

1.) What is V+ and what is it used for?

V+, formerly VARSKIN+, is a software wrapper for several different dosimetry codes. The original VARSKIN is contained in the first V+ module called SkinDose. Additional modules include WoundDose, NeutronDose, EyeDose, ExtravDose, and Rad Toolbox. These codes are used to calculate radiation dose to various organs of the body and to provide radiological data all in one convenient location.

2.) What is the latest version of the V+ software and how can I obtain a copy?

The latest version is V+ 2.1. This version was posted to the RAMP website in April 2025. Individuals interested in obtaining this version of the code should check out the “Registration for the V+ Code” navigation link on the U.S. NRC RAMP website.

3.) Is there a fee associated with obtaining a copy of V+?

No. A user can obtain V+ for free. The ExtravDose (Extravasation Dosimetry) module is made available free of charge to all RAMP users until January 1, 2026. During this period, the NRC RAMP program encourages users to provide feedback to support further refinement and development of the module. To ensure continued support for the ExtravDose module, a new fee structure will take place starting January 1, 2026. The other V+ modules will continue to be free to all RAMP users. U.S. University staff and students, and Federal/State government employees will receive free access to the ExtravDose module if they renew their license every two years. International organizations, private entities, U.S. licensees, and government contractors will be required to pay \$2,000/year for access to the ExtravDose module.

4.) Can I share my copy of the V+ folder with others?

No. V+ users are required to complete a non-disclosure agreement (NDA) for their copy of the software. The NDA states that the user agrees not to share their copy of V+ with any third party without obtaining prior written permission from the NRC.

5.) What if I have multiple users at my facility; do I need to fill out an NDA for each user?

No. The NDA allows for a list of multiple users at your facility, but no more than 5 users per license for ExtravDose.

6.) How often is the V+ computer software updated?

V+ is typically updated every 9-12 months. Earlier updates are issued if significant changes occur in the software.

7.) Is V+ only used domestically?

No. V+ is used by many international government agencies and is an important computer code in the US NRC’s Radiation Protection Computer Code Analysis and Maintenance Program (RAMP).

8.) How accurate are the V+ modules?

Uncertainty is primarily related to the user’s definition of the exposure scenario. A couple recent papers have shown that some of the V+ modules compare very well with probabilistic (Monte Carlo) and deterministic methods of estimating radiation dose. A few of these papers are listed in the technical documents section.

9.) What type of computer do I need to run V+?

V+ can be installed on computers running the latest Windows operating system (back to Windows 7).

10.) Will V+ run on a MAC?

Not directly. V+ will, however, run on a MAC Windows emulator or virtual machine.

11.) How much computer disk space does V+ need?

The V+ folder uses about 900 MB of hard-disk space.

12.) How do I install V+?

V+ has now been updated to be a single-click install. The installer pop-up screen will guide you through the installation. There are instructions at the beginning of the User Manual.

13.) Are there any dependencies/prerequisites required prior to installation?

No. All dependencies (e.g., Java runtime environment) are packaged within the installer.

14.) Will V+ run on my tablet or smartphone?

No, not currently. V+ was developed for personal computers running Windows operating systems (7.0 or later) and will not run on a table or smartphone. We are, however, considering whether a table/phone application would be useful to our users.

15.) I am getting a .net framework error. What does this mean and how do I fix it?

If you get this error, it means that you are running an outdated version of VARSKIN. Users should use the most current version to avoid this error.

16.) What do I do if I can't get V+ to run on my machine?

If working on an employer machine, check with your computer administrator to ensure something internally to your organization's requirements isn't blocking the installation. If you continue to run into issues, submit a V+ help request by selecting the "VARSKIN Support" navigation link.

17.) Is there any customer support or troubleshooting help available to V+ users using an older version of VARSKIN?

There is limited VARSKIN support available for users with earlier versions of the VARSKIN software. Support is generally provided for the current and most recent versions of the code being distributed under the US NRC RAMP program.

18.) Is there a contact phone number to receive help with the V+ software?

No. Since V+ development and distribution is a collaborative effort between the US NRC RAMP and V+ development teams, V+ users will receive efficient and timely customer support by using the VARSKIN Request Support page on the RAMP website.

19.) What should I do if I get an error message or the V+ code crashes?

V+ users experiencing error messages or code crashes should go to the V+ Frequency Asked Questions (FAQs) page to review the FAQs for similar error messages. If your error message is not mentioned in the FAQ, go to the V+ Forums page to review the forum boards for the error message. If not listed in the error reports, log into the RAMP website and go the Error (Bug) Reports forum board to add this error message to the forum.

20.) Is there a forum that V+ users can go to for discussions related to the modules used in the V+ code?

Yes. The V+ forum is available on the RAMP website to all registered V+ users. To access the forum, select the "VARSKIN Support" navigation link on the US NRC RAMP website.

21.) How can I get information about the training available for V+ users?

RAMP members can get training information (including training course dates, online training modules and presentations) by selecting the VARSKIN Training & Presentation Materials link on the RAMP website. Additional information can also be found in the Meetings page.

22.) Where can I find the V+ User Guide and other related technical documentation?

