Radiation Researcher Reflects on 80th Anniversary of Atomic Bombings of Hiroshima and Nagasaki

Jonathan Samet, MD, was the featured keynote speaker at the Radiation Effects Research Foundation's anniversary event this past summer.

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When the Radiation Effects Research Foundation (RERF) — an organization that studies the long-term effects of radiation on the survivors of the 1945 atomic bombings of Hiroshima and Nagasaki, Japan — held its 50th anniversary celebrations in Japan this past July, they asked University of Colorado Cancer Center member Jonathan Samet, MD, MS to serve as keynote speaker.

"I felt honored to be asked," says Samet, former dean of the Colorado School of Public Health and professor of epidemiology and occupational and environmental health. "I thought it was critically important to acknowledge the tragedies and what we're learning, and the contribution that is being made by the survivors to help humankind."

Studying survivors

Samet, an epidemiologist who has carried out studies on the risks of radiation, has a long history with RERF, which was established in 1975 after a reorganization of its predecessor organization, the Atomic Bomb Casualty Commission. After serving on the foundation's board in the 1990s, he returned as a Board of Councilors member in 2011 and has stayed involved since then, helping to oversee research on the bombings' survivors, known in Japan as the hibakusha.

"The studies have been going on for a long time, and there's a group of about 110,000 survivors who have been followed for mortality and causes of death," he says. "There are about 20,000 who have come in for more regular examinations over the years, and at this point, around 15% of them are still alive."

Thanks to the generosity and sacrifice of the hibakusha, Samet says, the bombings that killed more than 200,000 people now serve as a valuable data point on how radiation exposure affects cancer risk.

“Right after the blast, there was a rapid increase in acute leukemia,” he says. “It started within three or four years, peaked after five or six years, then abated. About 25-30 years after the blast, there was a radiation-related rise in solid cancers like breast cancer and colorectal cancer. The relationship between radiation exposure and cancer risk observed in this cohort has been the basis for radiation safety guidelines around the world.”

Early interest

Samet’s interest in radiation began in the late 1970s at the University of New Mexico, where he was a new faculty member studying the effects of underground uranium mining on lung cancer risk.

“That brought me into the world of radiation risk assessment, and I ended up leading a number of national academy committees assessing risks of different types of radiation,” he says. “That connected me with the work in Japan, doing radiation epidemiological studies over time.”

Looking back

Samet’s expertise in radiation — the 1945 bombings in particular — led to an invitation from fellow CU Cancer Center member Sharon Pine, PhD, editor of the cancer journal Carcinogenesis, to pen an introduction to the September 2025 issue of the journal dedicated to the 80th anniversary of the bombings.

“We chose to theme the recent special issue of Carcinogenesis around the 1945 atomic bombings because of the enduring scientific and public health importance of this tragic event and the significance of the anniversary as a moment for reflection on long-term cancer risk from radiation exposure,” says Pine, director of the cancer center’s Thoracic Oncology Research Initiative.

“Dr. Samet’s expertise in radiation epidemiology, environmental exposures, and population-level cancer risk assessment, together with his longstanding engagement with radiation health research, made him an ideal choice to write the introduction,” she continues. “His perspective allows him to frame the contributions in this issue within both a historical context and their implications for contemporary cancer research and public health.”

Looking ahead

Samet says an important part of recognizing the 50th anniversary of RERF and the almost 80th anniversary of the research conducted on the survivors is looking toward future research yet to be done and the promise of using modern research techniques to uncover even more knowledge from the survivors and their descendants.

“Researchers have collected biological specimens of various sorts over the decades, so we’re well-

positioned to do what we've been calling 21st-century science, genomics in particular," he says. "We're hoping we can address some fundamental questions. There's been a push to look at epigenetics in the survivors, for example. RERF also wants to understand how it can better partner with collaborators around the world. There's so much data and so many specimens, and there's an opportunity to do more through collaboration. There's a lot of hope."

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