

The Boice Report #10



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

ICRP Meets in Fukushima City in November 2012

To dovetail with the informative summaries from the [2013 Health Physics Society \(HPS\) Professional Development School](#) on “all things Fukushima” appearing in this current newsletter, I’ve composed a complementary column on the recent International Commission on Radiological Protection (ICRP) Main Commission meeting held 29 October–2 November 2012 in Fukushima City, Japan.

- **Lessons Learned:** An ICRP task group, chaired by Abel González, identified gaps and made recommendations to improve the system of protection in place to protect people during and after the accident at the Fukushima Daiichi nuclear power plant (ICRP 2012). Members included Japanese authorities and colleagues from research institutes and universities, as well as ICRP radiation specialists. A few impressions are provided.
- **Sharing Information:** While the authorities acted properly (sheltered in place, evacuated, restricted the food supply) to ensure minimal, if any, health consequences from the small population exposures (Boice 2012a), communication and sharing of information was inadequate and increased anxiety and distrust that hinders the remediation efforts today.
- **Children and Pregnant Women:** During and after emergency situations, particular attention is to be given to children, pregnant women, and the developing fetus, yet recommended dose limits, constraints, and reference levels do not include clear guidance on what actions should be taken.
- **Misuse of Collective Dose:** Multiplying tiny radiation doses by millions (or billions) of individuals to estimate numbers of radiation-induced cancers should not be done, yet such computations are still being performed.
- **Intakes of Radioactive Elements:** Doses to organs from internal radionuclides are not more hazardous than doses from external radiation, yet they raised undue concern. As Paracelsus said in the 15th century, the poison is in the dose—not in the fact of exposure or type of exposure.
- **When to Return:** Upwards of 20,000 citizens will not be able to return to their homes for many years to come because the radioactive cesium contamination results in annual effective doses of >20 mSv, the recommended reference level (ICRP 2009). The reference level is chosen by authorities as a starting point from which people would be allowed to return, and then optimization (remediation) begins to lower the exposure (see also the National Council on Radiation Protection and Measurements initiative [Chen 2012]). Confusion and misunderstanding of the reference level was not uncommon, even as to classifying the contaminated area as a “planned” (1 mSv) or “existing” (<20 mSv) circumstance. Members of the public were also confused as to why they were allowed 1 mSv per year living near the reactor, but after the accident they were allowed 20 mSv per year!
- **Risk Communication and Radiation Understanding:** A big problem. True here and everywhere.
- **Stigma:** Products from Fukushima may not be purchased. Physicians were concerned about treating “contaminated” persons. Young people may not return. Livelihoods are affected.
- **Waste:** Disposing of contaminated waste, rubble, debris, and water is a problem for a small island country (see photo on page 15 showing the ubiquitous blue bags of low-level radioactive dirt from home remediation in Date City).

- **Confusion:** Radiation units and quantities caused confusion—not just the use of traditional versus SI units, but the misuse of effective dose when equivalent dose was meant (and vice versa). Confusion was enhanced because both have units of mSv. Lowering the acceptable radiation levels in foods caused concern (“why were higher levels allowed before?”) with little to no health benefit. There is inconsistent and incoherent guidance of food and water limits, e.g., higher levels (Bq per L) are allowed for coca cola than for water. Experts and academic societies did not speak with one voice and were often at cross ends. The media added to the confusion, but was not entirely at fault.
- **Health Surveys:** To reduce anxiety and provide health care, health surveys are being conducted for the 2 million residents of Fukushima Prefecture (Yasumura 2012). The perception of risk remains high and has, in combination with the terrible loss of loved ones from the tsunami and the disruption of lives from evacuation, resulted in anxiety and depression, leading to psychological problems requiring counseling by mental-health professionals.

REMINDER: Coming in a few days is the National Council on Radiation Protection and Measurements annual meeting, 11–12 March 2013. Attend and be immersed in everything you’ve wanted to know about “Radiation Dose and the Impacts on Exposed Populations.” It’s in Bethesda, it’s free, and it’s dedicated to the people of Fukushima (Boice 2012b). The keynote speaker is Shunichi Yamashita, who will summarize the ongoing health surveys of the 2 million residents of Fukushima Prefecture! Registration is still open at www.ncrponline.org.

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ICRP Main Commission Surrounded by Bags of Radioactive Debris Date City, Japan – November 2012



Left to right: Michiya Sasaki (Assistant Secretary), Jacques Lochard (France), Claire Cousins (UK, Chair), William Morgan (USA), Nataliya Shandala (Russia), Jan Pentreath (UK), Ohtsura Niwa (Japan), Zi Qiang Pan (China), Hans-Georg Menzel (Switzerland), Eliseo Vañó (Spain), Jai-Ki Lee (South Korea), John Cooper (UK), Abel González (Argentina, Vice-Chair), Christopher Clement (Scientific Secretary), and John Boice (USA).