

# Baby Teeth May Hold Clue to What Caused Cancers

*Continued from cover*

During the late 1950s, the most alarming feature of growing Cold War tensions between the United States and the Soviet Union was a fierce competition to test and build as many atomic bombs as possible. The threat of nuclear war was very real, and leaders on both sides pushed hard to develop the largest stockpile of the most advanced nuclear weapons.

The United States would eventually conduct 206 above-ground bomb tests in the South Pacific and Nevada, generating fallout in the form of over 100 cancer-causing isotopes, most of which are not found otherwise in nature. Fallout drifted in the atmosphere across the continental United States, returned to earth through precipitation, and entered [the bodies of targeted Pacific Islanders, Southwest US Indigenous peoples and millions of others] through the food chain.

Some of the bombs that were tested had a power equivalent to more than 1,000 times the force of the Hiroshima bomb. Along with fears of possible nuclear war, many were concerned with the actual buildup of fallout in the population — especially in children who are most vulnerable to its toxic effects. Government officials secretly collected bones and tissues from deceased Americans and found large increases in Sr-90 that corresponded with the timing of the tests. These findings were never publicly released, and the testing continued.

Virtually all military leaders and many political leaders of the day had no intention of stopping bomb tests. Grassroots opposition represented the only chance to force a shift in government policy to protect public health. Scientists and citizens worked together in the St. Louis study, in which at least 320,000 baby teeth were collected and measured for Sr-90. The dramatic results showed children born in 1963 had 50 times more Sr-90 than those born in 1951, when large-scale testing began.

These conclusions were published in peer-reviewed medical journals and landed eventually on President John F. Kennedy's desk. Kennedy referenced fallout buildup in children in a July 1963 speech ("with cancer in their bones, with leukemia in their blood, with poison in their lungs"). After hearing expert testimony on the buildup of carcinogens from fallout detected in the population, the Senate ratified a ban on all above ground tests. Kennedy signed the treaty — as did leaders from the Soviet Union and United Kingdom — in October 1963. Although the test ban was billed as an anti-nuclear war treaty, in truth it was as much an environmental health measure, which had been influenced, at least in part, by the baby teeth research project. (Underground testing continued in the United States through 1992.)

But it was not until 1999, following the end of the Cold War and the collapse of Soviet Union, that the National Cancer Institute (NCI), a federal agency, estimated that between 11,000 and 212,000 Americans developed thyroid cancer from fallout from [just the radioactive iodine-131 in] the tests. This disclosure was accompanied by a second NCI study, released three years later, which estimated 11,000 had died of cancer caused by exposure to the [iodine-131 in] fallout. [Scores of other radioactive isotopes in the fallout were not studied by the NCI.]

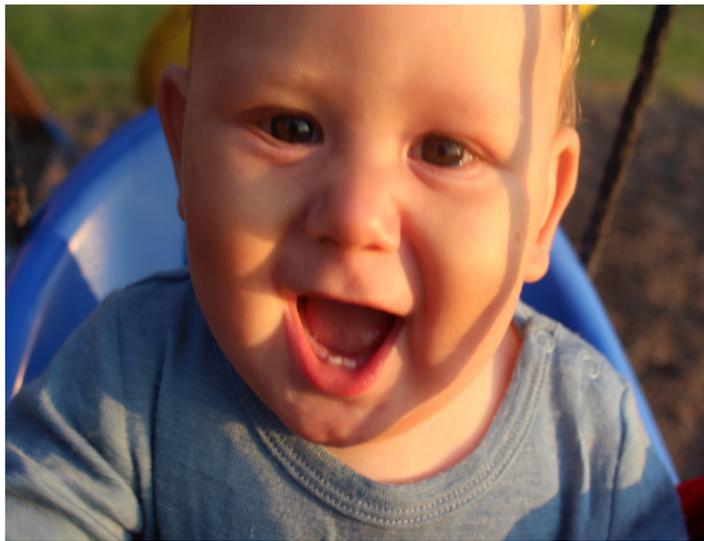
Although both estimates are considered conservative, in light of the approximately 200 million Americans who were exposed to bomb fallout, these disclosures represented the first time the US government had officially acknowledged the probable health impacts of the test program on US citizens.

The studies had actually been completed five years previously and had remained under seal. Robert Alvarez, a regular contributor to *The Washington Spectator* on nuclear and environmental matters, was working in the Department of Energy during the Clinton years and persuaded Energy Secretary Hazel O'Leary to release the findings.

The St. Louis Baby Tooth Survey, which also showed a 50 percent decline in measurable Sr-90 in the four years after the test ban, ended in late 1970. In 2001, Washington University staff made a surprise discovery of tens of thousands of baby teeth held over from the study and stored in a remote ammunition bunker outside St. Louis.

The University donated the teeth to the Radiation and Public Health Project (RPHP), a New Jersey-based research and education group. RPHP was engaged in its own tooth study, the measurement of Sr-90 levels in children living both close to and far from domestic nuclear reactors. With the trove of baby teeth from the St. Louis study, RPHP was determined to examine the critical question the original study hadn't pursued: What was the impact of bomb fallout on public health and cancer risk?

In 2011, RPHP published its first article on a study of in-body health hazards using baby teeth in the *International Journal of Health Services*. The study showed that a sample of teeth from St. Louis residents who died of cancer by age 50 had more than double the Sr-90 concentration of persons who were healthy at age 50.



