

RAMPED UP!

RAMP NEWSLETTER – SUMMER 2021, ISSUE 13

EDITOR: JESSICA STRONGIN

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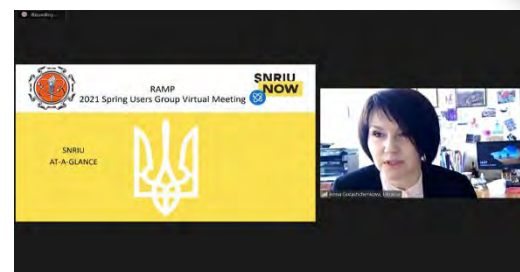


U.S. Nuclear Regulatory Commission
Rockville, MD

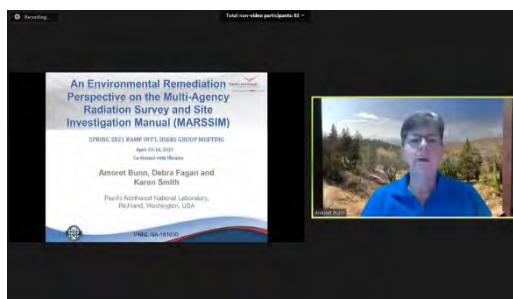
U.S. NRC RAMP website:

<https://ramp.nrc-gateway.gov/>

2021 International RAMP Users Group Virtual Meeting Recap



The fifth International Radiation Protection Computer Code Analysis and Maintenance Program (RAMP) Users Group Meeting was virtually held on April 12 - 16, 2021. The meeting was co-hosted by the NRC, the State Nuclear Regulatory Inspectorate of the Ukraine (SNRIU), and the Ukrainian State Scientific and Technical Center for Nuclear and Radiation Safety (SSTC-NRS). The RAMP team welcomed over 160 registered participants, instructors, and support staff. Numerous international regulators and organizations were represented including Ukraine, Cyprus, Italy, South Africa, South Korea, Spain, Taiwan, Ukraine, Australia, Nigeria, United Arab Emirates, and Poland. Domestic and international users comprised of multiple Federal Government and State agencies, national laboratories, universities, and the nuclear industry. *(continued on p. 2)*



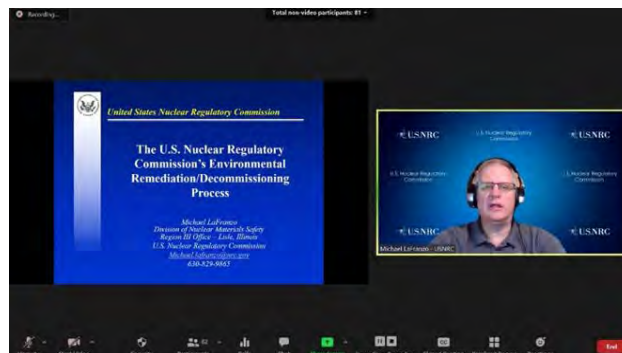
2021 INTERNATIONAL MEETING RECAP

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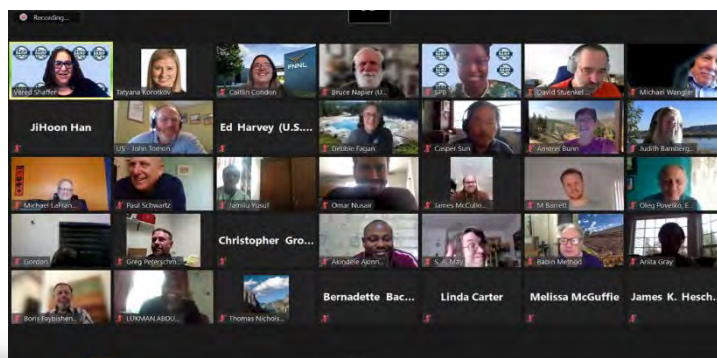
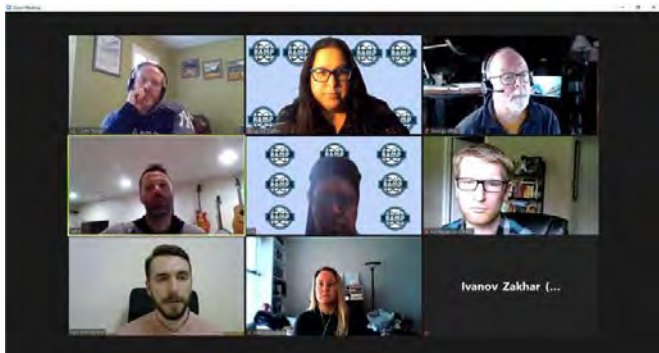
(cont. from p. 1)

