

U.S.NRC
 Office of Federal and State Materials and Environmental Management Programs

Protecting People and the Environment

Options to Revise Radiation Protection Regulations Further Considerations

American Association of Physicists in Medicine
 July 19, 2010

Donald A. Cool, Ph.D.
 Office of Federal and State Materials and Environmental Management Programs

1

Background

- ICRP completed revised recommendations in late 2007.
- NRC staff analysis indicated areas warranting consideration for revisions.
- Commission approved staff recommendation to engage stakeholders and initiate development of technical basis materials on April 2, 2009.




U.S.NRC

2

Objective of Staff Effort

- Objective is to explore implications, as appropriate and where scientifically justified, of greater alignment with ICRP Publication 103.
- Given adequate protection, discussion is to focus on discerning the benefits and burdens associated with revising the radiation protection regulatory framework.
- Make recommendations to Commission.



U.S.NRC

3

Outreach Activities

- Phase I of outreach has included:
 - Presentations to numerous organizations and groups.
 - FRN published inviting inputs (72 FR 32198)
 - Dedicated web address for comments
 - FSME Newsletter (No. 09-1)
 - Press Release (No. 09-078)
 - All State Letter (FSME-09-025)



4

Future Plans

- Continue to engage industrial radiography community, other industry segments, and public citizen groups
- Phase II - Facilitated round tables meetings starting in September 2010
- Phase III – Validation of information received, Spring 2011
- Staff recommendations to Commission – Fall 2011



5

What Have We Heard?

- Wide range of views on major topics
- General support for increasing alignment with international recommendations and other national regulations to improve consistency and trans-boundary considerations
- General agreement that scientific information should be updated
- Rationale for selecting options not yet well articulated



6

Issues

- Effective Dose and Numerical Values
- Occupational Dose Limits
- Dose Limits for Special Populations
- ALARA planning



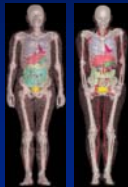
Effective Dose

- NRC 10 CFR Part 20 expressed as Effective Dose Equivalent, applied (effective 2008) to both external and internal exposure
- Options:
 - No Change – TEDE
 - Express as TED
 - Allow use of either
- Implications:
 - Impact on records and reports?
 - Impact on compliance with limits (DDE vs. TED)?



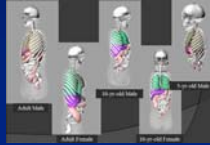
Numerical Values

- ICRP has provided updated Tissue and Radiation Weighting Factors (W_T , W_R)
- ICRP working on revised dose coefficients based on new values, models, decay data
- Options:
 - No Change
 - Update to new values
- Implications:
 - Impacts of timing?
 - Other implications?



What Have We Heard?

- Effective Dose
 - Supportive of update
 - Questions on application of current rule
 - Impact of methodology on ability to comply with options for dose limits
- Numerical Values
 - Supportive of update
 - Recognition of schedule



10

Occupational Dose Limits

- ICRP Recommendation is 10 rem over 5 years, with a maximum of 5 rem in any one year
- Part 20 limit is 5 rem per year
- Options:
 - No change: 5 rem per year
 - ICRP recommendation
 - 2 rem per year
- Implications:
 - Impacts of reduced values?
 - Impacts of increased recordkeeping?



11

What Have We Heard?

- Occupational Dose Limits
 - Many want limit to stay at 50 mSv/yr (5 rem)
 - A few comments to reduce limit
 - Certain groups of licensees continue to have individuals above 20 mSv/yr (2 rem)
 - Preference by some stakeholders to keep higher limit as legal boundary, and increase ALARA and perhaps constraints to reduce doses



12

Dose Limit for Embryo/Fetus

- ICRP recommendation is 100 mrem after notification of pregnancy.
- 10 CFR 20.1208 is 500 mrem over gestation period
- Options:
 - No Change
 - ICRP Recommendation
 - Other single value, such as 50 mrem, after declaration
- Implications:
 - Impacts of reduced values?
 - Impacts of increased recordkeeping?



13

What Have We Heard?

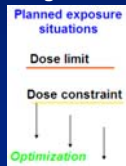
- Dose Limits for Embryo/Fetus (Occupational)
 - Mixed feedback
 - Lack of data
 - Some options challenge limits of detection for monitoring
 - Nuclear Medicine labs prefer current limit for operational reasons
- Public Exposure
 - Should special provisions for doses greater than 100 mrem be discontinued for children, pregnant females, and nursing mothers?



14

Constraints (1)

- ICRP recommends the consistent application of constraints as a tool in optimization of protection.
- Constraints are not to be limits.
- Part 20 already as a constraint for public exposure from airborne radionuclides from materials facilities.
- Many large licensees already use planning values in ALARA programs.



15

Constraints (2)

- Options:
 - No Change
 - Require a licensee to use constraints as part of radiation protection program
 - Specify a numeric value licensee is not to exceed
- Implications:
 - Impacts to Programs?
 - Benefits in protection seen?
 - Relationship to Dose Limit?
 - Appropriate insertion of regulatory requirement?



16

What Have We Heard?

- Use of Constraints for ALARA planning
 - Constraints not well understood
 - Questions on inspection, compliance, reporting
 - Detail of how a requirement might be constructed is critical to understanding impacts
 - Consideration of what justifications would be appropriate for exceeding a constraint, and what actions would be needed
 - Some stakeholders leaning to endorsement of constraint, and setting a value, to provide flexibility



17

Questions ?

- Web pages
<http://www.nrc.gov/about-nrc/regulatory/rulemaking/opt-revise.html>
- Email Address: regs4rp@nrc.gov



18