In 2017, RPHP began a partnership with Marc Weisskopf, a Harvard University School of Public Health professor who had a long history of using teeth in research. Harvard secured a grant from the National Institutes of Health (NIH) to use a sample of teeth to study early-life exposure to neurotoxic metals (hazardous substances such as industrial solvents and heavy metals including arsenic, lead, and mercury) and disease risk later in life.

The NIH grant supported the entry of information on the baby teeth and their donors into a digitized, searchable database. The file contains just fewer than 100,000 teeth from 37,000 donors. All are born between 1946 and 1965, and they include people born in all 50 states and 45 foreign countries.

Following the *Post-Dispatch* article in March, hundreds of people from the St. Louis area contacted RPHP to inquire if their teeth were included in the collection. About 40 percent of the requests showed at least one donated tooth, and some as many as 14.

RPHP's next step will be to expand on its 2011 study. About 6,000 of the 37,000 tooth donors are now deceased, and about 1,800 of these are estimated to have been cancer deaths. The identity and cause of death of each of the deceased will be cross-referenced with the National Death Index, a death records compiled from state vital statistics offices. RPHP will then be able to test for Sr-90 levels in the teeth of a cohort of known cancer victims who were children at the time of the above ground atomic bomb test program.

On a related front, RPHP held a press conference in March 2021 to announce a new report showing a widening gap between cancer death rates in Monroe County, Michigan, and the rest of the United States — especially in children. Monroe County is located just south of Detroit and is the site of the Fermi 2 nuclear reactor, which began operating in the mid-1980s.

RPHP contends Fermi 2 may have played a role in these unusual trends. Government has essentially ignored the issue of the documented prevalence of cancer among populations living near nuclear reactors. Only one federal study has been performed in the 64 years since the first reactor became operational.

RPHP also announced it was asking for donations of baby teeth from Monroe County children in order to test for Sr-90. The group will compare results with Sr-90 levels from a sample of teeth in the Detroit area from the earlier Baby Tooth Survey study — the first-ever comparison of early-life exposures to atomic bomb fallout and nuclear reactor emissions.

Newport Beach, Michigan, is less than five miles from the Fermi reactor. The people who live there know about Fermi 1, which operated briefly in the 1960s and had a near-meltdown in 1966. They also know that for the last 36 years, Fermi 2 has been operating around the clock. There has been no meltdown, but there have been daily "permitted" releases of radioactive waste products [in gases and liquids] — including Sr-90 — which enter the air and water and the local food supply.

There were childhood cancers in Newport Beach in the 1970s, but at the time no one saw Fermi reactors as a potential explanation for the tragedies. They were simply unusual events, with no known cause.

But things changed drastically in recent years, as unusual numbers of people in the Newport Beach community, frequently in their forties and fifties, have been diagnosed with cancer. Experts have offered no explanation of why so many people living near the Fermi plants have been diagnosed with cancer so early in life. This year, after hearing about the RPHP report and the program to collect baby teeth, many Newport Beach residents recognized that the Sr-90 released from reactors like Fermi is the same Sr-90 found in those ominous mushroom clouds generated by bomb tests so many years ago.

For now, like Carolyn Schulte in St. Louis, the folks in Newport Beach await results — hoping for at least one conclusive factor in the search for a cause of the cancer that has ravaged their families.

— Joseph Mangano is executive director of the Radiation and Public Health Project, and wrote this article for the *Washington Spectator*.

## Cancer & Infant Mortality Near Operating Reactors

Dozens of peer-reviewed scientific studies show a relationship between cancer incidence and the nearby operation of nuclear reactors. The 2008 KiKK study in Germany, which was followed three years later by the Fukushima catastrophe, led its government to announce the phase-out, now nearly complete, of all its 17 reactors by the end of 2022.

According to a 2002 study reported in the *Archives of Environmental Health* from 1985 to 1996, average infant death rates dropped 6.4 percent every two years. But in areas surrounding five reactors shut down between 1987 and 1995[\*], infant mortality rates dropped an average of 18 percent in the first two years. Additional research at Maine Yankee and Big Rock Point in Michigan, both shuttered in 1997, showed that infant death rates fell 33.4 percent and 54.1 percent, respectively.

### Four major studies include:

- "Childhood Leukemia in the Vicinity of Nuclear Power Plants in Germany," Peter Kaatsch, Claudia Spix, Irene Jung, and Maria Blettner [the "KiKK Study"], *German Medical Journal International*, Oct. 17, 2008.
- "Childhood leukemia around French nuclear power plants, the Geocap study, 2002-2007," Claire Sermage-Faurel, Dominique Laurier, Stéphanie Goujon-Bellec, Michel Chartier, Aurélie Guyot-Goubinl, Jérémie Rudant, Denis Hémon, and Jacqueline Clave, *International Journal of Cancer*, Feb. 28, 2012.
- "Meta-analysis of standardized incidence and mortality rates of childhood leukemia in proximity to nuclear facilities," Peter J. Baker, *European Journal of Cancer Care*, Vol. 16, Issue 4, July 2007.
- "Infant Death and Childhood Cancer Reductions after Nuclear Plant Closings in the United States," Joseph J. Mangano, Jay M. Gould, Ernest J. Stern-glass, Janette D. Sherman, Jerry Brown, William McDonnell, *Archives of Environmental Health*, Vol. 57, No.1; Jan.-Feb. 2002.

[\*] The Genoa reactor near La Crosse, Wisc. closed in 1987; Rancho Seco outside Sacramento, and Fort St. Vrain in Colorado both closed in 1989; Trojan near Portland, Oregon shut in 1992; Millstone in Connecticut closed in 1995. — *JL*