



**Environmental Health Physics:
Risk Communication and the Use of Dose
Assessment at Operating and
Decommissioning Reactor Sites**

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General Information

- Audio Recording of Session
 - All sessions will be recorded
 - Audio recording will be available on the RIC website after the conclusion of the conference.
- Unanswered Questions
 - Questions that are not answered during the conference session will be posted along with the answers on the RIC website after the conclusion of the conference.
- Presentation Materials
 - All electronic presentation materials will be posted on the RIC website after the conclusion of the conference.



NRC Radiation Protection Activities

- **Office of New Reactors**
 - Conducting new reactor licensing reviews and inspection support
 - Preparing for Small Modular Reactor applications
 - Part 50, Appendix I Rulemaking
- **Office of Nuclear Reactor Regulations**
 - Continued implementation of the ROP in the Radiation Safety Strategic Area
- **Office of Nuclear Material Safety and Safeguards**
 - Interim Staff Guidance regarding radon at uranium recovery facilities
 - Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)
 - MILDOS-AREA code

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NRC Radiation Protection Activities

- **Office of Nuclear Regulatory Research**
 - Health Studies
 - Analysis of Cancer Risk in Populations Around NPPs
 - Million Worker Study
 - Technical Bases for a Potential 10 CFR Part 20 and 10 CFR Part 50 Appendix I Rulemaking
 - NUREG-1836, Standard Review Plan for Partial Site Release
 - Radiation Exposure and Information Records System
 - RAMP - Radiation Protection Computer Code Program

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Radiation Protection Code Analysis and Maintenance Program

- The RASCAL computer code evaluates releases from nuclear power plants, spent fuel storage pools and casks, fuel cycle facilities, and radioactive material handling facilities and is designed for use by the NRC in the independent assessment of dose projections during response to radiological emergencies.
- The RADTRAD computer code is used to assess occupational radiation exposures, typically in the control room; to estimate site boundary doses; and to estimate dose attenuation due to modification of a facility or accident sequence.
- The HABIT computer code is an integrated set of computer programs used to estimate chemical exposures that personnel in the control room of a nuclear facility would be exposed to in the event of an accidental release of toxic chemicals.

RASCAL  **RADTRAD**  **HABIT** 

- The gaseous and liquid effluent (GALE) computer code estimates the quantities of radioactivity released by a plant through liquid and atmospheric discharges during routine operations for pressurized-water reactors (PWR) and boiling-water reactors (BWR).
- The Decontamination and Decommissioning (DandD) computer code assesses compliance with the dose criteria of 10 CFR Part 20, Subpart E. DandD uses screening dose assessments to estimate annual dose from residual radioactivity in soils and on building surfaces.

GALE  **DandD** 

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Radiation Protection Code Analysis and Maintenance Program (cont.)

- The VARSKIN computer code uses a library of decay data for a large number of radionuclides, and also a set of built-in source geometries, to calculate the dose to the skin resulting from contamination on the surface of the skin or on protective clothing.
- The Phantom with Moving Arms and Legs (PIMAL) humanoid phantom models are considered an efficient and accurate tool for developing exposure models and performing dosimetry calculations for radiation workers and exposed members of the public.
- The Radiological Toolbox is an electronic handbook that contains extensive databases related to radiation work. The software does not perform any calculations beyond unit conversions and minor radioactive decay and equilibrium calculations.

VARSKIN  **PIMAL**  **RAD Toolbox** 



Presenters

- Chris McKenney, Nuclear Regulatory Commission
NRC Dose Modeling for Decommissioning
- Stuart Walker, Environmental Protection Agency
EPA Superfund Radiation Risk Assessment Approach
- Dr. Kathryn Higley, ICRP Committee 5
The ICRP Approach to Radiation Protection of the Environment
- Dr. Paul Locke, John Hopkins Bloomberg School of Public Health
Risk Communication Challenges and Opportunities



Session Format

- Each presentation will be about 15 minutes
- Approximately 20 minute question and answer session at the end
