ST. LOUIS BABY TOOTH SURVEY: CONTRIBUTIONS AND LEGACY

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Thank you for allowing me to join you on this great event. Since I only have 15 minutes, I’m going to cover some basic information about the St. Louis Baby Tooth Survey, and the impact it has made – to St. Louis and to the world. Please feel free to take a handout I’ve prepared on this amazing effort.

(SLIDE 1)
The first issues I’m going to address are why was a Baby Tooth Survey conducted in the 1950s and 1960s, and why did it happen in St. Louis? Over half a century ago, during the Cold War, the United States and Soviet Union were engaged in a race to test and build as many nuclear weapons as possible. Many were fearful that an all-out nuclear war was inevitable, and it nearly happened during the Cuban Missile Crisis. Many were also disturbed about the fallout from atom bomb tests in Nevada that moved across the nation and entered the food chain through precipitation. People wanted to know how much fallout was entering human bodies. The government only had a small program testing bones, and gave it very little publicity.

St. Louis was home to a number of prominent scientists, many at Washington University, who were disturbed by nuclear testing and weapons buildup. They believed that as scientists, they were responsible for informing people of risks of new technologies and to push for new policies that reduced these risks.

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In 1958, these scientists joined with citizen activists in St. Louis to form the Greater St. Louis Committee for Nuclear Information, and one of their first actions was to authorize a study of Strontium-90 in baby teeth of children – who we commonly refer to as “Baby Boomers.”

Strontium-90 is one of over 100 radioactive chemicals that do not exist in nature, but are only created in atomic bomb explosions and nuclear reactor operations. It is very similar to calcium; after ingesting Sr-90 in food and water, the chemical quickly attached to bone and teeth, where it remains for a lifetime. The chemical kills and injures cells, which can lead to cancer, birth defects, and other diseases.

The idea of studying baby teeth was very different from other studies that required autopsies, biopsies, urine samples, or blood samples. The data was collected simply by asking parents to donate a baby tooth that their child had lost. The idea that people could help science and policy simply by contributing a tooth had great appeal.
Over the next 12 years, the St. Louis community worked diligently to collect the incredible number of 320,000 baby teeth for the project. Teeth were solicited through schools, libraries, dental clinics, churches, civic organization, and other means. It was so well known in the community that many still recall it decades later – especially the button that every child received with a picture of a boy missing his front teeth, above the words "I Gave My Tooth to Science."

Teeth were tested in a specialty lab, and results showed that average Sr-90 in teeth rose 50 TIMES – that is, 5000% - from 1950 to 1963. The first medical journal article on results was published in November 1961, and sent to White House science advisor Jerome Weisner, who discussed the tooth project with President John F. Kennedy. On August 5, 1963 – exactly 50 years ago this Monday – representatives from the U.S., Soviet Union, and Great Britain agreed to stop testing nuclear weapons above the ground. Kennedy signed the treaty just six weeks before his death. The tooth study also showed that Sr-90 levels in the body fell by more than 50% in the first five years after the test ban. This treaty remains one of the great environmental health treaties, and one of the greatest actions towards world peace. I believe, as do many others, that the treaty saved thousands, even millions of lives worldwide.

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The St. Louis tooth study ended in 1970, but it is truly a story that continues today. First, measuring Sr-90 in baby teeth became a model for future scientific studies. Several European countries did similar projects on bomb test fallout, with the same findings as in St. Louis. Sr-90 in teeth from several countries was compared before and after the devastating 1986 nuclear reactor meltdown at Chernobyl. Our research group conducted a study of teeth from nearly 5,000 children near six U.S. nuclear plants; we found high and rising Sr-90 levels near each plant, and a link with local rates of cancer in children. Another study examined teeth near the Sellafield nuclear site in northern England.

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Everybody assumed that the St. Louis study was over. But in June 2001, a discovery shocked many. Washington University staff, while examining storage space at Tyson Valley, a former World War II gunnery range, found boxes and boxes of teeth not used in the original study – and estimated 85,000 teeth. Each is enclosed in a small manila envelope, paper-clipped to a 3 x 5 card with information about the donor, their parents, and the tooth. The University donated the teeth to the Radiation and Public Health Project, and we began something that wasn’t done in the 1960s – to find out if bomb fallout harmed the health of the “Baby Boom” generation – a still-unresolved question.

The response to this discovery was incredible. After the St. Louis Post Dispatch wrote a page-one article, national media, including the New York Times, USA Today, and National Public Radio, did their own stories. Over 2,000 emails and letters were sent to our group from “Baby Boomers” and their parents – many of them relating memories from the old study, and some of them describing cancer and other health problems among “Baby Boomers” and a plea to help find causes.
We were able to contact many of a sample of St. Louis tooth donors, through current addresses or death records. In 2010 we published a study in a scientific journal showing that a sample of 20 teeth from those who died of cancer by age 50 had more than double the Sr-90 than teeth of those who were healthy at age 50. We struggle to raise funds for these studies, but are planning more. The tooth study lives on!!!

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In closing, I want to address how history should view the tooth study – what did it do?

First and foremost, it confirmed the dangers of above-ground atom bomb tests, and helped speed the treaty that banned these tests and sharply reduced dangerous fallout from human bodies.

Second, it established a relatively simple method of measuring radiation in human bodies that numerous researchers have used since.

Third, it proved that scientists and citizens working together could effectively change public policy.

And finally, it upheld the belief that scientists are responsible for giving information on risks – not just benefits – of new technology.

I’ve left out many details, and omitted many names of St. Louis people who did so much for the community and for humanity – please see my book or the handout, or contact me by visiting www.radiation.org.

Thank you for your time and attention.