U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Special Interest Session

Changing Radiation Protection Standards and Guidance

Conference of Radiation Control Program Directors

May 22, 2013

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 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.

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

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Overarching Questions to Address

- Cumulative effects of regulation
- Regulatory impact
- State implementation

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

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
- Key Questions:
  - What would be an appropriate time frame and approach to transition of terminology
  - Consistent methodology for calculations

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Individual Protection

- Commission Direction:
  - 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

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Individual Protection Performance Options

- Require licensees to establish an administrative control level (ACL) as part of their radiation protection program and to establish specific procedures for individual protection, such as:
  - ACL 20 mSv per year.
  - ACL average 20 mSv over 5 year period.
  - 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

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

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 sources of occupational exposure.
- Other Options

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Individual Protection Questions

- Key Questions:
  - How does each approach work for different classes of licensed use?
  - Is there another mechanism to look at cumulative exposures?
  - Should States be allowed to use prescriptive requirement if NRC decides to use performance based approach?
  - What is impact on licensee activities? State regulatory programs?

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

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?

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

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?

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

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?

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

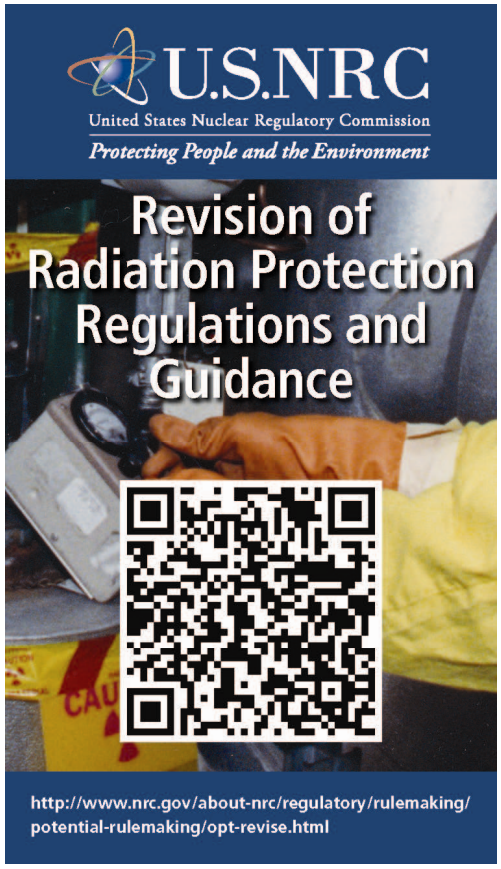
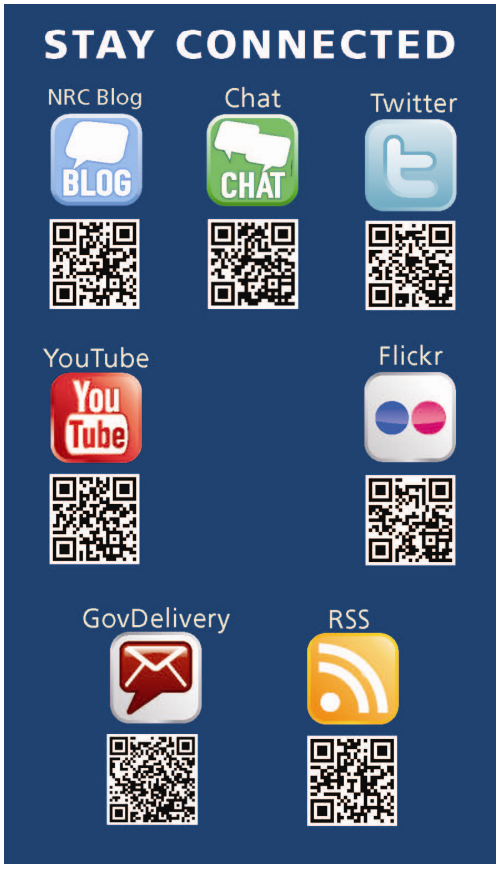
Reporting of Occupational Exposure

- 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?

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

10 CFR Part 20 – Next Steps

- Key Staff Actions:
  - Engage Federal Agencies, States, licensees, and with public stakeholders on each of the topics.
    - Conference of Radiation Control Program Directors Annual Meeting
    - International Dosimetry Conference
    - Health Physics Society Annual Meeting
    - Master Material License Counterpart Annual Meeting
    - Nuclear Energy Institute Radiation Protection Forum
    - American Association of Physicists in Medicine
    - Organization of Agreement States Annual Meeting
  - Develop Federal Register Notice with specific proposed options and questions.
    - Plan to publish for inputs early summer
    - All comments to be docketed
    - Round 2 in 2014 with more specific proposals.

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