



HANS K. FAUSKE

1935–2021

Elected in 2016

“For contributions to nuclear and chemical reactor safety.”

BY ROBERT E. HENRY

HANS KARE FAUSKE died September 27, 2021, at age 85. He was born to Marie and Ivar Fauske on December 7, 1935, in Bergen, Norway.

His undergraduate degree was in chemistry from the Norwegian Institute of Technology (1958), and he completed his education with an MSc (1959) from the University of Minnesota, under the guidance of Professor Herb Isbin, and a DSc (1963), both in chemical engineering, from the Norwegian Institute of Technology.

Upon completion of his studies, Hans joined the staff at Argonne National Laboratory (ANL), where he provided thesis supervision of master’s and PhD students doing research through a collaboration of universities such as the University of Chicago, University of Minnesota, University of Notre Dame, and Northwestern University.

Before leaving ANL in 1980, he served for two years as director of the DOE Fast Reactor Safety Technology Management Center; he was responsible for the planning and management of the US programs and recognized as a world authority on fast breeder reactor safety. During this period he also chaired the Argonne National Laboratory Committee A, which was responsible for the hiring and promotion of scientific and engineering staff.

In 1980 he left ANL, along with Michael A. Grolmes and the author of this tribute, to establish Fauske & Associates Inc. (FAI), which in 1986 became a Westinghouse Electric Company. He was president of FAI from 1980 to 2012 and then the company's regent advisor through 2019.

FAI achieved a national and international reputation and is considered a global leader in nuclear and chemical process safety. Dr. Fauske himself was involved in projects covering a wide range of safety issues in both the nuclear power and chemical process industries. His career included roles involving many aspects of both chemical and nuclear reactor safety:

- He was senior consultant to the Nuclear Industry Degraded Core Rulemaking program that followed the accident at the Three Mile Island Unit 2 plant. He had a leadership role in initiating the MAAP computer code that is used by utilities around the world to assess possible accident behavior, and how to counter that behavior, for commercial water-cooled nuclear power plants.
- He was senior technical advisor to the Clinch River Breeder Project with responsibility for developing the severe accident energetics evaluations. This eventually led to the licensing of the liquid sodium-cooled Clinch River Breeder design.
- He provided technical direction for the AIChE Design Institute for Emergency Relief Systems (DIERS), which is sponsored by 28 domestic and international chemical firms. These activities resulted in state-of-the-art methods and laboratory tools that have been used to design relief systems for individual chemical recipes involved in both storage and process equipment throughout the world. These studies of possible chemical vulnerabilities were employed at the US Hanford high-level waste tanks to support containment-in-place as a viable long-term alternative strategy that has been used effectively.

Dr. Fauske's important contributions were recognized with myriad honors. He was elected a member of the NAE (2016)

and was also a fellow of the American Nuclear Society (ANS) and American Institute of Chemical Engineering (AIChE). Over the decades he received the first University of Chicago Medal for Distinguished Performance at Argonne National Laboratory in the field of Reactor Technology (1975), the ANS Tommy Thompson Award in the field of reactor safety (1982) and Thermal-Hydraulics Division Technical Achievement Award (1991), the AIChE Donald Q. Kern Award (1992) for Heat Transfer and Fluid Flow Technology and Robert E. Wilson Award (1996) for ensuring nuclear and chemical industries safety, the University of Minnesota Outstanding Achievement Award (2004) for worldwide impact on nuclear and chemical reactor safety, and the ANS George C. Lawrence Pioneering Award (2012) for nuclear safety in recognition of his lifetime of pioneering contributions toward the enhancement of nuclear safety.

He served on the editorial boards of the *Journal of Loss Prevention in the Process Industries*, the *International Journal of Multi-Phase Flow*, and the *AIChE Process Safety Progress Journal*.

He published more than 200 scientific articles and held numerous patents in the areas of nuclear and chemical process safety. He coauthored the book *Experimental Technical Bases for Evaluating Vapor/Steam Explosions in Nuclear Reactor Safety* (with the tribute author; ANS, 2017). Following are just a few of his other notable publications:

- On the mechanism of uranium dioxide-sodium explosive interactions. *Nuclear Science and Engineering* 51:93–101 (1973)
- Summary on accident energetics, including coolant dynamics, cladding and fuel relocation, and molten-fuel-coolant interaction. *Proceedings of the International Meeting on Fast Reactor Safety and Related Physics* (Oct 5–8, 1976, Chicago), Conf-761001, vol 1:316–24 (1977)
- Managing chemical reactivity – Minimum best practice. *Process Safety Progress* 25(2):120–29 (2006)

He continued actively writing and publishing into his 80s.

Dr. Fauske spoke seven languages, and recently became a US citizen, something he carefully weighed for many years. He was generous with his time, a patient mentor, and modest despite his substantial accomplishments. When not engaging with his family, his favorite place to be was solving problems at his white board, continuously writing equations for understanding and predicting important physical phenomena.

He was immensely proud of the achievements of his children and grandchildren, and he adored his wife Judi (née Gerdes), his “very pretty lady” whom he married February 8, 1964. She survives him, as do their children Hans Kristian (AnnMarie) and Kirk Ivar (partner Tori Harmon), and five grandsons.