This was the first RAMP Users meeting that focused on environmental remediation and decommissioning topics. The meeting featured training sessions and discussions on the environmental remediation computer codes (MILDOS and GENII) and the decommissioning computer codes (VSP, DandD, and RESRAD-RDD). The virtual training offered users an opportunity to test these RAMP computer codes and their ability to use the codes while receiving direct feedback from the code developers. Attendees participated virtually in open discussions with developers, provided suggestions for code improvements, and learned more about code upgrades and future releases.

The meeting also featured two technical symposiums: “Regulatory Framework for Decommissioning and Environmental Remediation” and “Transport of Radionuclides in the Environment.” Both symposiums included presentations by NRC staff from both Headquarters and the Regions, staff from both Argonne National Laboratory and Pacific Northwest National Laboratory, and staff from SNRIU and SSTC-NRS. Full videos and presentations are available on the RAMP website: <https://ramp.nrc-gateway.gov/>.



Although the RAMP meeting was held virtually, attendees were able to network, collaborate and had opportunities to share their knowledge and experiences. There were many engaging presentations which stimulated in-depth discussions and comments during these sessions. Users were able to ask more in-depth questions about their needs during every session. In the end, it proved to be an extraordinarily successful users meeting.



TEAM HIGHLIGHTS

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NRC Undergrad Intern

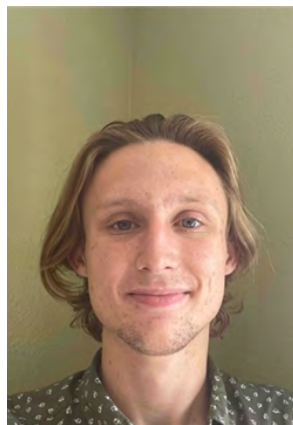


Jessica Strongin is from Columbia, Maryland and is currently a junior at the University of Maryland (UMD) studying chemical and biomolecular engineering. At the NRC, Jessica works on multiple data management and analytics projects for the REIRS database and RAMP website. Additionally, she has done process improvement for non-disclosure agreement approvals in collaboration with the International Programs Team.

At UMD, Jessica conducts research involving nuclear forensics applications for gamma spectroscopy, as well as material research for electronics. She additionally serves as a business process analyst for the college's Division of Information Technology.

Outside of work, Jessica can be found at her piano studio, on the tennis courts, or outside running. She also loves traveling and attempting to master making international cuisine.

NRC Graduate Intern



Adam Stricker is from Eugene, Oregon and has earned his Bachelor of Science in Radiation Health Physics from Oregon State University in 2021. He is currently pursuing his Master of Science in Radiation Health Physics at Oregon State. At the NRC, Adam has worked on risk communication instructions and assisted the RAMP team in user management. Additionally, he has researched the effectiveness of wearing a face mask during a nuclear emergency. This involved the comparison of inhalation dose savings and skin dose from the absorbed radiation in the face mask.

At Oregon State, Adam was involved with the Radiation Ecology research group where he helped in the testing and progression of FSOPhantom, a particle transport and dose calculation code.

In his free time, Adam enjoys playing sports and is an avid member of the disc golf club. He also loves playing board and card games with his friends and family.

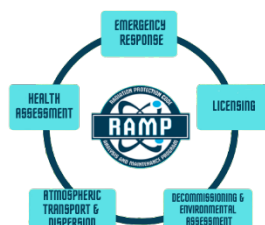
CODE UPDATES

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INTERNATIONAL PARTNERS UPDATE

RAMP has been expanding their international partnerships with over 600 international radiation protection code users.

The RAMP team welcomes Poland, the newest addition to the RAMP family!



