The Boice Report #9

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DOE Worker Studies

As part of the Million U.S. Radiation Worker and Veterans Study (Boice 2012a), a workshop was recently held in Oak Ridge, Tennessee, on unique opportunities for investigations that might enhance understanding of radiation health effects. Attending were representatives from the National Council on Radiation Protection and Measurements (NCRP), Oak Ridge National Laboratory, Oak Ridge Associated Universities, and the International Epidemiology Institute (see photo on page 23).

- 50 mSv Study: A previous study of 3,145 Department of Energy (DOE) workers and civilian Nuclear Naval Propulsion Program workers who received >50 mSv in a single calendar year is planned to be extended and enhanced (Fry et al. 1996). An additional 30 years of follow-up would increase the chances of uncovering possible radiation effects. In addition, and more importantly, all DOE workers who received >50 mSv career dose will be included, resulting in a study size of more than 10,000 workers.

- Nuclear Naval Propulsion Program: An interesting historical aspect of the 50 mSv Study was that nearly 1,000 civilian nuclear navy shipyard workers had been included at the request of Admiral Hyman Rickover.

- 250 mSv Workers: Since 1944 to the present, over 1,300 individuals involved in more than 400 accidents have been included in the Radiation Accident Registry developed by the U.S. Radiation Emergency Assistance Center/Training Site. One of several criteria for inclusion in the registry was receiving at least 250 mSv to the bone marrow of the whole body or to the gonads (Christensen 2012; Ricks et al. 2000). The proposed study will include only U.S. individuals who survived their accidental exposures.

- Mallinckrodt Chemical Works: One of the early uranium refining and processing facilities in the United States was at the Mallinckrodt Chemical Works in St. Louis. Over 2,500 workers employed between 1942 and 1966 were studied and mortality was evaluated through 1993 (Dupree-Ellis et al. 2000). A new follow-up will extend the years of observation another 20 years, include female and nonwhite employees, and consider dose reconstructions following intakes of uranium estimated from urinalysis, radon breath analysis, and environmental measurements. Mallinckrodt processed pitchblende uranium ore from the Belgian Congo, which contained up to 70 percent uranium, compared with North American ore of less than one percent. This high uranium content was associated with a high radium content in the ore. After shipments of pitchblende were received and removed from boxcars, radon could be detected in breath analyses of workers (ORAUT 2005).

REMINDER: Don't forget the NCRP Annual Meeting 11–12 March 2013. You'll be exposed to the latest understanding on the range of radiation doses people receive in medical, occupational, and environmental circumstances, including accidents, and the impact these doses have on individuals and society (Boice 2012b). It's in Bethesda, it's free, and it's dedicated to the people of Fukushima affected by the tsunami and reactor accident (Boice 2012b). Register NOW at http://www.ncrponline.org.

References

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Workshop on DOE and Navy Shipyard Worker Initiatives – November 2012

Left to right:
Derek Hagemeyer
Donna Cragle
Ashley Golden
Betsy Ellis
Phil Wallace
Dick Toohey
Rich Leggett
Keith Eckerman

Not pictured:
Sara Cohen and John Boice