Advance Notice of Proposed Rulemaking
10 CFR Part 20

Health Physics Society Mid-year Meeting
February 11, 2014

Donald A. Cool, Ph.D.
Senior Advisor, Radiation Safety and International Liaison
Office of Federal and State Materials and Environmental Management Programs

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

History

- ICRP Recommendations announced December, 2007
- Initial Staff Recommendations – SECY-08-0197, December 2008
- Staff Recommendations for direction – SECY-12-0064, April 2012
- Commission direction SRM-SECY-12-0064, December 17, 2012
  - The Commission approved in part, and disapproved in part, the staff's recommendation
- Staff preparing Advance Notice of Proposed Rulemaking

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Areas of Work

- Updated Methodology and Terminology
- Part 20 (Standards for Protection Against Ionizing Radiation) Technical Issues
- Part 50, Appendix I (Numerical Guidelines for Design Objectives to meet ALARA) Technical Issues
- Conforming Changes to other portions of the Regulations

Methodology and Terminology

- **Commission Direction:**
  - Develop a regulatory basis for a revision to 10 CFR Part 20 to align with the most recent methodology and terminology for dose assessment.
- **Approach:**
  - TEDE becomes TED
  - New W_T and W_R values incorporated into definitions
  - Appendix B revised with new ALI and DAC values

Methodology and Terminology Issues

- Implications of using TED in place of TEDE
- Calculation for "member of the public" using age and gender weighted composite
- Effluents pathways each 0.5 mSv (50 mrem) or change?
- Time frame for calculations to be available
  - Coherence of EPA, DOE, NRC approaches, and use of mathematical vs. voxel phantoms
  - Acceptable alternatives? e.g. FGR-13, ICRP final dose coefficients

Individual Protection - ALARA

- **Commission Direction:**
  - Occupational TEDE limit to remain at 50 mSv (5 rem)
  - Continue discussions with stakeholders on alternative approaches to deal with individual protection at or near the current effective dose limit.
- **Approach:**
  - Regulatory requirements and guidance that will ensure that cumulative exposures are examined, and that progressive restrictions can be taken as cumulative exposures increase.

Individual Protection Approach

- Require ALARA planning
- Require licensee to establish mechanism(s) to examine cumulative exposure, and take progressive restrictions on the occupational exposure as cumulative exposures increase.
- Require licensees to establish one or more administrative control levels (ACL) as part of their radiation protection program and to establish specific procedures for individual protection.
- Require licensees be provided with record of all other concurrent sources of occupational exposure

Individual Protection ACL Options

- ACL 20 mSv per year
- ACL average 20 mSv over 5 year period (ICRP-103)
- ACL 10 (mSv) x N (age) (NCRP-116)
- ACL to restrict individuals to 20 mSv if cumulative exposure exceeds xx mSv

- Other Options?

Individual Protection Issues

- Implications of a more structured framework for ALARA planning and implementation in the regulations?
- How might each approach work for different classes of licensed use?
- Different ACL's for different groups of individuals?
- Other mechanisms to look at cumulative exposures?
- How to address concurrent exposure?
- Should States be allowed to use more restrictive or prescriptive requirements if NRC decides to use performance based approach?

Lens of the Eye

- **Commission Direction:**
  - Continue discussions with stakeholders regarding possible revisions to the dose limit (150 mSv (15 rem)) for the lens of the eye
- **Approach:**
  - Reduction to 50 mSv (5 rem) LDE

Lens of the Eye Issues

- Relative importance of health endpoint?
- Methods for measurement or assessment?
- Methods for recording dose when eye is protected?
- Are there alternatives to keep LDE cumulative exposure below threshold?
- Implications for radiation protection programs?

Embryo/Fetus

- **Commission Direction:**
  - Continue discussions with stakeholders regarding possible revisions to the dose limit (5 mSv (0.5 rem)) for embryo/fetus
- **Approach:**
  - Reduction to 1 mSv (0.1 rem)

Embryo/Fetus Issues

- Apply to post declaration or entire gestation period?
- What should be done if 1 mSv has already been reached at declaration?
- Continue to require efforts to avoid substantial variation above a uniform monthly exposure rate?
- Methods for measurement or assessment?

Traditional vs. SI Units

- **Commission Direction:**
  - Disapproved the elimination of traditional units from NRC regulations. Both traditional and SI units should be maintained.
- **Approach:**
  - Implement Commission Policy Statement – SI first, traditional in parenthesis

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Traditional vs. SI Units Issues

- What is the impact of changing order of presentation to SI first, traditional in parentheses?
- Should licensees be allowed to record and report in SI? Under what circumstances?
- Should Appendix B be given in SI, or traditional, or both? Should the SI values be the "regulatory standard"?
- How do we avoid confusion?

Reporting of Occupational Exposure

- **Commission Direction:**
  - Improve reporting of occupational exposure by NRC and Agreement State licensees, some of which do not currently submit reports.
- **Approach:**
  - Add additional categories of licensed use: e.g., Part 35
  - Modify requirements for compatibility
  - Explore mechanisms for central repository of data for all to use.

Reporting of Occupational Exposure Issues

- Are the reasons for reporting now valid for other categories of licensees?
- What categories should be added, and why?
- What are health and safety, and/or trans-boundary considerations?
- Should Agreement States be required to adopt reporting requirements? Rationale? Adequacy and Compatibility level?
- How might States incorporate exposure from machine produced radiations?

Next Steps

- **Federal Register Notice with specific proposed options and questions.**
  - **Advance Notice of Proposed Rulemaking in concurrence**
  - **Plans of webinar(s)**
  - **All comments to be docketed**
- **Further opportunities for comment on more specific proposals when draft technical basis is developed.**

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/opt-revise.html

Questions?

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Revision of Radiation Protection Regulations and Guidance

http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/opt-revise.html

STAY CONNECTED

NRC Blog | Chat | Twitter

YouTube | Flickr

GovDelivery | RSS

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment