2016 Domestic RAMP Users Group Meeting Recap

In October 17-21, 2016, the NRC hosted another successful week-long RAMP users' meeting at the Hilton Rockville Meeting Center with over 50 participants in Washington DC. Six countries were represented among the international users: South Africa, Canada, South Korea, the United Arab Emirates, China, and Taiwan. Domestic users comprised of multiple U.S. government and state agencies, national laboratories, universities, and some from the nuclear industry. The meeting offered training and discussion sessions for RASCAL, VARSKIN, RADTRAD, GENII, PiMAL, GALE, HABIT, Radiological Toolbox, DPFPAK, and the Atmospheric Codes. The hands-on training with the code developers allowed users to test the codes and their understanding and ability to use them. Users were able to ask more in-depth questions pertaining to their needs in the discussions. Aside from networking and collaborating, RAMP users also had the opportunity to relax and socialize at the local Millers Ale House, take a night tour of Washington DC, and a tour of the NRC Operations Center throughout the week.

What's Been Happening with the RAMP Codes?

RASCAL: The RASCAL Development Team (RDT) is working on an update to RASCAL version 4.3.3 to correct code errors, add US AP1000 nuclear power plant sites and add the international meteorology search feature to MetFetch. Planned for Summer 2017 release. The RDT is also working on RASCAL version 5.0 to be written in Java with a more user friendly GUI and code flexibility for future sites and reactor types.

GALE: Released GALE 3.0 in January 2017 for NRC staff for evaluation. This version allows users the option to select a reactor coolant source term (ANS/ANSI-18.1-1984, 1999, & 2016) and select GALE fixed modeling parameters (GALE86 or GALE09). The user can also choose to modify certain GALE fixed modeling parameters for both PWRs and BWRs.

VARSKIN: Transitioned to a new website on the RAMP webpage. Released version 5.3 which addressed errors related to calculated dose for relatively long exposure times from very short-lived nuclides; addressed an off axis angle error when there was a significant difference between the radius of a volumetric source and the radius of the dose averaging disk; increased the air-gap limit from 5 cm to 20 cm; and a new color scheme in VARSKIN to make it easier to read. Working on an update (version 6.0) for release in Fall of 2017.

SNAP/RADTRAD: SNAP Model Editor version 2.5.3 with RADTRAD plugin version 4.11.5 was released in January 2017 and AptPlot version 6.7.2. was released in February 2017. Update to the RADTRAD-AC (version 4.5.5) anticipated for release in April 2017.

RAMP Team Highlight

VERED ANZENBERG SHAFFER, PH.D., is the newest member to the U.S. NRC RAMP Team. Dr. Shaffer is also the new VARSKIN Program Manager.
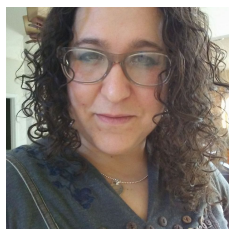
Dr. Shaffer joined the NRC in 2008 after completing a doctorate program in Nuclear Engineering with a focus in Radiation Biology. Her undergraduate degree is BioNuclear Engineering. Through out her educational training, Dr. Shaffer focused on the areas of health physics and medical usage of radioactive materials.

At the NRC, Dr. Shaffer has worked on licensing and inspections of medical and industrial facilities. She has assisted in epidemiology projects and on training development in the health physics area for the agency. Her focus has been in the medical usage of nuclear material at the agency as well as communication outreach to the public.

For RAMP, Dr. Shaffer would like to increase international outreach and communications and to grow the international community in the RAMP program. She will work closely with the RAMP team as the program transitions from a training program to a technical exchange meeting format. The first of this transition will occur during the October 2017 meeting with the VARSKIN Technical Meeting. Stay tuned for more information to come soon!

International Partners

Thank you Atomic Energy Council of Taiwan for meeting with the RAMP Team and US NRC senior management this past December 2016 on discussions related to the RAMP program. And a thank you to Taiwan for hosting the RAMP International Meeting in April 2017.

