



## RIC 2010 Radiation Protection

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U.S. Nuclear Regulatory Commission  
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### Technical Basis Information for Regulatory Decision Making

- Technical Basis support for data needs
- Currently developing information on options and impacts of changing 10 CFR Part 20 for greater alignment with ICRP Publication 103 recommendations
  - Dose limits and constraints
  - Cost and implementation considerations
  - Development of ICRP dose conversion factors
- Challenging, multiyear effort that spans a range of technical disciplines in radiation protection

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### Technical Basis Information for Regulatory Decision Making – Agreement State Occupational Exposure Data

- Agreement States regulate ~90% of materials licensees
- Material Licensees are not required to report occupational exposure data to NRC
- Solicitation of occupational exposure data from Agreement State industrial radiographers and medical licensees

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## Radiation Exposure Information and Reporting System (REIRS)

- Required by 10 CFR 20.2206 that licensees submit occupational dose reports to NRC by April 30<sup>th</sup>
- 2008 Occupational Dose Trends
  - Average Annual Collective Dose for LWR - 88 person-rem (0.88 person-Sv)
  - Average Measurable Dose/Worker: 0.18 rem (0.0018 Sv)
- Decreasing trend in collective occupational doses over the past 10 years due to ALARA practices

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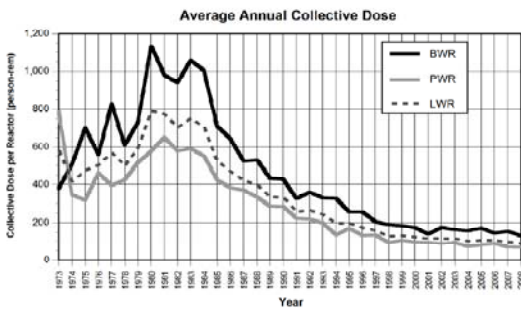
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## REIRS (continued)



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## Information System on Occupational Exposure (ISOE)

- Started in 1992 under a joint sponsorship by the Nuclear Energy Agency and International Atomic Energy Agency
  - information exchange for world-wide commercial NPPs
  - Forum for utilities and regulatory representatives
- Database contains information on over 300 operating and decommissioned reactors world-wide
- World-wide Occupational Dose Trends for 2008
  - Average Annual Collective Dose: 86 man-rem/reactor (0.86 man-Sv/reactor)

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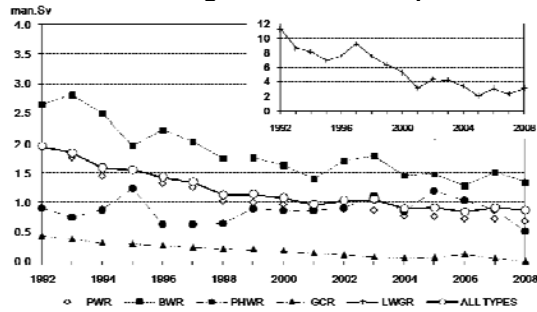
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### World-wide Average Collective Dose per Reactor



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### Analysis of Cancer Risk in Populations Living Near Nuclear Power Facilities

- Provide the NRC with the latest cancer risk for populations living near nuclear power facilities
- Initial work started with the Oak Ridge Institute for Science and Education (ORISE) operated by Oak Ridge Associated Universities (ORAU)
- Status
  - Developed draft study protocol for mortality study
  - Peer-review committee established
  - Agency-wide communication team established
  - Analyzing the responses to the sources sought notice for commercial organizations

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### Analysis of Cancer Risk (continued)

- Next Steps
  - Determine study contractor
- Challenges
  - Communication to ensure a shared understanding with our stakeholders
  - Wide stakeholder interest and scrutiny
- Key Messages
  - This study will give the agency the latest credible scientific information for responding to stakeholders' concerns related to cancer incidence and mortality in populations that live near licensed nuclear power plants.
  - The project has broad support across the program and regional offices

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### Computational Projects/Products

- Phantom with Moving Arms and Legs (PIMAL)
  - Phantom Development
  - GUI Enhancement
- Radiological Toolbox
  - Updating Data Set
- VARSKIN
  - Improving Beta Particle Algorithm

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### VARSKIN Computer Code

Figure 7. VARSKIN 3 and VARSKIN 4 dose comparison at 7 mg/cm<sup>2</sup> for four different averaging areas.

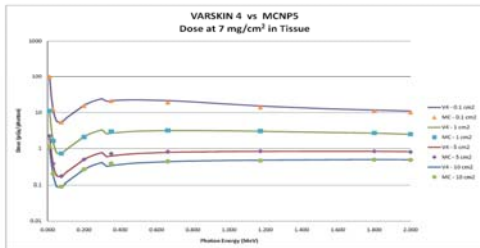


Figure 8. MCNPS and VARSKIN 4 dose comparison at 7 mg/cm<sup>2</sup> for four different averaging areas.

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