

## Walker, Stuart

---

**From:** Clements, Julie A HNC@NWO <Julie.A.Clements@usace.army.mil>  
**Sent:** Wednesday, August 24, 2016 3:38 PM  
**To:** Walker, Stuart  
**Cc:** Hays, David C NWK  
**Subject:** FW: draft revisions for PRG calculator to review

Dave came through on your short suspense! Here are his comments. I will continue my review and will make your "longer comment period". As I work through the User's Guide (I'm reading a hard copy), I wonder if I'm the only one who wishes it were in a larger font. LOL! Maybe I'm just getting old. No wait . . . that can't be the problem.

1. The user guide does not appear to be updated with the changes. E.g. Section 2.2.2 still includes the +D instructions, the Resident Soil Alternative External Exposure analysis is not discussed, and GSFo, and GSFb are not defined in the guide or online table info (would help to add to Table 1 of section 5).
2. On the website the What's new discussion is slightly different than the language in Stuart's email. The Whats new GSFb discussion states "...shielding from a concrete slab..." while Stuarts email language says "shielding provided by clean soils". This leads to possible confusion for the user, I assume clean soil is the intent?
3. Comments to the new inputs for the calculator:
  - a. When entering the decay chain parent and checking "include daughters" the resulting list of daughters to input activity for are incorrect. They include the stable end isotopes (Pb-206, Pb-207, and Pb-208) and some isotopes that are not a part of the decay schemes (e.g. for Ra-226, Rn-218 and Hg-206 are included). This may be confusing to users. I would guess ORNL used the  $4n, +2$ , etc. rule to select isotopes to list rather than look at actual chains? I like having all the daughter listed though. When updated the user guide should also discuss branching fractions as the calculator lists all daughters (some with extremely small branching fractions that do not contribute significantly to risk).
  - b. Thickness for GSFo is a required input and self explanatory as thickness but GSFo and how used in model is not really defined anywhere that I could find.
  - c. Guidance is needed on how GSFo, GSFi, and GSFb relate or work together. I assume they are related in that GSFi + GSFb applies to the time a receptor is indoors but only GSFb applies to the outdoor time fraction. Not sure about GSFo maybe both? Think this could be confusing if not explained in users manual.
  - d. The produce options are helpful and seem to work and are in general ok but a lot of inputs required as the default, definitely something to address in the updated user manual to avoid user confusion. It is unclear how the GSFo and GSFb relate to the produce calculations (they should at thicknesses greater than 1 meter at least). Also, I would think the PEF wind and produce climate zones should be linked, being able to set them differently may be a source of user confusion.

---

**From:** Walker, Stuart  
**Sent:** Friday, August 19, 2016 2:10 PM  
**To:** Clements, Julie A HNC@NWO  
**Cc:** Garufi, Katherine; fdolislager@utk.edu <mailto:fdolislager@utk.edu>  
**Subject:** draft revisions for PRG calculator to review

Hi Julie, I wanted to see if you (and Dave if possible) had an opportunity to do a quick turnaround on some draft changes to the PRG calculator. I am just looking for some initial comments/thoughts on the draft changes prior to my sending them to the regions for a review. At this point I want to see if someone not familiar with the draft changes can follow from the text below, and the changes in the "PRG Calculator" and "User Guide" sections. If possible I would love any quick comments you have by COB Wednesday August 24. I want to send it out for review to the Regions on August 26 and I will provide you with a longer comment period (3-4 weeks then).

I am heading out to county fair. I will be in on Monday (703) 603-8748, and you can call my cell [REDACTED]

There are some draft changes to the PRG calculator available for your review at: BlockedBlocked<https://prg-test.ornl.gov/radionuclides/> <BlockedBlocked<https://prg-test.ornl.gov/radionuclides/>>

User Name and Password are [REDACTED]

Please send me any comments by Friday September ??????. PLEASE DO SHARE outside of EPA.

The draft revisions are described below and are also in the "What's New" section of the draft PRG calculator with appropriate hotlinks to documents:

1. The +D and +E isotopes have been removed from the selection list. Now, a user may select the 'Include daughters' checkbox to see PRG output for the entire chain. The user may select the radionuclide with all of its daughters in secular equilibrium, or select the radionuclide and provide the numbers of years that ingrowth of the daughters has been occurring. [Note Julie, the work of the last sentence is not yet finished for review. A few more weeks, then I can ask for a 3-4 week review while the regions review]
2. In the resident, farmer, and indoor worker soil external exposure equations, a new variable has been added (GSFb) to account for the gamma shielding provided by clean soil beneath a building.
3. Previously, produce intake rates were based on general fruit and vegetable consumption rates. Now, the produce intake rates are derived from 22 individual produce items, found in the 2011 Exposure Factors Handbook, that contribute to the overall produce ingestion PRG. Mass loading factors (MLFs) were also improved, from a single MLF that was applied to all produce, to 22 individual MLFs that correspond with the 22 individual produce items that make up the new produce intake rates. In site-specific mode, users will now be able to select additional animal products including Goat Milk, Mutton Milk, Goat Meat, and Mutton, which are not included in the default animal product PRGs. Users will also be able to select Rice and Grains, which are not included in the default produce PRG. Formerly, the transfer factors used in this risk assessment tool were specific to element only. Now, the transfer factors are element, climate zone, soil type, and produce specific. For more detailed information, Biota Modeling in EPA's Preliminary Remediation Goal and Dose Compliance Concentration Calculators explains where these new intake rates, MLFs, and transfer factors were sourced and how they will be applied to the PRG calculator.

4. For the soil to groundwater SSLs, Kd values can be selected by soil type and the same values are used in produce equations that are used in the Method 1 for the SSL.

#### User Guide changes

Here is a quick list of sections that changed in the User Guide.

- 2.3
- 2.4
- 4.6.4 (notes were added to let users know that TF for poultry is used for fowl and TF for beef is used for game.)
- 5. Table 1 (purple, orange, and green sections)

The equation images for mutton, goat, sheep milk, and goat milk have been developed but they have not coded into the user guide yet. They can be seen in site-specific mode in the calculator.