Next Steps towards Revising Radiation Protection Regulations

NEI Radiation Protection Forum

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History

- ICRP Recommendations announced December, 2007
- Initial Staff Recommendations – SECY-08-0197, December 2008
- Staff Recommendations for direction – SECY-12-0064, April 25, 2012
- The Commission issued the Staff Requirements Memorandum (SRM-SECY-12-0064) to the staff on December 17, 2012.
- The Commission approved in part, and disapproved in part, the staff's recommendation from SECY-12-0064.
- Staff is moving forward to implement the Commission's direction.

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

Overarching Questions to Address

- Cumulative effects of regulation
- Regulatory impact
- State implementation

Updated 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.
- **Proposal:**
  - TEDE becomes TED
  - New W_T and W_R values incorporated into definitions
  - Appendix B revised with new ALI and DAC values

Updated Methodology and Terminology

- **Issue:**
  - Approach to calculation for "member of the public"
    - Dose coefficient based on age weighted use of adults, teenagers, children and infants?
    - Target dose for ALI at 0.5 mSv (50 mrem) or change?
    - Coherence of EPA, DOE, NRC approaches
  - Time frame for calculations to be available
- **Key Questions:**
  - What would be an appropriate implementation time frame and approach to transition of terminology

Individual Protection - ALARA

- **Commission Direction:**
  - 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.
- **Objective:**
  - Regulatory Requirements and guidance that will ensure that cumulative exposures are examined, and that progressive restrictions can be taken as cumulative exposures increase.
- **Options:**
  - Performance based requirement added to ALARA and Radiation Protection Programs, with guidance, or
  - Prescriptive requirements

Individual Protection Performance Options

- Require ALARA planning
- Require licensees, as part of their radiation protection program, establish mechanisms to examine cumulative exposure, and take progressive restrictions on the occupational exposure allowed as cumulative exposures increase.

Individual Protection Performance Options

- 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.
- Acceptable approaches might include:
  - ACL 20 mSv per year.
  - ACL average 20 mSv over 5 year period (ICRP-103).
  - ACL to use NCRP 10 (mSv) x N (age) cumulative approach.
  - ACL to restrict individuals to 20 mSv if cumulative exposure exceeds xxx mSv.
  - Other Options

Individual Protection Prescriptive Options

- Require licensees to have a record of all occupational doses (lifetime) if exposures are permitted to exceed 20 mSv per year.
- Require that licensees not allow occupational exposures to exceed 20 mSv in a year if the cumulative occupational exposure exceeds xxx mSv.
- Require licensees be provided with record of all other concurrent sources of occupational exposure.
- Other Options

Individual Protection Questions

- **Key Questions:**
  - **What are the implications of a more structured framework for ALARA planning and implementation in the regulations? What changes to programs would be anticipated?**
  - **How might each approach work for different classes of licensed use?**
  - **Should licensees be allowed to establish different ACL's for different groups of individuals?**
  - **How do the different options for guidance support, or impact, the ability of licensees to best address protection within their programs. Are there other options that could be considered?**

Individual Protection Questions

- **Key Questions:**
  - **Is there other mechanisms to look at cumulative exposures?**
  - **What would be the impact of clarifying amendments to ensure that occupationally exposed individuals provide their exposure to each licensee under which they may be concurrently receiving 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
- **Proposal:**
  - Reduction to 50 mSv (5 rem) LDE
- **Key Questions:**
  - Are there alternatives to keep cumulative exposure below threshold?
  - Viewpoints on the relative importance of health endpoint?
  - What methods should be allowed for measurement or assessment?
  - What methods should be allowed for recording dose when eye is protected?
  - What is impact on licensee activities? State regulatory programs?

Embryo/Fetus

- **Commission Direction:**
  - Continue discussions with stakeholders regarding possible revisions to the dose limit (5 mSv (0.5 rem)) for embryo/fetus
- **Proposal:**
  - Reduction to 1 mSv (0.1 rem)
- **Key Questions:**
  - Apply to post declaration or entire gestation period?
  - What should be done if 1 mSv has already been reached at declaration?
  - What methods should be allowed for measurement or assessment?
  - What is impact on licensee activities? State regulatory programs?

Traditional vs. SI Units

- **Commission Direction:**
  - Disapproved the elimination of traditional units from NRC regulations. Both traditional and SI units should be maintained.
- **Proposal:**
  - Implement Commission Policy Statement – SI first, traditional in parenthesis
- **Key Questions:**
  - How do we avoid confusion?
  - Should Appendix B be given in SI, or traditional, or both?
  - Should licensees be allowed to report in SI?
  - What is impact on licensee activities? State regulatory programs?

Reporting of Occupational Exposure

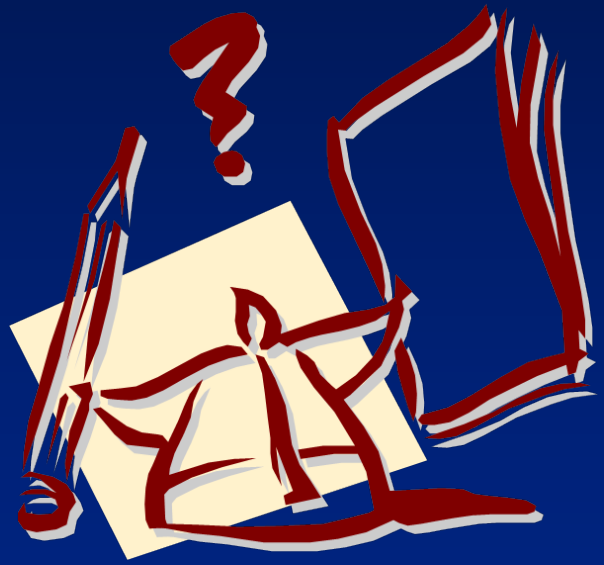
- **Commission Direction:**
  - Improve reporting of occupational exposure by NRC and Agreement State licensees, some of which do not currently submit reports.
- **Proposal:**
  - Add categories of licensed use: e.g., Part 35
  - Modify requirements for compatibility
  - Explore mechanisms for central repository of data for all to use.
- **Key Questions:**
  - What categories should be included?
  - What is the rationale for reporting?
  - What are health and safety, and/or trans-boundary considerations?
  - How to deal with occupational exposure of machine produced radiations?
  - What is impact on licensee activities? State regulatory programs?

Next Steps

- Engage Federal Agencies, States, licensees, and with public stakeholders on each of the topics.
- Develop Federal Register Notice with specific proposed options and questions.
  - Plan to publish for input
  - Possibility of webinar(s)
  - All comments to be docketed
  - Further opportunities for comment with more specific proposals.

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

Questions?



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Revision of Radiation Protection Regulations and Guidance

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