The V+ User Guide is available at the VARSKIN Documentation navigation link. Other V+ technical documents are available via that same link.

23.) What is an extravasation as related to the NRC medical definition?

An extravasation is the leakage of radiopharmaceutical administrations from a blood vessel or tube into the surrounding tissue. The extravasation of a radiopharmaceutical can result in radiation dose being received by healthy tissue near the injection site rather than by a cancerous tumor.

24.) Why did NRC develop the extravasation model?

The NRC developed the extravasation dosimetry model to better determine the potential for high radiation dose to health tissue

25.) I normally use two monitors with different resolution settings. Will the ExtravDose module accommodate these settings.

Yes. The program detects changes in resolution and resets the input windows each time windows move across monitors. If, however, the magnification settings are different on the two monitors, issues may arise but can be corrected by cycling through the selection of Basic and/or Advanced mode. A screen resolution of 1152 x 864 is the minimum.

26.) In BASIC mode, how do I change the value of Pixel Side Length?

In BASIC mode the user is limited to a single homogeneous tissue layer. Therefore, the pixel side length is set equal to the Effective Tissue Thickness.

27.) Dose the new NRC's extravasation model estimate dose from alpha-particle emissions?

Yes. Radiation dose is calculated for alpha, electron, and photon emissions.

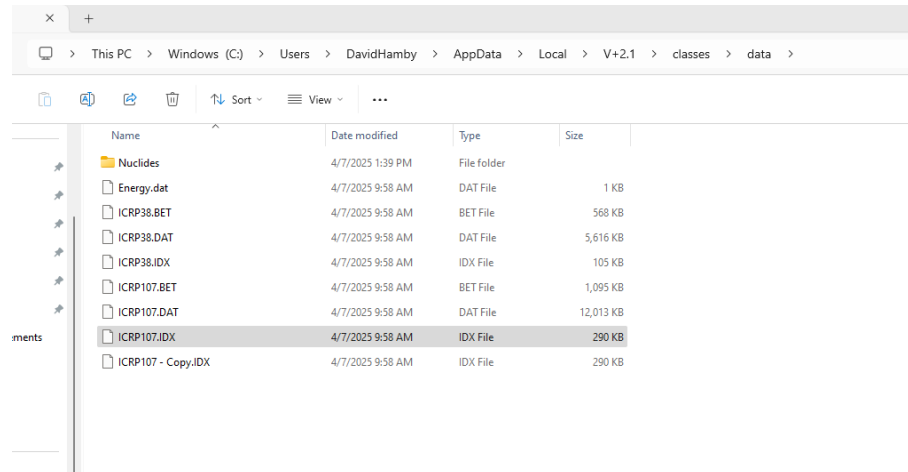
28.) Dose the extravasation model handle decay progeny?

No. In its current form, ExtravDose calculates dose to tissue from only the parent radionuclide emissions. Future versions may be coded to handle emissions from decay chains.

29.) I need to determine ROI dose from progeny radionuclides, but with a short half-life, running the nuclide with its own half-life (without constant replenishing), I get a very small dose. Cesium-137, for example, does not include dose from the 662 keV photon, unless I run Ba-137m. But that nuclide has a short half-life and would not be replenished as if it were decaying from Cs-137. Is there a way to get around this limitation?

Yes. The user can go into the ICRP107.IDX file and edit the half-life of the nuclide in question. For the progeny of Cs-137, specifically Ba-137m, the file to edit can be found (with a default installation) here:

C:\Users\<username>\AppData\Local\V+2.1\classes\data



Prior to editing, create a copy of the ICRP107.IDX file. Edit (with any text editor) the highlighted file above, find Ba-137m and change its half-life to that of the parent (if equilibrium is assumed). If something other than equilibrium exists, you will have to calculate some equivalent half-life. Use either “s”, “m”, “h”, “d”, or “y” for units and keep the numerical format. The half-life appears immediately after the nuclide name. Once the edit is made, ‘reload’ the nuclide in ExtravDose (simply select something else and then go back to Ba-137m and hit TAB).

30.) Does the Syringe geometry model consider the presence of the plastic syringe when calculating dose to skin?

The code does NOT consider syringe material in the calculation. The syringe model is one dating back to the days of Varskin 3. It was turned off in Varskin 4, and recently turned back on with V+ 1.0, but without alteration from its earlier version. The model essentially (and only) turns the cylindrical source on its side for the dose calculation. The user can confirm this with these two simulations:

Source:	1 MBq of P-32	
Geometry:	SLAB	SYRINGE
Thickness:	0.886 cm	
Width:	0.886 cm	
Diameter:		1 cm
Density:	1 g/cm ³	1 g/cm ³
Dose Depth:	7 mg/cm ²	
Exposure:	1 hour	
Avg Area:	10 cm ²	
Air Gap:	0	
Cover:	None	

Running the two scenarios above will BOTH give you an Electron dose of 10 mSv. To create a more realistic Syringe model, employ a COVER of 0.9 g/cm³ with a thickness of

0.31 cm. The user should turn off backscatter correction (but with the cover, it is insignificant). V+ SkinDose will then calculate an electron dose of 0.55 mSv; a reduction of a factor of about 20.