New Addition: VARSKIN+ Launch

VARSKIN+ is a code that focuses on calculating skin dosages from a variety of simulated source geometries, such as point, disk, cylinder, sphere, slab, and syringe. It is the most requested RAMP code, primarily because it assists in calculating skin dose assessments from hot particle radiation as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1201(c). This regulation states that the assigned shallow dose equivalent is to the part of the body receiving the highest exposure over a contiguous 10 cm² of skin at a tissue depth of 0.007 centimeters (7 mg/cm²). Internationally,

VARSKIN+

SkinDose

WoundDose

NeutronDose

EyeDose



VARSKIN+ user interface

	Density	Thickness	Density Thickness
Cover 1	g/cm³	cm	g/cm²
Cover 2	g/cm³	cm	g/cm²
Cover 3	g/cm³	cm	g/cm²
Cover 4	g/cm³	cm	g/cm²
Cover 5	g/cm³	cm	g/cm²
Total:	0.00e+00 g/cm³	0.00e+00 cm	0.00e+00 g/cm²

Input for covers in SkinDose

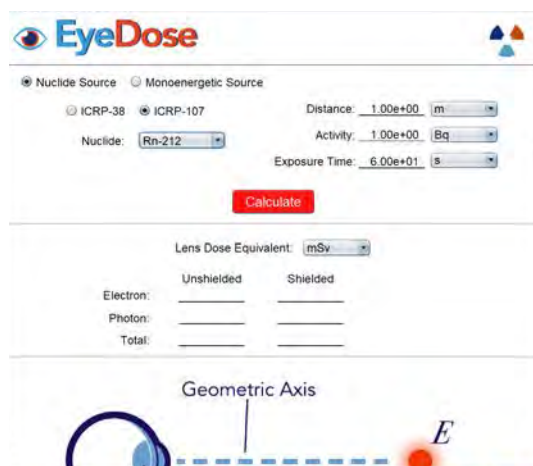
VARSKIN+ and its predecessors are used in industry and hospitals for calculating skin dosages. The National Health Services in the United Kingdom has been a prominent user of VARSKIN+ in assessing safety measures for staff working with nuclear medicine, as well as patients receiving such treatments. (continued on p. 5)

CODE UPDATES

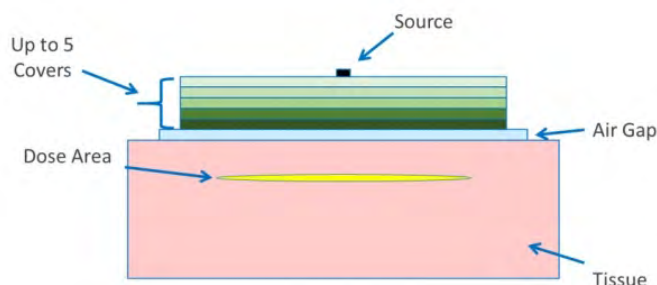
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(cont. from p. 4)

The newest version performs the same capabilities as the previous on a more advanced GUI. Additionally, VARSKIN+ has an enhanced photon and electron dosimetry model, as well as inclusion of airgap and cover material effects. Both ICRP 38, “Radionuclide Transformations – Energy and Intensity of Emissions” (1983), and ICRP 107, “Nuclear Decay Data for Dosimetry Calculations” (2008), libraries are available at the user’s option and contain data on gamma rays, X rays, beta particles, internal conversion electrons, and Auger electrons.



EyeDose interface, with new reference source implemented



Introduction of coverage material for skin dosage calculations

This newest version of VARSKIN also introduces three new dosimetry modules for wound, neutron, and eye dosimetry. Additionally, the skin and wound dose modules implement a new alpha dosimetry model for shallow skin assessments. VARSKIN+ can be used to perform wound dose assessments if the metabolic modeling and dosimetry methods are consistent with NRC regulations (e.g., use of 10 cm² averaging area for skin dose assessments and tissue or organ weighting factors as defined in 10 CFR 20.1003).



