RAMPED UP!

RAMP Newsletter – Spring 2023, Issue 16
Editor: Jade Adams

INSIDE THIS ISSUE

U.S. Nuclear Regulatory Commission
Rockville, MD

U.S. NRC RAMP website:
https://ramp.nrc-gateway.gov/

## 2022 Fall RAMP Users Group Virtual Meeting Recap

The 2022 Fall International Radiation Protection Computer Code Analysis and Maintenance Program (RAMP) Users Group (RUG) Meeting was held October 24 – 27, (virtually) and November 1-3 (hybrid), 2022. The meeting was hosted by the US Nuclear Regulatory Commission (NRC) and Pacific Northwest National Laboratory (PNNL). The meeting welcomed over 350 registered participants, instructors, and support staff from over 20 international regulators and organizations. The international participants included representatives from Australia, Austria, Canada, Ghana, Italy, Nigeria, South Africa, South Korea, Spain, Taiwan, United Arab Emirates, United Kingdom, United States, Ireland, Ukraine, Malaysia, Singapore, Mexico, Denmark, and Poland. The domestic and international attendees included multiple Federal government and State agencies, national laboratories, universities, and the nuclear industry.

The RUG Meeting opened with an all-day "Emergency Response Symposium." The symposium consisted of 4 sessions. The first session titled: "Emergency Response Frameworks," featured a video on how the NRC responds to an emergency. It also featured presentations from PNNL, the State of Vermont, and Radiation Emergency Assistance Center/ Training Site (REAC/TS) on how national laboratories and states respond to emergencies. The second session titled: "The International Emergency Response," started with a special presentation by Ukraine on their Emergency Response during war time. This session also included a panel discussion with Canada, South Africa, South Korea, and Spain. The third session titled: "Innovation and New Initiatives in Emergency Response," featured presentations such as "Preventative Radiological and Nuclear Detection," "Forensics after Nuclear Incidents," and "Machine Learning in Emergency Response." The last session of the symposium was "NRC Initiatives." This featured presentations from NRC staff such as "Exacting the Science of Emergency Response" and "Non-Radiological Health Effects of the Evacuation and Relocation Study."
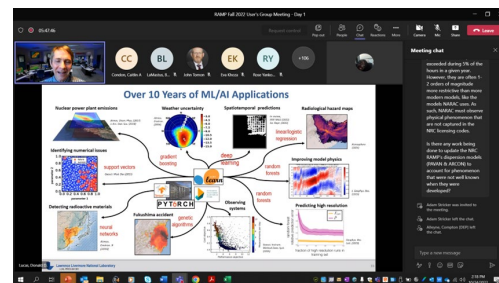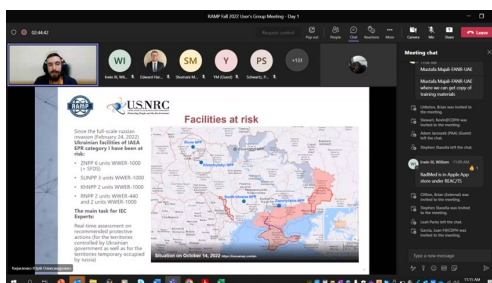
Days two through four of the RUG meeting featured code overviews and discussions on specific RAMP codes including: VARSKIN+, Integrated Modules for Bioassay Analysis (IMBA), Phantom with Moving Arms and Legs (PiMAL), Radiological Assessment System for Consequence Analysis (RASCAL) for radiological emergencies, and Turbo Federal Radiological Monitoring and Assessment Center (FRMAC). The code developers from PNNL, Sandia National Laboratories, and Renaissance Code Development (RCD) discussed the features and models in each of the respective RAMP codes.
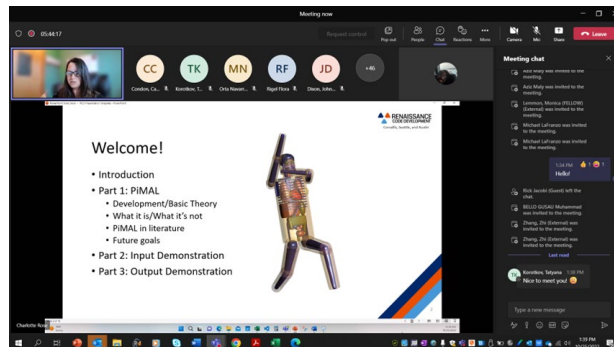
TEAM HIGHLIGHTS

Meet Jade Adams!

