From: nukephysics@comcast.net
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Subject: Docket ID NRC-2009-0279
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Attachments: Siegel et al Comment Letter Re Docket ID NRC–2009–0279.doc

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To whom it may concern:

Attached please find comments respectfully submitted regarding Docket ID NRC-2009-0279, on behalf of myself and 19 SARI members or associate members. SARI is an international group Scientists for Accurate Radiation Information (http://radiationeffects.org).

Sincerely,

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COMMENTS RESPECTFULLY SUBMITTED FOR DOCKET ID NRC-2009-0279

On July 25, 2014 (79 FR 43284), the U.S. Nuclear Regulatory Commission (NRC) published for comment an advance notice of proposed rulemaking (ANPR) to obtain input from members of the public on the development of a draft regulatory basis (Docket ID NRC–2009–0279). The draft regulatory basis would identify potential changes to the NRC's current radiation protection regulations (10 CFR part 20). The potential changes, if implemented, would achieve a closer alignment between the NRC's radiation protection regulations and the recommendations of the International Commission on Radiological Protection (ICRP) contained in ICRP Publication 103 (2007).

We respectfully offer the following comments concerning the ANPR:

NRC has proposed ALARA planning, as well as five other policy and technical issues, in an effort to align its regulations with recommendations of the ICRP to bring about global harmonization of radiation protection policies and practices. The NRC's current occupational dose limit is 50 mSv per year, but ICRP recommendations included lowering the occupational dose limit to a 5-year average of 20 mSv per year, with the dose in any given year not to exceed 50 mSv; so for a 5-year period, the cumulative limit is 100 mSv in order to achieve an average effective annual limit of 20 mSv. NRC staff has proposed to adopt this ICRP recommendation.

We feel that this is unrealistically conservative and non–evidence-based. Radiation is no more hazardous today than it was previously. In fact, it is likely that low doses are actually beneficial, so a 60% decrease in the annual occupational dose limit has no basis and is unwarranted. Previously, the Commissioners have wisely rejected staff's recommendation to lower the occupational dose limit to 20 mSv/y, so it appears that staff's proposed ICRP alignment effort based on an average cumulative dose in a given 5-year period is a way to essentially achieve, and even go beyond, this reduced annual dose limit without specifically so stating.

In the United States, the majority of occupationally exposed individuals receive less than 20 mSv per year as reported in the ANPR. But some receive larger exposures up to, and occasionally above, the NRC's current annual occupational limit of 50 mSv and may be receiving such doses over multiple years. The NRC, in its proposed effort to align its requirements with the recommendations of ICRP, is currently examining possible mechanisms for addressing individual protection at, or near, the current occupational dose limit of 50 mSv per year as stated in the ANPR; however, staff's intention appears to be directed at instituting a much lower annual dose limit of only 20 mSv. One potential mechanism for achieving this goal is to revise 10 CFR 20.1101 to include additional requirements for implementing ALARA. Since NRC's current regulations in 10 CFR part 20 do not include an explicit requirement to plan activities to optimize radiation protection (ALARA planning) or to establish ALARA planning values as part of the licensee's radiation protection program, licensees would be required to have an ongoing process to review radiation exposures. Licensees would have to consider if changes are

warranted and practical to reduce exposures, and to ensure the implementation of appropriate programmatic changes.

One proposed potential methodology is that a licensee could use the ICRP Publication 103 (2007) recommendations for an average dose over a 5-year period of 20 mSv (2 rem) as an administrative control level (ACL). If no individual at the licensed facility exceeded the ACL on an annual basis, then no additional actions would be needed by the licensee other than continued monitoring of exposures. However, if an individual exceeded the ACL in any particular year, the licensee could commit to tracking and limiting the dose of that worker over a 5-year period; the licensee would need to maintain the cumulative occupational dose records during this period. It appears that NRC staff is conflating its ALARA policy with its dose limits, as the intention is not simply to keep doses as far below current dose limits as possible, it is also to effectively reduce the current occupational dose limit.

