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May 31, 2012

Dr. Kevin D. Crowley
Senior Board Director
Nuclear and Radiation Studies Board
500 Fifth Avenue, N.W.
Washington, DC 20001

Subject: National Research Council Report on "Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 1"

Dear Dr. Crowley:

This letter provides comments of the Nuclear Energy Institute (NEI)[1] on behalf of the nuclear energy industry on the subject report developed by the National Research Council Committee on the Analysis of Cancer Risks in Populations near Nuclear Facilities – Phase 1 (Phase 1 Report).

NEI commends the committee's efforts to "identify scientifically sound approaches for carrying out an assessment of cancer risks associated with living near a nuclear facility," as requested by the U.S. Nuclear Regulatory Commission (USNRC). We believe it is essential that such a study, if it were to proceed, be conducted with the highest standards of science-based rigor and objectivity. Most importantly, any proposed scientific study should include a clear explanation of how the potential results would be expected to address the broad range of expectations and concerns expressed by stakeholders in public meetings held during the course of the committee's deliberations.

The Phase 1 report does not provide a rationale or explanation for how the proposed study, including the proposed pilot project, might be expected to yield technically defensible results that will help to address stakeholder concerns. In fact, the Phase 1 report seems to anticipate that the results of the proposed study will be inconclusive in light of the committee's own assessment of the daunting scientific and technical challenges and limitations inherent in their proposed approach:

[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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"As noted in this summary and discussed in detail in Chapter 4, the statistical power of epidemiology studies of cancer risks in populations near nuclear facilities is likely to be low based on currently reported effluent releases from those facilities. Moreover, the magnitude of the variation of other risk factors that may not be measurable such as smoking or exposure to medical radiation may surpass the expected effect from the releases of the nuclear facilities and therefore overwhelm the actual effect attributed to the releases" (p. S.6 of the Phase 1 Report).

The Phase 1 Report provides a well-researched and documented basis for concluding that the doses from NRC-regulated nuclear facilities are expected to be low and *"[a]s a consequence, epidemiology studies of cancer risk in populations near nuclear facilities may not have adequate statistical power to detect the presumed small increases in cancer risks arising from these monitored and reported releases*" (p. S.2 of the Phase 1 Report). Although the Findings in the Summary of the Phase 1 Report appear to be carefully nuanced in regard to "monitored and reported releases," the relevant section of the full report (Chapter 2) contains a broad assessment of a full range of possible past and present exposure scenarios from nuclear facility operations. This assessment provides no indication that doses might be any greater than a small fraction of the ubiquitous exposure from naturally-occurring background radiation received by the U.S. population –with the correlated expectation of low statistical power for any type of related epidemiological study of cancer risk.

Although the committee did not opt to undertake an assessment of the levels of exposure that would need to be postulated to achieve adequate statistical power for such a study, such assessments have been performed. For example, Cochran presented such results at the 2011 USNRC Regulatory Information Conference[2] indicating that individual doses would need to be on the order of "several rem per year" or more, which would be thousands of times more than the range of doses considered likely in the discussion in the Phase 1 Report.

We agree with Cochran that "it is not credible to assume that such high radioactive releases would have gone undetected." The nuclear energy industry for decades has had high-quality programs in place to monitor its employees, to monitor releases of various effluents and any radioactive materials, and to monitor the environment near our facilities to protect the health of our workers and the public as well as the environment. All results regarding effluents and environmental monitoring are reported to the USNRC and are publicly available.

Every facility has a professionally, highly trained radiation safety staff to continuously monitor and control radiation dose at safe levels. Routine releases of effluents into air or water are carefully planned, monitored, and controlled. If an inadvertent release should occur, follow-up monitoring is conducted to fully assess the extent of the release and to confirm that any potential radiation dose is within the radiation safety limits established by the U.S. Environmental Protection Agency and the

[2] Cochran, T.B. Limitations of Cancer Ecologic Studies of Populations Near U.S. Nuclear Plant Sites. Natural Resources Defense Council, Inc. 2011

Nuclear Regulatory Commission. The monitoring results and potential radiation dose for all releases are reported to the USNRC and are available to the public.

Nuclear facilities also have separate, robust environmental monitoring programs that would detect radiation in the soil, plants, water, and livestock should there be a release of radiation. Monitoring equipment is positioned within the plant and at the plant site boundaries, and regular sampling of water from nearby surface and underground water bodies is conducted. All of this information is reported to state officials. Many states have their own monitoring programs in place as well. Industry programs for monitoring and controlling radiation dose to the public are carefully and regularly inspected by NRC radiation safety specialists.

According to the USNRC Fact Sheet on Analysis of Cancer Risks in Populations Near Nuclear Facilities –Phase 1 Feasibility Study, *"[t]he NRC requested that the study be performed in two phases. In Phase 1, NAS will determine whether the study request's goals can feasibly be met in a technically defensible way– and if so, develop recommendations for phase 2 using scientifically sound processes for evaluating whether nuclear facilities pose a cancer risk."* Yet, in the Statement of Task presented in the Phase 1 Report (p. 1.9), the scope of the Phase 1 study omits any reference to determining whether a study such as that proposed in the report can be expected to address "in a technically defensible way" public concerns about the potential impact on the health of those living near nuclear facilities. Accordingly, the report does not address this central issue, which we view as a significant missed opportunity, given the makeup of the subject matter experts on the committee and the time and resources expended in this Phase 1 activity.

In our previous comments on a possible study of cancer risks in populations around nuclear facilities (for example, in NEI presentations to the Nuclear and Radiation Studies Board on April 20, 2010, and at the USNRC Regulatory Information Conference on March 8, 2011), we have noted the positions of the National Research Council Committee VII on the Biological Effects of Ionizing Radiation (BEIR VII) and the US Health Physics Society (HPS) that argue against proceeding with a study such as is proposed in the subject report:

"In general, additional ecological studies of persons exposed to low levels of radiation from environmental sources are not recommended." [3]

"Do not fund epidemiological studies of exposed populations which have low statistical power and are unable to detect health effects with a reasonable statistical confidence (e.g., 90% or higher) based on the current risk estimates…Do not fund epidemiological studies on populations for which

[3] National Research Council - Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2. The National Academies Press 2006

there is insufficient data to properly control for known confounding factors, such as smoking history, exposure to other carcinogens, genetic pre-disposition, etc."[4]

Our understanding of the Phase 1 report as a whole is that the proposed epidemiological study is unlikely to produce scientifically defensible results that are directly relevant to assessing "cancer risks associated with living near a nuclear facility," which is the U.S. Nuclear Regulatory Commission's stated purpose for conducting a study. In regard to the suggestion that "there may be sound policy reasons for proceeding with these studies," the report does not contain an explanation of how the results of the proposed study, might be used to help to "address public concerns about cancer risks," considering the inherent limitations on statistical confidence and inability to resolve known confounding factors

In our view, the report recommends an epidemiological study that will likely involve an outlay of significant resources without much expectation for a meaningful outcome in regard to advancing the scientific understanding of potential risks or enhancing the USNRC's ability to directly respond to the concerns of stakeholders. We do not support going forward with such a study.

Thank you for the opportunity to comment on the document. If you have any questions concerning these comments, please contact me.

Sincerely,

Ralph L. Andersen, CHP

[4] Health Physics Society Policy on Expenditure of Funds for Ionizing Radiation Health Effects Studies. Health Physics Society November 1998