The Boice Report #11

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Fukushima Conference in February 2013

In February 2013, an international academic conference on radiation health risk management was held in Fukushima City, Japan. The three days covered a broad range of health, medical, and risk-management topics while providing a comprehensive overview of the ongoing health surveys and population-exposure reconstructions that followed the nuclear reactor accident on 11 March 2011. Coincidentally, a 6.2 magnitude earthquake was experienced while I was chairing one of the sessions. Sirens went off, my mobile phone buzzed and received Japanese alerts, chandeliers swayed, the building rocked. I gave my phone to Dr. Toshiteru Okubo, who said, "Boice's computer says we're having an earthquake." Well, no one moved and I could see no concern among those in the audience—confirming the impression that the Japanese population has coped with natural disasters effectively over many centuries but that, in contrast, the 9.0 magnitude earthquake and ensuing enormous tsunami were beyond their experience and ability to cope. The presentations from the conference will be on the Fukushima Medical University website (www.fmu.ac.jp/radiation-health). Below are a few items I found of interest.

- **Evacuation Deaths.** The evacuation of 840 patients or elderly people in nursing homes and health care facilities apparently resulted in 60 immediate deaths due to hypothermia, dehydration, trauma, and deterioration of serious medical condition (Tanigawa et al. 2012) and upwards of 100 deaths in the subsequent months (Yasumura et al. 2013).
- **Mental Health.** Mental health problems associated with stress, depression, anxiety, the evacuation, loss of loved ones, inability to return home, stigma, and fear of radiation effects for self and children are being recognized as the most serious health consequence of the accident (Matsuoka et al. 2012; Shigemura et al. 2012; Slovic 2012; Bromet 2013). Cancer risk pales in comparison.
- **Atomic Divorce.** The stress for young families is so severe that a new term has been developed by the media called "atomic divorce" to represent the splitting of family units because of the effects of the evacuation and fear of radiation (Haworth 2013).
- **Population Exposure and Risk Assessment.** The Japanese authorities acted swiftly and the population dose is very low and, for all but a handful of individuals, much less than the levels received in a year or two from natural sources of background radiation or from a CT examination. Tiny to no radiation levels have been measured in young children in areas of high ^{131}I exposure potential, estimated in population surveys of nearly 300,000 people who responded to questionnaires on location and diet after the accident and in U.S. military personnel assisting with the humanitarian efforts[1] (Tsubokura et al. 2012; Tokonami et al. 2012; Cassata 2012; UNSCEAR 2012). Low population exposure levels are also consistent with the preliminary report from UNSCEAR (2012), although an ongoing assessment will soon be available, so stay tuned.
- **World Health Organization (WHO) 2013 Report.** The population dose estimates summarized above were based on environmental measurements and measurements on individuals and comprehensive dose reassessments on individuals. However, they are somewhat inconsistent with the rather high-sided estimates of population dose recently reported by the WHO (2013).

[1] www.fmu.ac.jp/radiationhealth/survey

Although these sophisticated and careful estimates indicated a low population exposure, the committee nonetheless presented lifetime percentages to hypothetical populations associated with maximum possible (though extremely unlikely) assumptions as to population dose, including the influence (or lack thereof) of reduced exposures due to evacuation and restrictions on contaminated foods. Taking literary license with a recent cartoon in *The Washington Post*, we might say, "All those in favor of discussing hypothetical future Fukushima cancers instead of existing psychological mental problems. . ."

- **The Psychological Fallout and Collateral Damage.** Some press releases following the WHO report (which coincided with the end of the Fukushima conference) emphasized and misconstrued the theoretical risks: "Cancer risk 70% higher for females in Fukushima area, says WHO"; male children are at high risk of leukemia (aside, no leukemia excess was seen after Chernobyl); and female children are at increased risk of breast cancer (Guardian 2013). The mayor of Iitate (one of the contaminated villages where residents are not allowed to return) said that the WHO report and its excessive analyses have further increased the anxiety of the population (Tabuchi 2013) and harmed the already fragile communication and recovery efforts. Some radiation professionals expressed surprise that any excess cancers would occur, and a number felt that erring on the side of caution by unrealistically maximizing the possible exposures instead of using best estimates and measurement data was inappropriate and was not helpful to the Japanese people (Cheng 2013). Most agreed that these tiny doses were at levels far below what epidemiology could have any chance of revealing any excess cancers in the future, if there are any. It is sobering to ponder whether our best intentions in making these assessments are having unintended consequences by not providing reassurances to the affected populations and may be causing more harm than good.

I hope you attended the 11–12 March 2013 National Council on Radiation Protection and Measurements (NCRP) Annual Meeting (or viewed the webinar), which was dedicated to the people of Fukushima. The presentations are summarized in this newsletter and have been recorded for availability on the NCRP website (ncrponline.org).

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February 2013 - Fukushima City, Japan

Front row, left to right: Valentina Drozd, Toshiteru Okubo, John D. Boice, Jr., Abel J. González, Shigenobu Nagataki, Wolfgang Weiss, Mikhail Balonov, and Rethy K. Chhem; middle row, left to right: Akira Ohtsuru, Shunichi Yamashita, Christoph Reiners, Kenji Kamiya, André Bouville, Christopher Clement, Hajo Zeeb, Victor Ivanov, Elena Buglova, Jacques Lochard, and Dimitry Bazyka; back row, left to right: Arifumi Hasegawa, Keiichi Akahane, Seiji Yasumura, Kazunori Kodama, Reiko Kanda, Nakahiro Yasuda, Zhanat Carr, Vladimir Saenko, John Harrison, Hideyuki Matsui, and Ohtsura Niwa

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