

## **RAMP: The Radiation Protection Computer Code Analysis and Maintenance Program**

## What Is RAMP?

The U.S. Nuclear Regulatory Commission (NRC), Radiation Protection Computer Code Analysis and Maintenance Program (RAMP), develops, maintains, improves, distributes, and provides training on NRC-sponsored radiation protection and dose assessment computer codes. These codes cover licensing, emergency response, and dose assessment.

The codes are used by NRC staff, other U.S. Federal agencies, the NRC's Agreement States, licensees, and international partners.





### Office of Nuclear Regulatory Research



# Codes in RAMP

### **Emergency Response - RASCAL**

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



### **RASCAL Release Pathways**

### C3: Available release pathways Pathway from sky well to reactor building (secondary containment Pathway to atmosphere Through the suppression poo Via Steedby Gas Tractment System (SBGTS) Through the dry well wall Direct from reactor building or offset repid. Expass reactor building BWR Mk1 - Dry Well- Direct Reactor Building Secondary Containment Hair clean by Low pressure system .CK Cancel Help Even Tarbine Building .







NRCDose3 - Version 3.0.10 (JUNE 2019)

Ouit About Manuals

LADTAP Liquid Pathway Dose Assessmen

GASPAR Gaseous Pathway Dose Assessmen

Annual Average Meteorological Dispersion and Deposition

his computer program was created by an agency of the United St remment. Neither the United States Government nor any agency thereo nts. In addition you may not distribute this computer program or use this mputer program without the permission of the U.S. Nuclear Regulatory

### RASCAL 1st year Intermediate Phase TED



## **Nuclear Power Plant Licensing Assistance**

**SNAP/RADTRAD:** Estimates doses to the public, from design-basis accidents (DBA), at the exclusion area boundary (EAB) and low population zone (LPZ) and occupational doses in the control room

operations. (RAM) transportation. effluents from nuclear power plants.



**HABIT:** Estimates 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.

**GALE:** Estimates quantities of radioactivity released by a plant through liquid and atmospheric discharges during routine

**RADTRAN:** Risk and consequence analysis of radioactive material

**NRCDose:** User-friendly graphical user interface (GUI) for the LADTAP II, GASPAR II, and XOQDOQ programs, which are Fortran codes used to implement NRC's current requirements for As Low As (is) Reasonably Achievable (ALARA) for radioactive







# Codes in RAMP

### **Environmental and Atmospheric Assessments**

**GENII:** Estimates radionuclide concentrations in the environment and dose to humans from acute or chronic exposures from radiological releases or initial contamination conditions.

**MILDOS:** Calculates radiological dose commitments received by individuals and the general population within an 80-kilometer radius of an operating uranium recovery facility.

PAVAN, ARCON96: Models the atmospheric influence on routine radiological releases and design-basis accidents.





radiation fields. arms and legs.

✓ high ☐ medium ☐ low





Phantom Parameters Set Transparencies Sliders Text Simulation Shoulder Rotation Up / Down Up / Down 57 56 Front / Back Front / Back 25 0 Ellbow Rotation Left Right Out / In Out / In 102 96 Up / Down Up / Down 42 18 Hip Rotation Left Right Out / In Out / In 9 79 Up / Down Up / Down	VARSKI
Knee Rotation   Snap Image	

### **Other Dose Assessments**

Radiological Toolbox: Database that includes dose coefficients for exposure to radionuclides distributed in the environment and for exposures to photon and neutron

**VARSKIN:** Performs confirmatory calculations of licensees' submittals on skin dose estimates at any skin depth or volume with point, disk, cylindrical, spherical, or slab surfaces. Also enables users to compute doses from multiple sources. **PIMAL:** Graphical user interface of a phantom with moving









# **Users' Group Meetings and More**

RAMP hosts two meetings a year during the fall and spring, alternating between domestic and international locations.

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![](_page_3_Picture_5.jpeg)

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as trainer and user discussions. RAMP is now shifting to hosting more topic-based technical sessions and seminars. To date, several VARSKIN technical meetings and a symposium on dose to the lens of the

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### Access to codes, updates, training materials, and technical documentation are only available to RAMP members.

### Head to the Web site at <u>https://ramp.nrc-gateway.gov/</u> for more information!

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