

## The Boice Report #18



*John D. Boice, Jr., NCRP President  
ICRP Main Commissioner, UNSCEAR Delegation  
Veterans' Advisory Board on Dose Reconstruction Board Member  
Vanderbilt Professor of Medicine*

### Health Physics Society/Radiation Research Society Symposium New Orleans, September 2013

You should be proud of the Health Physics Society (HPS) leadership for organizing the very first joint symposium of HPS and the Radiation Research Society (RRS) at the 59<sup>th</sup> Annual Meeting of the RRS this September in New Orleans. The joint symposium was well attended and the topic, nanotechnology, was well received. The HPS presenters were President Darrell Fisher and members Ray Guilmette, Mark Hoover, and Gayle Woloschak. The HPS organizing chairmen were Armin Ansari and John Zimbrick. Nanotechnology and its uses in medicine, exposures in the workplace and environment, dosimetry considerations, and the value of animal models were covered.

Abstracts for the entire RRS annual meeting can be found at [www.ameetingbydesign.com/ambd-drop/Abstracts.pdf](http://www.ameetingbydesign.com/ambd-drop/Abstracts.pdf). Highlights of the RRS meeting include:

- **Another Million.** The Million U.S. Radiation Worker and Atomic Veteran Study was an invited symposium ([www.ncrponline.org/PDFs/BOICE-HPnews/Nov-2012\\_Million\\_Worker.pdf](http://www.ncrponline.org/PDFs/BOICE-HPnews/Nov-2012_Million_Worker.pdf)), and four of the five who presented are members of the HPS (John Boice, Larry Dauer, John Till, and Steve Simon). After I provided an overview, the Mound Polonium Study (Dayton, Ohio), nuclear power plant studies, atomic veteran dosimetry issues, and biodosimetry of atomic veterans were discussed. Betsy Ellis (Oak Ridge Associated Universities) covered the remarkable (and the world's only) study of workers exposed to polonium where health outcomes were linked to organ doses estimated from 200,000 bioassays. Polonium was used during World War II for the neutron triggers in the Trinity and Nagasaki plutonium bombs and was the poison used to assassinate Alexander Litvinenko in London in 2006.

Our nuclear power plant study was presented by Larry Dauer (Memorial Sloan-Kettering Cancer Center) and included nearly 150,000 selected workers with known dosimetry from the various records systems made available from the U.S. Nuclear Regulatory Commission and Landauer, Inc. ([www.ncrponline.org/PDFs/BOICE-HPnews/8-NPP-JAN2013.pdf](http://www.ncrponline.org/PDFs/BOICE-HPnews/8-NPP-JAN2013.pdf)).

John Till (Risk Assessment Corporation) provided a fascinating overview of how absorbed doses are reconstructed for the 230 aboveground nuclear weapons tests at the Nevada Test Site (now known as the Nevada National Security Site) and Pacific Proving Grounds. The amount of information available to do this work is startlingly enormous and comprehensive ([www.ncrponline.org/PDFs/BOICE-HPnews/Dec-2012\\_AtomicVeterans.pdf](http://www.ncrponline.org/PDFs/BOICE-HPnews/Dec-2012_AtomicVeterans.pdf)).

Steve Simon (National Cancer Institute) presented a proposed study of biological dosimetry of some of the highest exposed atomic veterans. At the 1954 Castle Bravo test in the Bikini Atoll, the yield was underestimated and resulted in the largest hydrogen bomb ever detonated by the United States during aboveground testing. The wind blew in an unexpected direction, and high levels of fallout fell on the population living on some Marshall Islands, as well as on 28 military personnel, the so-called weathermen involved in predicting wind patterns ([www.ncbi.nlm.nih.gov/pubmed/20622553](http://www.ncbi.nlm.nih.gov/pubmed/20622553)). The population on Rongelap Island was evacuated and high rates of thyroid cancer were subsequently observed; further information is available at [www.ncbi.nlm.gov](http://www.ncbi.nlm.gov).

[nih.gov/pubmed/20622547](http://nih.gov/pubmed/20622547). The 28 military personnel received the highest exposure of any of the atomic veterans in our study of 115,000 military personnel. We plan to contact those still alive and evaluate chromosomal damage (translocations) in circulating lymphocytes that may have lasted over 60 years and compare these findings with film-badge readings and dose reconstructions. There is also the possibility of measuring electron paramagnetic resonance (EPR) in the teeth as another biodosimetric indicator.