The NRC RAMP Team is happy to welcome and introduce its newest member, **Jade Adams**. Jade joined the NRC in July 2022 through the agency's Nuclear Regulator Apprenticeship Network (NRAN) program. Prior to joining the NRC, Jade received her Bachelor of Science in Electrical Engineering with a concentration in Nuclear Power from Alabama A&M University. She also is a member of Alpha Kappa Alpha Sorority, Inc. Despite her background in Electrical Engineering, she is pursuing a career at the NRC as a Health Physicist. She is actively working to complete inspection manual chapter (IMC) 1248, Appendix B, Materials Health Physics Inspector," qualifications. Jade is very interested in the health effects that radiation has on members of the public and the environment. Jade has already assumed the duties and responsibilities for the RAMP Team including:

- Assisting with RAMP Users' Group meeting coordination
- VARSKIN+ analysis
- Contributing to the RES Researcher
- Editor of RAMP Newsletter
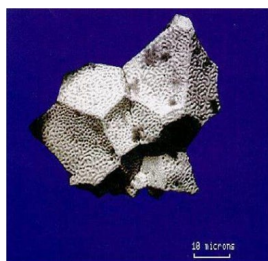- Shadowing Contracting Office Representatives (COR Level 2)

RAMP Codes Instrumental in Recent NRC Workshop

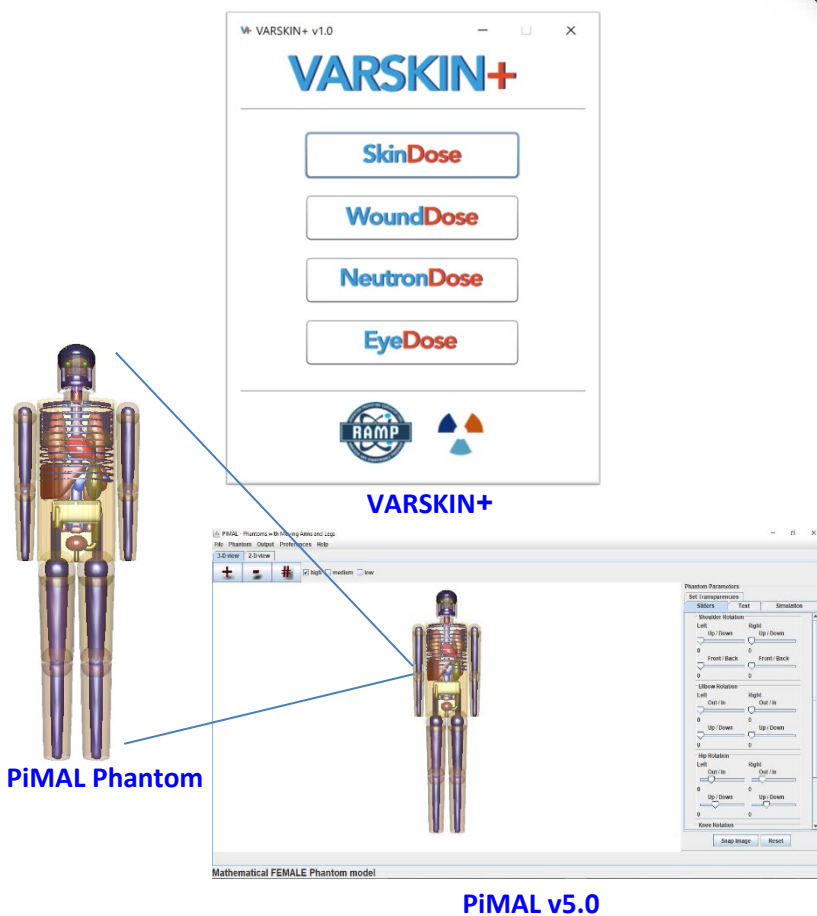The NRC recently held a public workshop on the internal and external dosimetry of discrete radioactive particles (DRP). Renaissance Code Development (RCD) is developing dose coefficients for a number of different scenarios of potential exposures to DRPs in the environment at decommissioning nuclear power plants. DRPs, also known as "hot particles", are small (< 1 mm in any dimension) water-insoluble particles of radioactive material with high specific activity. At nuclear power plants, DRPs are created both during normal operations and decommissioning activities.

The workshop consisted of presentations and questions from stakeholders on the origin of DRPs, their detection in soils, and their potential radiological hazards to the public. Three RAMP dosimetry codes (VARSKIN+, PiMAL, and IMBA) are being employed to develop these dose coefficients for estimating the potential hazards of DRP exposure.