NeutronDose module and interface



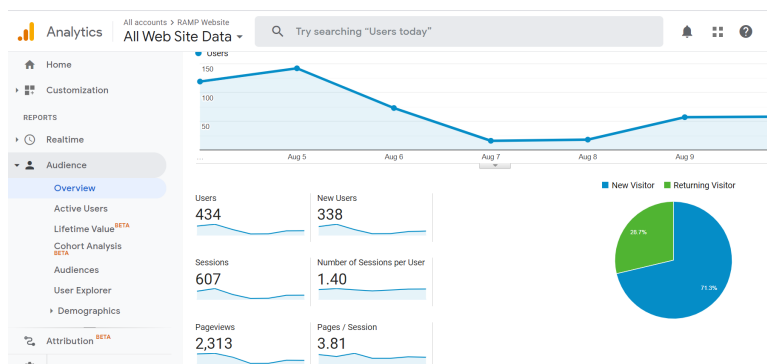
WoundDose module and interface

RAMP ON THE WEB

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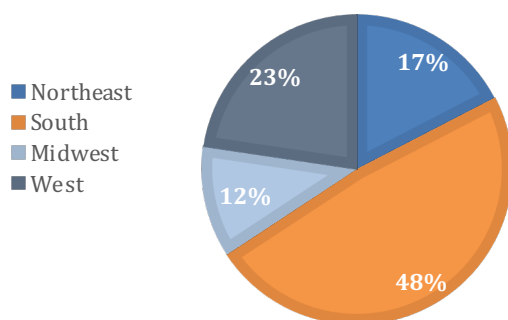
RAMP User Analytics: What is it?

With over 3000 individuals from the United States and around the world, RAMP needs an effective way of understanding its users. Using Google Analytics integration, the RAMP team can learn more about the users and their interactions with the website. Google Analytics allows RAMP to monitor access to web pages, code downloads, and the location and number of users. From this, the RAMP team can receive valuable insight on tracking code popularity, determining priorities in code improvements, and analyzing trends regarding safety in nuclear industries, regulators, and academia.

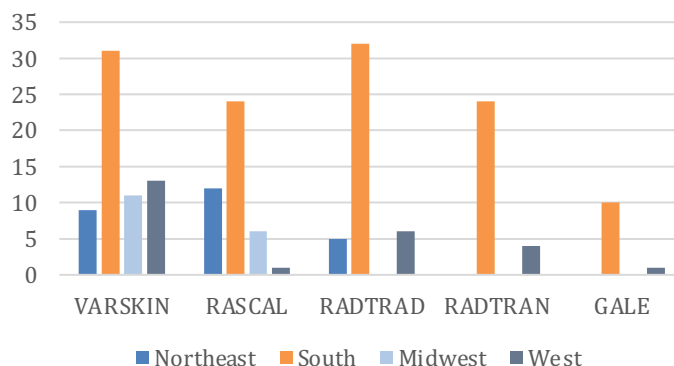


RAMP Users: United States

PROPORTION OF CODE DOWNLOADS BY US REGION



CODE DOWNLOADS BY US REGIONS



There have been over 1000 code downloads from the United States alone in the past year. Most of these downloads came from states in the South, which can be attributed to the location of NRC Headquarters. Since the beginning of this year, RAMP has gained over 450 users from the United States alone, ranging from State and Federal governments to universities and commercial entities. *(continued on p. 6)*

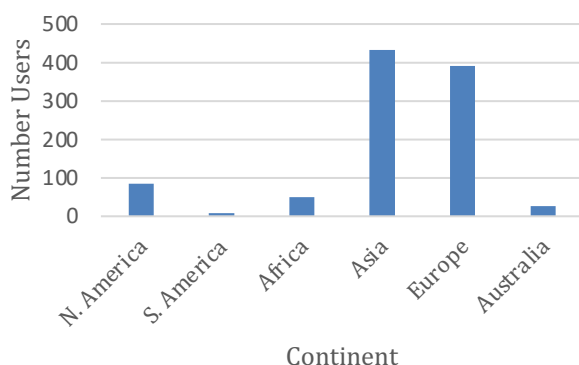
RAMP ON THE WEB

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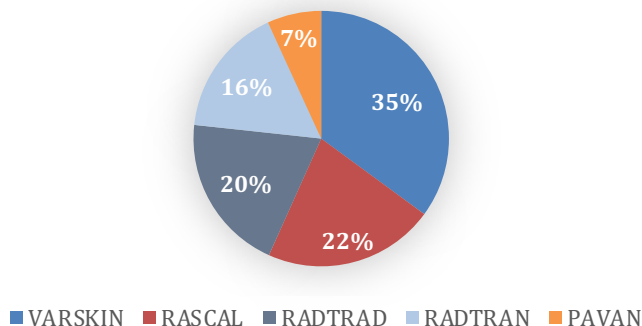
RAMP Users: Around the Globe

Since the start of 2021, RAMP has acquired over 200 new international users from 16 different countries that span six continents. RAMP has partnered with various international regulators and academic institutions for fulfilling their safety and research needs. Some of RAMP's notable international users include Kyung Hee University in South Korea, the National Health Services of the United Kingdom, the Nigerian Nuclear Regulatory Authority, and the National Nuclear Safety and Safeguards Commission of the United Mexican States.