In the spirit of full disclosure, the study now has over seven million workers, but we keep “million worker study” for now, although the “seven million worker study” has a nice ring. Did I mention that we have four times as many high-dose subjects (over 100 mSv) as the study of atomic bomb survivors, with some workers exceeding 2,000 mSv? And the exposures were received gradually over many years and not instantaneously, as was the case in Japan in 1945.

- **Marilyn.** The Failla Memorial Lecture, the highest award of the RRS, was given to Marilyn Stovall of the M.D. Anderson Cancer Center for her many years of service to radiation research and health effects. She was introduced by RRS President Tom Hei, and Tom mentioned that Marilyn is one of the few individuals in her profession who is recognized by a single name—“Marilyn”—similar to Madonna in music and Michael in basketball. Marilyn’s presentation was an overview of the comprehensive studies of children who were successfully treated with radiation ([www.ncbi.nlm.nih.gov/pubmed/21128808](http://www.ncbi.nlm.nih.gov/pubmed/21128808)). The treatment of childhood cancer has been a great success story, with over 80 percent surviving beyond five years and with radiotherapy being an important factor. But the price paid has been an increase in late health effects that are now recognized and are being addressed in the clinical setting.



**John Boice and Marilyn Stovall at the Failla Dinner at Antoine’s**

Even though it was late in the day, there was standing room only (SRO) for Marilyn’s presentation; she was humble, gracious, articulate, and inspirational. The world needs more Marilyn!

- **SIT.** The RRS also has a remarkable program called Scholars in Training (SIT), where travel awards are given to up to 150 students. I was asked to start the conference for the SIT—it is always fun to talk about one’s career—and it was SRO. We need to interact more and more with young scientists to address the dwindling number of radiation professionals, which is reaching crisis proportions ([www.ncrponline.org/PDFs/2013/WARP\\_HealthPhysicsNews.pdf](http://www.ncrponline.org/PDFs/2013/WARP_HealthPhysicsNews.pdf)).
- **Next Year in Las Vegas.** Save the days 21–25 September 2014 for the [60<sup>th</sup> RRS annual meeting](#). You would enjoy this interaction with radiation scientists from many disciplines, and I hope there will be a 2<sup>nd</sup> Annual HPS/RRS joint symposium. HPS might consider issues of Fukushima or childhood exposures, which would draw SRO crowds. I’m on the RRS planning committee and have also suggested a joint National Council on Radiation Protection and Measurements (NCRP)/RRS symposium on the integration of radiation biology with epidemiology to enhance our understanding of risks in the low-dose domain (linear no-threshold theory anybody?).

RRS has graciously agreed to cosponsor the Conference on Radiation and Health at the same time as its annual meeting in Las Vegas since the American Statistical Association dropped its sponsorship after over 30 years! It will be a melding of epidemiology and biostatistics with the biology community ([www.ncrponline.org/PDFs/BOICE-HPnews/2012\\_Aug\\_HPNEWS.pdf](http://www.ncrponline.org/PDFs/BOICE-HPnews/2012_Aug_HPNEWS.pdf)).

**Mistake.** Unforgivably, the president of NCRP (aka me) published in last month’s *Health Physics News* the incorrect dates for next year’s fantastic, over-the-top 50<sup>th</sup> NCRP Annual Meeting, celebrating 50 years since being chartered by Congress in 1964. The correct dates are 10–11 March 2014.

Register now at [civclients.com/ncrp](http://civclients.com/ncrp) and there will be no charge! Actually, register later and there will be no charge. But **please register!**

## The Million Dollar Sextet\* Performing at the 59<sup>th</sup> RRS Annual Meeting



Left to right: John Boice (NCRP), Susan Till, John Till (RAC), Larry Dauer (MSKCC), Betsy Ellis (ORAU), and Steve Simon (NCI)

\*Okay, a bit of a stretch to link the Million Dollar Quartet with the Million Worker Study. But hey, my son just opened this month in the musical *Ring of Fire* (Johnny Cash, as you know, was one of the Million Dollar Quartet singers), and good presentations are often good performances!