The SkinDose module of VARSKIN+ (the classic VARSKIN) is used to provide equivalent dose coefficients for DRPs stationary on the skin surface and on the surface of internal organs, specifically the upper respiratory tract (in the case of inhalation) and the gastrointestinal tract (in the case of ingestion). PiMAL, when combined with the Monte Carlo N-Particle® (MCNP®) code, is applied to develop effective dose equivalent (EDE) coefficients for external and internal DRPs. And, IMBA is used for the estimation of committed effective dose equivalent (CEDE) coefficients for DRPs moving through the gastrointestinal tract.
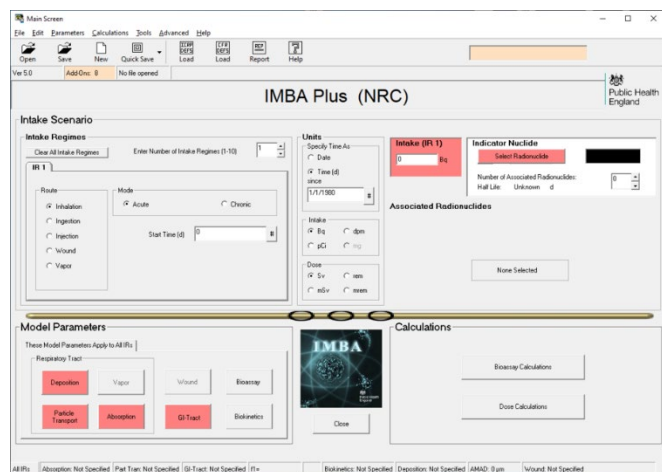

VARSKIN+

PiMAL Phantom

PiMAL v5.0

Uranium oxide from Chernobyl

IMBA

Country Highlights

The RAMP team would like to highlight countries that have recently renewed their RAMP international agreements or became a new RAMP partner. Please join us in recognizing Spain and Italy for renewing their RAMP agreements.

THE COMPUTATIONAL ANALYSIS USER GROUP

The Computational Analysis Users' Group (CAUG) is underway and has been a great success thus far. The group has met several times and recently began incorporating problem solving sessions in addition to the training lessons. Currently, our users' group is working on building their fundamental knowledge of MCNP. As professionals in the field of radiation safety, this provides two important skills: it allows the use of PiMAL for advanced dosimetry, and the ability to critically evaluate MCNP outputs. Our instructor, Charlotte Rose, has done a wonderful job teaching the basics and will soon have our users' group moving into intermediate topics. If you have missed any training sessions or want to join us for the first time it is not too late. We record and upload all sessions to the RAMP website under the PiMAL code. On the code menu under the PiMAL page, look for the "CAUG Training Sessions" link. Alternatively, you can use this direct link to the training page: https://ramp.nrc-gateway.gov/codes/pimal/training.

FUTURE EVENTS

RAMP NEWSLETTER – SPRING 2023, ISSUE 16

WE'D LOVE TO HEAR FROM YOU!

The RAMP Team welcomes your thoughts and feedback on any code features and enhancements for the RAMP codes and the RAMP website. Please send your feedback to RAMP@nrc.gov.

SPRING 2023 RAMP USERS' GROUP MEETING

	🇬🇭 GMT	🇺🇸 EDT
DAY 1	**Tuesday, April 25, 2023**	
Open Registration and Networking Opportunities	8:00 AM – 9:00 AM	4:00 AM – 5:00 AM
Opening Session	9:00 AM – 11:30 AM	5:00 AM – 7:30 AM
Working Lunch – Overview of NRC's Licensees Toolkits		
IMBA (Virtual)	1:00 PM – 4:00 PM	9:00 AM – 12:00 PM
Social Night Out		
DAY 2	**Wednesday, April 26, 2023**	
Open Registration and Networking Opportunities	8:00 AM – 9:00 AM	4:00 AM – 5:00 AM
VARSKIN+	9:00 AM – 12:00 PM	5:00 AM – 8:00 AM
Working Lunch – Physical Protection of Radioactive Material		
ALARA in Diagnostic Imaging	1:00 PM – 4:00 PM	9:00 AM – 12:00 PM
RASCAL Beginners (Virtual)	1:00 PM – 4:00 PM	9:00 AM – 12:00 PM
DAY 3	**Thursday, April 27, 2023**	
Open Registration and Networking Opportunities	8:00 AM – 9:00 AM	4:00 AM – 5:00 AM
PiMAL/MCNP	9:00 AM – 12:00 PM	5:00 AM – 8:00 AM
Working Lunch – NRC Licensee Toolkit		
VARSKIN+ Scenarios	1:00 PM – 4:00 PM	9:00 AM – 12:00 PM
RASCAL Day 2 (Virtual)	1:00 PM – 4:00 PM	9:00 AM – 12:00 PM
DAY 4	**Friday, April 28, 2023**	
Open Registration and Networking Opportunities	8:00 AM – 9:00 AM	4:00 AM – 5:00 AM
RAMP Code Help and Mentoring Opportunities	9:00 AM – 10:00 AM	5:00 AM – 6:00 AM
Meeting Closeout	10:00 AM – 10:30 AM	6:00 AM – 6:30 AM
Country to Country Meeting: Ghana	10:30 AM – 11:30 AM	6:30 AM – 7:30 AM
Country to Country Meeting: Open	11:30 AM – 12:00 PM	7:30 AM – 8:00 AM

Full agenda, registration, and additional information will be available on the RAMP website: **ramp.nrc-gateway.gov**