



Casper Sun, right, receiving an appreciation plaque from CSRP Past President Pan Zi Quiang
Photo courtesy of CSRP

This year's meeting of the CSRP was made more special by the fact that CSRP Past President Pan presented Sun with a very special plaque expressing the CSRP's appreciation for his contributions to the ongoing HPS-CSRP collaborations.

Many of you may not know this, but Sun (our own HPS photographer) has volunteered a great deal of time to ensure that this program continues to prosper. I can say with great confidence that my own visit would not have been possible without him.

I look forward to our future collaboration with CSRP and all our other international partners. Together the whole is greater than the sum of the parts.

The Boice Report #43



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The Seoul of ICRP

The International Commission on Radiological Protection (ICRP) met in October 2015 in Seoul, Korea (photo below). The [Third International Symposium](#), hosted by the Korean Association for Radiation Protection and held in conjunction with the ICRP committee deliberations, was well attended, with almost 400 participants. U.S. scientists make significant contributions to the international scene by chairing three of the five committees and serving as vice chairs on the other two. Three of the 12 members of the Main Commission are from the United States, the maximum number allowed for any country. Thus, while particular opinions and approaches to radiation protection are not always in complete alignment, the United States has a seat at the table. So what's the latest? The symposium [abstracts](#) and slide [presentations](#) and the work of the ICRP committees are available, and here's my take on the highlights.

Committee 1 on [Radiation Effects](#). There is continued work on the dose and dose rate effectiveness factor ([DDREF](#)). Several workshops were held and there is a [recent scoping publication](#). My view is that the dose rate effectiveness factor is more important than DDREF and may be estimated directly in the large-scale occupational studies being conducted in the [United States](#) and [internationally](#), in particular where the dose distribution is sufficiently broad to provide scientific guidance on whether there is a reduction of risk, i.e., slope of the dose response, in the low-dose range when the dose rate is reduced. As I mention frequently, I do not believe epidemiology will provide a direct answer to low-dose radiation risk questions, and it is important to incorporate biology in risk estimation as recently suggested in the new National Council on Radiation Protection and Measurements (NCRP) [Commentary No. 24](#).

The other interesting radiation-effects topic deals with cardiovascular disease and whether there is sufficient evidence in the low-dose domain (less than 0.5 Gy) to consider heart disease in the detriment equations. Again, my current take is that the evidence is too weak at this time, but that knowledge is accumulating so that in several years we should have scientifically valid data to make judgments on whether it is a low-dose consideration. A magnificent overview was provided by K. Ozasa on [heart disease](#), which was very well balanced in discussions of the different types of car-

divascular disease. The overview also discussed cerebrovascular diseases that have and have not been associated with radiation in the atomic bomb survivor data, the difficulties in interpreting the ill-defined conditions for heart disease, the influence of misdiagnosed cancers, and the differences in background rates (and changing rates over time) and causes of heart disease in Japan compared with other countries.

Committee 2 on [Dosimetry](#). Well, you might think this would be a particularly boring topic for the symposium, but it turned out to be one of the most contentious or at least debatable: what is an appropriate use of [effective dose](#) and should equivalent dose be discontinued as a separate protection quantity? Effective dose is a radiation protection quantity, but we all know that it is misused in medical, occupational, and environmental circumstances where it is being used for risk assessment and not for protection and compliance. Should it be used at all even as a rough (or pseudo) indicator of harm? There are clear situations where it should not be used as an indicator of harm, such as mammography in medicine where the organ dose to glandular breast tissue provides the indicator of risk to breast but effective dose would be misleading and irrelevant to other organs. The world is waiting for the [dose coefficients](#) for over 1,200 radionuclides that are coming for internal and external exposures.

Committee 3 on [Medicine](#). Much of the world's population exposure now comes from the medical uses of radiation, especially the remarkable imaging modalities. There were a number of informative summaries on whether we can identify [radiosensitive individuals](#) in the population for whom their genetic profile is such that it might multiply or enhance the risk due to the radiation exposure. Although it is likely that a percentage of people in the population are radiosensitive, [the evidence is not in](#) on how to identify them and what interventions might be appropriate. Nonetheless, this is a topic high on the list of which future work remains important. An ICRP publication that is coming soon for consultation deals with the practical aspects of diagnostic reference levels (DRL), supplementing NCRP Report No. 172 on [DRLs and achievable doses in medicine](#). How are they defined, how should they be implemented within the various clinical settings, and how do we find an achievable level that links up with the optimization principle?