RAMP Users per Continent 2020-2021



International Code Download Breakdown



New Website Addition: University Corner!

RAMP is excited to launch its own University Corner on the RAMP website. The University Corner aims to promote RAMP outreach to students and educators as well as showcasing students' work with RAMP codes. RAMP has members from over 80 international and domestic academic institutions and the University Corner is a way to encourage and expand university involvement within RAMP by current and future RAMP partners.

University Corner will contain many features to assist students and educators. One of the most helpful aspects will be the library, where students can find references for research and published literature that used the RAMP codes. Additionally, the web page will show students presentations and highlight opportunities for students and educators. University Corner will also provide code workbooks and training tools for students and instructors.



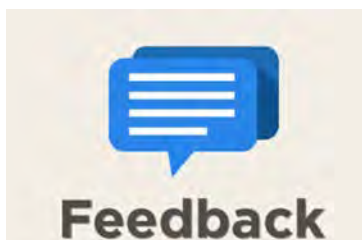
Photo Credits: "Library" by [camera_phone_lomo](#)

FUTURE EVENTS

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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.



IN THE NEXT ISSUE OF RAMPED UP...

- 2021 RAMP User Meeting Highlights
- Drones
- Code Consolidation
- RAMP around the World!
- RAMP in Numbers
- ...and More!!



OCTOBER 25 - NOVEMBER 4, 2021

Virtually hosted on Zoomgov

All times U.S. Eastern Daylight Time (EDT)



Monday October 25, 2021

8:30 AM – 9:45 AM	Opening Remarks Feature Presentation: Alice Caponiti, DOE Deputy Assistant Secretary for Reactor Fleet and Advanced Reactor Deployment
10:00 AM – 12:00 PM	Student Symposium
1:00 PM – 4:00 PM	Dosimetry Analysis Symposium

Tuesday October 26, 2021

8:00 AM – 9:00 AM	Q&A with Stephanie and Vered
9:00 AM – 12:00 PM	VARSKIN - Skin Dose
1:00 PM – 4:00 PM	VARSKIN - Neutron Dose

Wednesday, October 27, 2021

8:00 AM – 9:00 AM	Morning Primer: Advanced Code VARSKIN Discussion
9:00 AM – 12:00 PM	VARSKIN - Eye Dose
1:00 PM – 4:00 PM	VARSKIN - Wound Dose

Thursday, October 28, 2021

8:00 AM – 9:00 AM	Morning Primer: SNAP/RADTRAD
9:00 AM – 12:00 PM	Non-LWR Symposium
1:30 PM – 4:00 PM	Non-LWR Symposium

Friday, October 29, 2021

8:00 AM – 9:00 AM	Morning Primer: User's Choice
9:00 AM – 12:00 PM	VSP Bootcamp
1:30 PM – 3:00 PM	VSP Bootcamp
3:00 – 4:00 PM	Drones

RASCAL Sessions

RASCAL sessions are capped to 40 participants. All participants must be RASCAL users. Register for the sessions that would benefit you most.

Monday November 1, 2021

8:30 AM – 11:30 AM	RASCAL for Beginners
11:30 AM – 12:00 PM	Q&A for Beginners (Optional)

Tuesday, November 2, 2021

8:30 AM – 11:30 AM	RASCAL Models Overview
11:30 AM – 12:00 PM	Q&A (Optional)

Wednesday, November 3, 2021

8:30 AM – 11:30 AM	RASCAL Scenario Problems
11:30 AM – 12:00 PM	Q&A (Optional)

Thursday, November 4, 2021

8:30 AM – 11:30 AM	RASCAL Advanced Discussion
11:30 AM – 12:00 PM	Q&A (Optional)

Virtual meeting buffer between sessions | Country to Country Discussions will be scheduled on a per need basis