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General Comment

See attached file.

As described in the attached comments, the SOARCA needs to be revised and expanded to take account of the non-fatal thyroid cancers which, as Chernobyl has shown, seem likely to be the greatest observable physical health consequence of a major nuclear accident. To look only at latent cancer fatalities, when thyroid cancer is a seldom fatal, but serious and lifelong disease, produces a skewed and highly misleading picture -- comparable to an evaluation of the health consequences of coal-fired electrical generation that ignored childhood asthma and other non-fatal respiratory illnesses.

Attachments

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Cadd = P. Santiago (Pas2)
J. Bass (JXB7)

I appreciate the opportunity to submit comments on the NRC's SOARCA report, NUREG-1935.

In its discussion of the long-term medical consequences of an accident, the report focuses on latent cancer deaths. In doing so, it ignores the vastly greater number of non-fatal thyroid cancers that could result from a major nuclear accident. This is a grave omission, comparable to evaluating the health effects of coal-fired electrical generation without considering such non-fatal effects as childhood asthma.

Psychological effects aside, the most significant observable health effect of the 1986 Chernobyl disaster has been some 7,000 thyroid cancers, almost all among persons who were young children or in the womb at the time of the accident. Only an extremely small percentage of these have died, or are likely to die, of the disease. If the example of Chernobyl carries over to Fukushima, and there is no reason to doubt that it will, we will see the first Fukushima-related thyroid cancers turning up in Japanese children in another four years or so.

Common sense tells us that diseases do not have to be fatal to have a profound impact on the quality of life. (For example, blindness, deafness, and disfiguring acne are not in themselves fatal, and the death rate from malaria, if my reference sources are correct, is only about 1 in 300.) Anyone who doubts that thyroid cancer creates lifelong burdens need only follow the commendable example of Commissioner Apostolakis, who came to the October 2011 annual conference of the Thyroid Cancer Survivors' Association to gather data for himself, by meeting with small groups of patients.

For those unfamiliar with the disease, some explanation may be in order. Thyroid cancer is not like those cancers for which, once a given number of years have passed without a recurrence, the patient is pronounced cured, and no further medical attention is needed. Thyroid cancer patients are usually treated by removal of the thyroid gland, often coupled with radiation treatment to destroy any residual thyroid tissue. Accordingly, they are patients for life, requiring daily medication, without which they will die of hypothyroidism. They also require regular monitoring, since there is no date at which it can be said with assurance that the disease will not recur.

Many patients find it easy to achieve the correct dosage of thyroid hormone and resume a reasonably normal life, but many others never succeed in doing so. Experiences are highly individual. Because the thyroid gland controls metabolism, and has both physical and

psychological effects, imbalance can be extremely destructive to the quality of life. To give just one example, in 1986, a sitting U.S. Senator, John East of North Carolina, committed suicide, leaving a note that blamed his doctors for failing to properly treat his hypothyroidism.

To offer an analogy, when we compute the human cost to American forces of the war in Iraq, it goes without saying that we tally not only the 4,400+ troops killed in the line of duty, but also the 31,000+ who were wounded but survived, sometimes with lasting disabilities. To do otherwise would produce a distorted and highly misleading result. Surely the same reasoning applies to those harmed by a nuclear catastrophe. If the SOARCA considers only the latent cancer fatalities from a major nuclear accident, when the non-fatal but nevertheless serious cancers may outnumber the cancer fatalities by 20 or 100 to 1, it will mean a choice to look only at the tip of the tip of the iceberg, as though everything below that point did not exist. The NRC should revise the SOARCA accordingly.

Respectfully submitted,

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