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

Issue 1

Spring, 2015

RAMPED UP!

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RAMP HAS LAUNCHED!!!!!!

By Stephanie Bush-Goddard, Ph.D

The United States Nuclear Regulatory Commission (USNRC) has a new initiative called the Radiation Protection Computer Code Analysis and Maintenance Program (RAMP). The purpose of RAMP is to develop, maintain, improve, distribute and provide training on NRC-sponsored radiation protection and dose assessment computer codes.

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RAMP includes user groups of domestic and international code users that share costs, analysis, and experiences to facilitate maintenance and usage of high quality radiation protection codes. RAMP membership will benefit all participants by enabling the maintenance, improvement, and use of quality, validated codes; enhancing expertise; and providing a forum to share analyses and results, ideas for code improvements, and insights on priorities. Access to the codes and updates are only available to RAMP members.

AGENCY HIGHLIGHT: FEMA

On April 1, 1979, President Jimmy Carter signed the executive order that created the Federal Emergency Management Agency (FEMA). *FEMA* coordinates the federal government's role in preparing for, preventing, mitigating the effects of, responding to, and recovering from all domestic disasters, whether natural or man-made, including acts of terror. FEMA uses RASCAL in its Technological Hazards Division Radiological Emergency Preparedness Program.

COMPUTER CODES IN RAMP

RASCAL
Used for making dose projections for atmospheric releases during radiological emergencies. It is the premier computer code used by USNRC's emergency operations center..

RADTRAD
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.

VARSKIN
Used to perform confirmatory calculations of licensees' submittals regarding skin dose (from both beta and gamma sources) estimates at any skin depth or skin volume, with point, disk, cylindrical, spherical, or slab (rectangular) sources, and enables users to compute doses from multiple sources.

HABIT
The HABIT computer code is an integrated set of computer programs used mainly 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.

DandD
Used to perform simple estimates of the annual dose from residual radioactivity from residual soil or building contamination at the licensed site following decontamination and decommissioning to ensure compliance with the radiological dose criteria for license termination in 10 CFR Part 20, Subpart E.

PIMAL: Graphic User Interface
The PIMAL humanoid phantom models (used with MCNP) are considered an efficient and accurate tool for developing exposure models and performing dosimetry calculations for workers and exposed members of the public.

The Radiological Toolbox data include dose coefficients, exposure to radionuclides distributed in the environment, for exposures to photon and neutron radiation fields, and supplemental information on various topics.

GALE Used to estimates the quantities of radioactivity released by a plant through liquid and atmospheric discharges during routine operations.

"There are 10 kinds of people in the world: those who understand binary numerals, and those who don't."
— Ian Stewart, Professor Stewart's Cabinet of Mathematical Curiosities

INTERNATIONAL PARNTERS

RAMP welcomes the South African National Nuclear Regulator (NNR). NNR's mission is to provide and maintain an effective and efficient national regulatory framework for the protection of persons, property and the environment against nuclear damage.

RAMP also welcomes the Canadian Nuclear Safety Commission (CNSC). CNSC's mission is to regulate the use of nuclear energy and materials to protect health, safety, security and the environment and to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public.

CODE HIGHLIGHT: VARSKIN

BY DAVID M. HAMBY, PH.D.

Over the past few years, the VARSKIN software package has gone through a major overhaul of its photon and electron dosimetry models. The VARSKIN code estimates radiation dose to critical layers of tissue from skin contamination events. The code can simulate sources in a point geometry, as a two-dimensional disk, and as a few three-dimensional shapes. The point-kernel dosimetry technique is used and a library of over 800 radionuclides is available.

The VARSKIN User's Group was recently initiated (https://web.engr.oregonstate.edu/varskin) to provide a discussion forum for users of the code, pertinent news on VARSKIN development, and the most recent code updates to RAMP members (the latest version is VARSKIN 5.2). The User's Group currently has about 70 members.

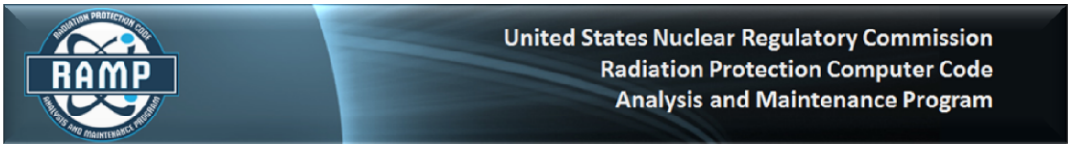
Upcoming code modifications will likely include a mechanism to automatically attach daughter products to parent source radionuclides, uncertainly and sensitivity analysis capability, and a geometry option for solid sources under the skin surface. Our group is also planning for inclusion of ICRP 107 dosimetric data and IEEE software certification.

RASCAL TRAINING

Date	Location	Description	Requirements	Contact
May [Dates TBD]	NRC Headquarters Three White Flint North 11601 Landsdown Street North Bethesda, MD 20852	RASCAL 4.3.1	General understanding of radiation dose concepts	Jeff Kowalczik jeff.kowalczik@nrc.gov
May 26-27,2015	NRC Region 1 2100 Renaissance Blvd, Ste 100 King of Prussia, PA 19406	RASCAL 4.3.1	General understanding of radiation dose concepts	Doug Tifft doug.tifft@nrc.gov
June 15-16, 2015	NRC Region 3 2443 Warrenville Rd, Ste 210 Lisle, Illinois 60532	RASCAL 4.3.1	General understanding of radiation dose concepts	Allan Barker allan.barker@nrc.gov
June 17-18, 2015	NRC Region 3 2443 Warrenville Rd, Ste 210 Lisle, Illinois 60532	RASCAL 4.3.1	General understanding of radiation dose concepts	Allan Barker allan.barker@nrc.gov

For questions about the class or to see if seats are available, e-mail the contact shown above for the course of interest.

RAMP WEBSITE NEWS!!!



The NEW RAMP website will provide members with access to all off the USNRC RP/DA computer codes. It will also provide a forum for each of the 7 codes where members can go and ask questions, post comments, and discuss their experiences with each one. The forums will serve as a great resource for NRC and users in gathering information to help with improving the accuracy and reliability of the codes.

"Good code is its own best documentation. As you're about to add a comment, ask yourself, 'How can I improve the code so that this comment isn't needed?'"
– Steve McConnell, Author

U.S. Nuclear
Regulatory Commission

Email: RAMP@nrc.gov

Meet the RAMP Program Mangers

Stephanie Bush-Goddard, Ph.D.

Dr. Bush-Goddard is a Senior Health Physicist at the US Nuclear Regulatory Commission. She is a graduate of the University of Michigan, Environmental Health Science Program. Her emphasis is in Environmental Health Physics and she has over 25 plus years in leading, analyzing and managing computer code programs.

Katie Tapp, Ph.D.

Dr. Tapp as been a Health Physicist at the US Nuclear Regulatory Commission for over eight years. She has a doctoral degree in Medical Physics from Purdue University and an undergraduate degree in Nuclear Engineering from University of Illinois. Her research emphasis is in Medical Health Physics and Decommissioning .

RAMP Web Address:
https://www.usnrc-ramp.com

LOCKHEED MARTIN
Information Technology

The Lockheed Martin RAMP website team will be responsible for the domain and maintenance of the website.

IN THE NEXT ISSUE OF RAMPED UP!

- Code Highlight: RADTRAD
- Who's new on the International Front
- RASCAL Benchmarking Activities
- VARKIN's model vs MCNP
- Uses of the Radiological Toolbox
- More Details on the RAMP User Meeting
- ..and Much More