Options to Revise Radiation Protection Regulations
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The US Regulatory Structure

- U.S. Federal Agency Regulations
  - Environmental Protection Agency
  - Nuclear Regulatory Commission
  - Department of Energy
  - Occupational Safety and Health Administration
  - Food and Drug Administration
  - Others
- Federal Agencies coordinated through the Interagency Steering Committee on Radiation Standards (ISCORS)
- State regulations
The US Regulatory Structure

• Federal Guidance
  Guidance Developed by the lead agency and signed by the President of the United States
  • Occupational Dose Limit
  • Public Dose Limit
  • Medical/X-ray

• Guidance Reports
  – Federal Guidance Report 11 on Cancer Risk
  – Federal Guidance Report 13 on Dose Coefficients
Context for the US NRC

• Authority to regulate certain types of radioactive material was given by the Atomic Energy Act of 1954, as amended.
  ➢ Source material
  ➢ Byproduct material
  ➢ Accelerated produced material (Energy Policy Act of 2005)
  ➢ NOT INCLUDED:
    ➢ X-rays
    ➢ Computer Tomography
    ➢ Accelerators
    ➢ Diffuse Naturally Occurring Material
Sources of Radiation Exposure in the United States (2006)

Radon & thoron (background) (37%)

Space (background) (5%)

Internal (background) (5%)

Terrestrial (background) (3%)

Computed tomography (medical) (24%)

Nuclear medicine (medical) (12%)

Interventional fluoroscopy (medical) (7%)

Conventional radiology/fluoroscopy (medical) 5%

Industrial (0.1%)

Occupational (0.1%)

Consumer (2%)

Background

• Most recent rulemaking to incorporate the recommendations of the ICRP into 10 CFR 20 was completed in 1991, and was based primarily on ICRP Publications 26 (1977)

• Regulations that contained explicit dose criteria, rather than cross-references to Part 20, were not updated in 1991, and remain based primarily on ICRP Publications 1 (1958) and 2 (1959)
Background

• NRC staff recommended in 2001 that the Commission wait for next set of ICRP recommendations, and begin Technical Basis development

• Commission agreed in April, 2002, but did not approve Technical Basis efforts

• ICRP Recommendations published in December, 2007 as Publication 103, following considerable public consultation
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• Policy Issue Notation Vote paper provided to Commission on December 18, 2008

• Provided Options for next steps regarding NRC radiation protection standards

• Provided Background on technical issues in 10 CFR Part 20 and 10 CFR Part 50

• Recommended Commission approval for staff to undertake stakeholder dialogue and technical basis development
• Commission approved staff recommendation April 2, 2009

• 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.
Commission Questions

• What were the implications of implementing ICRP 60?
• What were the costs associated with implementing ICRP 60?
  ➢ Government
  ➢ Users/Licensees
• What were the difficult issues associated with implementation of ICRP 60?
• What else can we learn?
NRC Staff Discussion Issues

- Effective Dose
- Numerical Values
- Occupational Dose Limits
- Dose Limits for Embryo/Fetus
- Use of Constraints for ALARA planning
- Revision of Part 50 Appendix I for Effluent ALARA
Schedule

• Provide recommendations to the Commission in late 2011

• Ongoing:
  ➢ Cooperative work to develop dose coefficients
  ➢ Coordination with multiple agencies and groups
  ➢ Technical Basis Development
  ➢ Interactions with Federal Agencies through ISCORS
Questions?

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

- Email Address: regs4rp@nrc.gov