NRC regulations require that worker exposures be maintained as low as is reasonably achievable (ALARA) because of the questionable and unproven linear non-threshold (LNT) model of radiation carcinogenesis. The LNT model permits theoretical predictions of risk associated with low doses of radiation down to zero exposure levels, but importantly, it does not account for the body's response (i.e., repair) of any radiation-induced damage and assumes that all outcomes are linear across the range of high and low dose exposures, an assumption that is not only likely false but also causes more radiophobia than radioprotection. Thus, because of the "fear" of as yet only assumed risk at low radiation doses, regulatory dose limits are required to be maintained "as far below" these limits as is "practical consistent with the purpose for which the licensed activity is undertaken." However, the NRC definition of ALARA, pursuant to 10 CFR 20.1003, should be called into question since little, if any, measurable risk is associated with exposure at the current dose limits, let alone at dose levels far below these limits, making any effort for licensees to maintain these lower levels of exposure impractical rather than "practical," a concept that is not even well defined and open to considerable interpretation.

NRC's efforts to globally harmonize radiation protection requirements, are, just like the healthy worker effect, backwards. There is no reason for or benefit from considering uniformity with ICRP recommendations, as they are not in agreement with established scientific literature. Rather, these recommendations are based on LNT-derived risks, with no consideration or allowance for much current literature on possible benefits and are thus overly conservative, unproven and radiophobic. In light of limited health care resources, it is increasingly important that NRC policies serve to protect the health and safety of workers and the public from real hazards that are rigorously tied to realistic projections of the severity and likelihood of detrimental effects, taking into account the actual financial and other costs to society. NRC has recently revised its regulations in 10 CFR part 35 using a risk-informed and performance-based approach, so it is counterproductive to now revise regulations in 10 CFR part 20 in a manner that has no scientific basis.

We are fully aware that there are 6 distinct policy and technical issues presented in the ANPR for proposed changes. The ANPR appears to assume that significant detrimental effects will be observed if ALARA planning is not instituted; further, the same is assumed to be true if the proposed reductions of the dose limits to the lens of the eye and embryo/fetus of a declared pregnant occupational worker are not instituted. But before any changes are even contemplated NRC needs to do its due diligence by presenting to its licensees documented, science-based evidence of actual low-dose effects, if any exist. We posit that any regulatory changes should not be based on a rushed "path" to global alignment of radiation protection policies, especially since, with a nod to Robert Frost, the ICRP road should not be taken just because it appears well-traveled. Instead, these changes must be based on valid scientific evidence.

According to ICRP recommendations, while radiation risks and effects are both detriment-related concepts, they have distinct meanings. Risk is related to the probability (or chance) that an effect will occur, whereas effect is the outcome of concern. Risk may be inferred, while effects should be observed. The distinction is important for low radiation dose situations. While the ICRP recommendations imply that risks may be inferred for any prospective assessment of generic radiation exposure situations, such inference of radiation risks should not be automatically interpreted as meaning that effects, e.g., cancer deaths of specific individuals, will be revealed. In fact, reports of theoretical cancer deaths after low dose radiation exposure situations (on the order of < 100 mSv) should be ignored because they are obtained by inappropriate calculations based on the LNT model and misuse of the collective dose concept. Importantly, it is one thing to have estimated the risk of deaths due to carcinogenesis resulting from exposure to low radiation doses before there were nuclear accidents. But now that there have been accidents and people exposed and NOT affected due to radiation exposure, it should finally be apparent that theoretical risk estimates derived from the LNT model are not verified by any actual observed effects; thus, the LNT model should finally be abandoned.

There is no documented and undisputed evidence of risk at the dose levels NRC is proposing to reduce, but there is evidence of benefit, an effect that cannot be accommodated by the LNT model at these same dose levels. Given that the risk of cancer associated with such low-dose radiation exposure is likely undetectable and potential benefits cannot continue to be ignored, NRC should begin to consider these doses to be relatively safe so that some degree of sanity can return to the global arena. Therefore, NRC should dismiss ICRP recommendations and perhaps consider raising, not lowering, dose limits.

Thank you for your attention and consideration.

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Note: All signers of this comment letter are members or associate members of the international group Scientists for Accurate Radiation Information (SARI, http://radiationeffects.org).