. Provided technical expertise and assistance to the US NRC in the preparation of Standard Review Plan and the technical basis document for the review of license renewal applications. Other

significant accomplishment include: investigated boric acid corrosion and nickel-alloy cracking issues for Davis Besse reactor, and characterization of thermal aging and neutron irradiation embrittlement of components from the decommissioned Shippingport reactor. From 1974-1985, conducted experimental research programs to investigate corrosion/compatibility of structural materials in liquid metal heat transport systems for fast breeder reactor and fusion reactor applications, and high-temperature gaseous environments in coal gasification and fluidized–bed combustion. Developed experimental data and prepared Nuclear Systems Materials Handbook (NSMH) design data sheets pertaining to sodium effects on tensile, fatigue, and creep-fatigue properties of austenitic and ferritic steels.

Research Interests:

Investigate aging degradation of structural materials and long-term effects of service environments on fracture properties of materials for use in different energy production systems.

Professional Activities:

Member of the ASME Code Subgroup on Fatigue Strength (1994-2008), and served as the ASME Symposium co-organizer for “Environmental Fatigue Issues” at the Pressure Vessel and Piping conference (2003-2007).

Member of the Pressure Vessel Research Council (PVRC), subgroup on Cyclic Life and Environmental Effects (1991-1999).

Member of expert panels on issues such as Environmental Fatigue and Environmentally Assisted Cracking.

Publications:

Author or co-author of 200+ journal articles, reports, and conference publications and presentations, including about 30 topical reports for the US Nuclear Regulatory Commission.