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Potential Changes to Radiation Protection Regulations

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General Comment

This comment is responsive to the U.S. Nuclear Regulatory Commissions publication of an advance notice of proposed rulemaking (ANPR) seeking input from the public on the development of a draft regulatory basis supporting changes to the NRCs radiation protection regulations (Docket ID NRC 2009-0279). The changes would align the NRCs radiation protection regulations with the 2007 recommendations of the International Commission on Radiological Protection (ICRP) contained in ICRP Publication 103 (2007).
The ANPR describes how the NRC regulations as they existed in the 1950s and 1960s reflected, in part, ICRP recommendations. The 1991 revisions to the regulations were intended to adopt the basic tenants of the ICRP system of radiation dose limitation, which established a risk-based system based on the principles of justification, optimization, and limitation. However, the differences between the current NRC requirements and the ICRP recommendations issued after ICRP Publication 30 (1979-1988) have created challenges for the NRC and its licensees. While the Commission directed NRC staff to develop NRC guidance for those segments of the regulated community that could benefit from better ALARA (licensees should achieve occupational radiation dose limits and limits of exposure to the public that are as low as reasonably possible), dose limits for the lens of the eye and for the fetus/embryo, the Commission disapproved the NRC staffs recommendation to develop a draft regulatory basis to reduce the occupational total effective dose equivalent to 20 msv (2 rem) per year.
In Part D of the ANPR- Individual Protection-ALARA planning, the ANPR notes that commercial power reactors have achieved a level of ALARA planning and monitoring that is not as common in the programs of other types of NRC licensees. The ANPR states that the NRC is examining mechanisms for addressing individual protections at or near the current occupation dose limit of 50 msv (5 rem) per year, and then notes that one mechanisms to do this is to revise the regulations to include additional requirements for implementing ALARA. The objective would be to monitor a particular individuals radiation exposure and ensure that measures are taken to reduce the cumulative dose if certain thresholds are reached. The ANPR then notes alternative methods by which to implement such a program, such as having a licensee use the ICRP 2007 recommendation for an average dose over a 5 year period of 20 msv (2 rem), and if such limit was breached,

then the licensee would need to track and limit the dose of that worker over a 5-year period. The problem with such approach is that the Commission previously rejected the NRC staff recommendation to reduce the occupational total effective dose equivalent to 20 msv (2 rem) per year. While the measures at hand are different, it seems that the NRCs proposed potential method instituting the 20 msv (2 rem) threshold is inconsistent, at least in spirit, with the Commissions earlier decision.

That is not to say, however, that the NRCs attention to the actual doses received by workers in non-power industries is unimportant. The ANPRs proposal that radiation exposure of individual workers employed across multiple licensees be tracked is reasonable. But the NRC should be consistent in the function of radiation exposure limits as a method to protect occupational health, versus the role of ALARA procedures in achieving such goal. Part D muddles that distinction. The fact that certain radiation workers exposure to radiation is not being tracked effectively is problematic and worthy of further investigation, study, and remedy. But it seems that this problem is less tied to specific allowed radiation levels, and the question of whether the NRC should follow ICRP guidance. Instead, it points to a potential weakness in the effectiveness of current NRC regulations related to monitoring. Tying this monitoring problem to the question of NRC alignment with ICRP guidance may instead serve to confuse matters.