

## Arthur C. Upton (1923–2015) – In Memoriam

Arthur Canfield Upton, M.D., died on February 14, 2015. He was that rare individual — a true giant and leader in his field of radiation science and a true gentleman and Renaissance man.

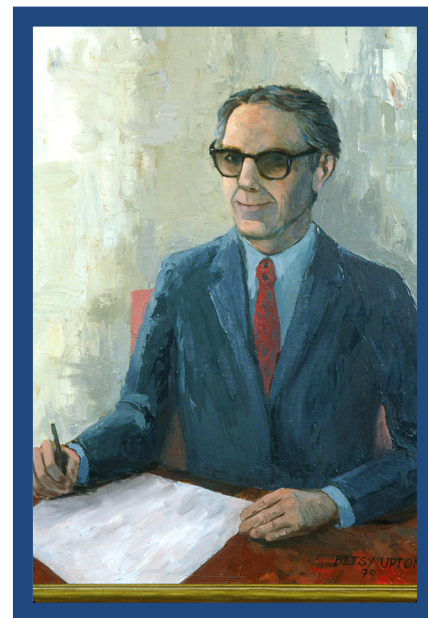
During an illustrious career that spanned seven decades, Art was director of the National Cancer Institute, chairman of the National Academy of Sciences BEIR V committee, president of the Radiation Research Society, and president of the American Association for Cancer Research.

Art held many academic positions including professor of pathology at the State University of New York at Stony Brook, Director of the Institute of Environmental Medicine at New York University, Clinical Professor of Environmental and Community Medicine at the University of Medicine and Dentistry of New Jersey Robert Wood Johnson Medical School and Clinical Professor of Pathology and Radiology at the University of New Mexico School of Medicine.

Art was internationally recognized for his research on the health effects of ionizing radiation. He worked with Jacob Furth in the 1950s at the Biology Division at the Oak Ridge National Laboratory and subsequently became “the leading expert in radiation pathology.” “Operation Greenhouse” was a monumental experimental study of the pathologic effects of ionizing radiation.

He was born on February 27, 1923, in Ann Arbor, Michigan, where he spent his childhood. His interest in becoming a physician was deep-rooted in childhood after seeing his mother nursed back to health after a serious struggle with pneumonia. He graduated from the Phillips Academy in Andover, Massachusetts, and subsequently from the University of Michigan where he received both his Bachelors and Medical Degrees. Later, he lived in New York City in the Village where he and his wife enjoyed the music, the art, and the theatre along the “Great White Way.” His wife and a daughter are both artists.

In 1977 President Jimmy Carter appointed Art as Director of the National Cancer Institute (NCI) where he was responsible for overseeing the nation's broad program of research into the causes, diagnosis and treatment of cancer. I came to NCI the same year as Art and because of our radiation backgrounds, we were linked to tumultuous issues. Mammography screening of asymptomatic women for the early detection of breast cancer came to the forefront and there was concern that the radiation exposures might be more detrimental than the early detection benefit. The National Institutes of Health (NIH) held their first consensus conference in 1977 to address this topic. During the Three Mile Island accident, Art provided important government guidance and testimony with regard to the potential health effects from the nuclear accident. Occasionally I would accompany him during Congressional testimony and, to my chagrin, had to do it alone when he was out of town, including accompanying NIH Director Don Frederickson and Secretary of the U.S. Department of Health, Education and Welfare (DHEW) Joseph Califano who testified before the John Glenn senatorial hearings just after the TMI accident — and after the early release of the BEIR III report. Dr. Upton's guidance brought balance and clarity to these volatile times of uncertainty.



Arthur C. Upton, 1979, painted by Betsy Upton [original hangs on the 11th floor, Building 31, NCI]

He rarely rode in an elevator and would walk the 11 floors to the top of his office building at NIH, not because of a fear of elevators, but rather a desire for exercise. I still have the letter he wrote in 1977 thanking me for sending a copy of my doctoral thesis which was relevant to the issues of mammography screening and risk of radiation-induced breast cancer.

His contributions to science were extraordinary. When on the Main Commission of the International Commission on Radiological Protection (ICRP) he developed many landmark publications including ICRP Publication 26 which led to a paradigm shift in the application of radiation protection throughout the world. As an experimentalist he provided insights into the effect of chronic low-dose radiation and the risk of leukemia. In the course of his career, Art published nearly 400 articles, books, and technical documents on the health effects of radiation. I co-authored two of these publications, one dealing with thyroid cancer and low-dose radiation and the other as editor of a 1984 book on *Radiation Carcinogenesis*.

His book with Fred Mettler on *The Medical Effects of Ionizing Radiation* is a classic and comprehensive treatise on the acute and long-term effects of ionizing radiation on humans and is one that I refer to frequently.

Art was an important contributor to the Consortium for Risk Evaluation with Stakeholder Participation (CRESP), a multi-university research program aimed at developing methods for involving stakeholders in the assessment of risk to human health and the ecosystem at nuclear weapons sites.

Art is the only person I know who served the United States in three different uniformed services: U.S. Army (during World War II), U.S. Air Force (Captain in the reserves), and U.S. Public Health Service (Rear Admiral).

In recognition of his many accomplishments, Art was elected to the Institute of Medicine, National Academy of Sciences and received many honors including the E.O. Lawrence Award from the U.S. Department of Energy, the Failla Lectureship from the Radiation Research Society, the L.S. Taylor Lectureship from the National Council on Radiation Protection and Measurements (NCRP) and the Distinguished Achievement Award of the Society for Risk Analysis. He was a long-term Council member of NCRP, Distinguished Emeritus Member, served on the Board of Directors, and also was the chair of NCRP Report No. 136 on *Evaluation of the Linear-Nonthreshold Dose-Response Model for Ionizing Radiation*. Art also was the chairman of the BEIR V committee of the National Academy of Sciences on the Biological Effects of Ionizing Radiation.

Art even in his "semi-retirement" was always available and could be called upon. Just a few years ago I had breakfast with him and his wife, Betsy, in Vienna during an United Nations Scientific Committee on the Effects of Atomic Radiation meeting. As Art approached 90 years of age, he was still called upon for guidance and advice, and he rarely refused. He affected the lives of so many who are today in leadership roles in the nation.

Art had a wonderful career that was befitting a wonderful individual. From growing up in Ann Arbor to working in Oak Ridge to Brookhaven to New York City to NCI to New Jersey to Santa Fe and throughout the world he contributed his knowledge and time with kindness and graciousness and unassuming leadership. The world has lost a gentle giant.

Art is survived by his wife (Elizabeth Bache Perry), three children (Rebecca, Melissa and Bradley), nine grandchildren, and seven great grandchildren.