We also want to welcome the following new international members to the RAMP User Group:

VARSKIN: Ben-Gurion University (**Israel**), National Institute for Nuclear Physics (**Italy**), Australian Radiation Protection and Nuclear Safety Agency (**Australia**)

MILDOS: Open University of Tanzania (**Tanzania**)

Highlight: Atmospheric Codes

By Kerstun Norman
US Nuclear Regulatory Commission

The atmosphere influences gaseous effluents released at nuclear power plants through dilution and dispersion. The RAMP website includes 3 atmospheric dispersion computer codes (XOQDOQ, PAVAN, and ARCON96) that are based on a straight-line Gaussian model. A technical support page for each code provides users the option of viewing information posted to the forum or submitting an email (RAMP@nrc.gov).

XOQDOQ is a computer code used to evaluate routine or anticipated, intermittent releases of radionuclides at nuclear power plants. These assessments are required by 10 CFR Parts 50 and 100. Relative atmospheric dispersion (X/Q) and deposition factors (D/Q) are calculated for 22 specific distances out to 50 miles from the site in each directional sector.

PAVAN is a computer code used to estimate relative ground-level air concentrations (X/Q) for the assessment of potential accidental releases of radioactive material from nuclear facilities. These assessments are required by 10 CFR Parts 50 and 100. PAVAN uses joint frequency distributions of wind direction and wind speed by atmospheric stability to estimate
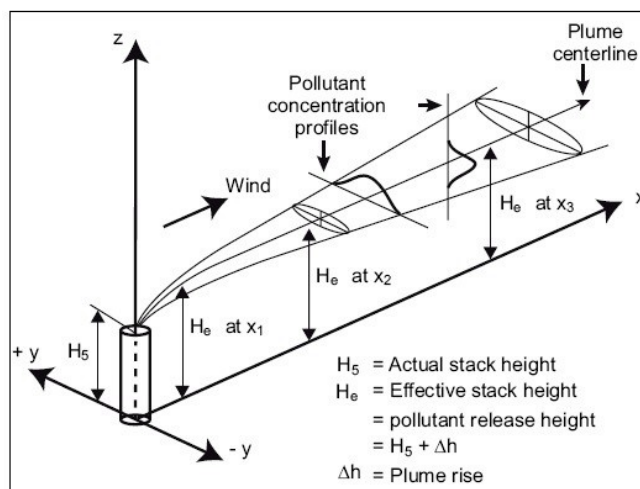
Schematic of the Gaussian plume (Schulze and Turner, 1996)

relative air concentration values for specific averaging time periods at specified distances. In particular, the averaging time periods range from one hour to 30 days in duration, and the distances usually correspond to the exclusion area boundary and the outer boundary of the low population zone.

ARCON96 is a computer code used to calculate atmospheric relative concentrations (X/Q) in support of control room habitability assessments required by 10 CFR Part 50, Appendix A, General Design Criterion 19. It uses hourly meteorological data and the atmosphere's influence in the vicinity of buildings to calculate the relative concentration at control room air intakes. These concentrations would be exceeded no more than five percent of the time and calculated for averaging periods ranging from one hour to 30 days in duration.

Spring 2017 RAMP USERS GROUP MEETING - TAIWAN

April 24 – 28, 2017

Howard Civil Service International House

DESCRIPTION OF TRAINING AND EVENTS 8 AM- 5 PM		RAMP Users' Meeting TAIPEI, TAIWAN April 24-28, 2017		
Mon., April 24, 2017	Morning Session	Opening Remarks and Plenary Session		
	Afternoon Session	SNAP/ RADTRAD	GENII	HABIT (Discussions)
Tues., April 25, 2017	Morning Session	SNAP/ RADTRAD		GENII
	Afternoon Session			
	Evening	Banquet Hall Reception		
Wed., April 26, 2017	Morning Session	SNAP/ RADTRAD	GENII	Code Discussions
	Afternoon Session	Nuclear Safety Duty Center and National Palace Museum Tour (optional)		
Thur., April 27, 2017	Morning Session	RASCAL	VARSKIN	ATM Discussions
	Afternoon Session			
Fri., April 28, 2017	Morning Session (day ends at noon)	RASCAL	VARSKIN	
		RAMP Closing Remarks and Ceremony		

Save the date:
2017 RAMP Users Group Meeting & VARSKIN Technical Meeting
October 16-20, 2017
Washington DC