Committee 4 on [Recommendation Application](#). Perhaps the most fascinating work from Committee 4 deals with the [ethical principles](#) of radiation protection. A draft report is in the making and there was an entire session at the symposium on ethical issues. NCRP founder Lauriston Taylor first focused on the need for [wisdom and ethics in radiation protection](#), and now it is being expanded and evaluated in the context of the recommendations that are being made to protect the public and workers. There can be conflicts with the basic principles of beneficence (do good), nonmaleficence (do no harm), autonomy (the rights of the individual), and justice (fair distribution of burdens and benefits). Also it is interesting to me, not really experienced in the ethical area other than taking the required annual courses at Vanderbilt, that differences between the U.S. perspective and the European perspective may be related to the weights we put on different ethical balances. In the United States we seem to stress autonomy and the rights of the individual a bit more than justice (equity) and the precautionary principal when making judgments on protection and societal issues.

Committee 5 on [Environment](#). This committee is now in its third term and it was never expected to last indefinitely. It may be reaching the end of its practical lifespan. It certainly continues to provide new and important insights into [environmental issues](#), documents have been published, and the NCRP has been influenced to consider environmental issues in our review of [radiation guidance for the United States](#). Carl-Magnus Larsson stepped down as head of Committee 5 and [Kathryn Higley](#) (Oregon State University and an NCRP Council member) was elected the new chair to complete Larsson's term.

Miscellaneous. I also find the side bars at all conferences to be extremely informative. Both Japan and Korea have large-scale worker studies. The [Japanese worker study](#) is farther along and includes contacting workers about lifestyle factors. It is clear that confounding factors such as cigarette smoking play a large role in the interpretation of the study results and, without adjustment, results are spurious. Russian scientists recently published in the Russian literature their results

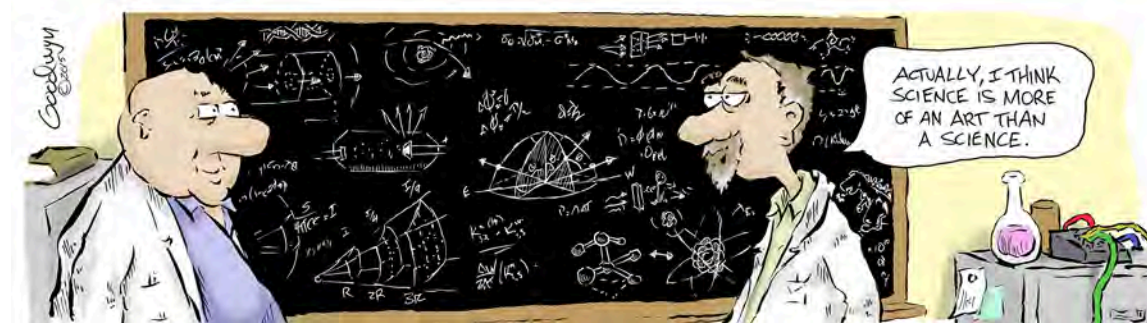
evaluating the possibility that [Arafat](#) had been poisoned with polonium, which had been raised in a previous [Swiss study](#). There was a special symposium sponsored by the Korean Association for Radiation Protection and ICRP discussing the challenges, both scientific and societal, associated with low-dose radiation research and its interpretation. Some of the recent studies coming from [Fukushima Prefecture](#) showing increased thyroid cancer rates among children appear likely related to the intensity of ultrasound screening and not a radiation effect, i.e., [screening results in overdiagnoses](#). The doses are not known but are most assuredly quite small and the latency is much too short. The investigation does “not add anything new regarding radiation-induced (or related) thyroid cancer” ([Davis 2015](#)).

I end on a very sad note. [Bill Morgan](#), a friend and colleague, died unexpectedly 13 November 2015. We flew to Seoul together and talked as always of all things radiation and all things family. Bill was an international leader in radiation biology and science; served NCRP, ICRP, and many other organizations; and gave freely of his time and talents and blithe spirit. It is an irreconcilable loss to the world and his family. My prayers are with his wife Marianne, his children, and his parents.

ICRP Main Commission in Seoul, Korea—October 2015



Front row, left to right: John Boice (United States), Eliseo Vañó (Spain), Jai-Ki Lee (Korea), Claire Cousins (chair, United Kingdom), Jacques Lochard (vice-chair, France), Donald Cool (United States), Carl-Magnus Larsson (Australia). Back row, left to right: Hua Liu (China), John Harrison (United Kingdom), Ohtsura Niwa (Japan), Christopher Clement (scientific secretary, United Kingdom), William Morgan (United States), Sergey Romanov (Russia), Hans-Georg Menzel (Germany).



[The Lighter Side of Health Physics](#)