Message

From: Praskins, Wayne [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4F47BC0A2C2E42A98347D59CD1A98B19-WPRASKIN]
Sent: 6/29/2020 10:19:46 PM
To: Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) [derek.j.robinson1@navy.mil]
BCC: Sanchez, Yolanda [Sanchez.Yolanda@epa.gov]; Chesnutt, John [Chesnutt.John@epa.gov]
Subject: HPNS Evaluation of Building Remediation Goals

Derek –

I had expected to set up a call with the Navy by now to discuss our response to the Navy's evaluation of building remediation goals.

I've held off setting up a call because our group is still working to understand how RESRAD BUILD calculates risk from an area contamination source. This is the same topic we exchanged emails about in May. I'm continuing to work with the Army Corps and our Headquarters staff to try to determine the significance of this issue.

It will be at least another week or two until we are ready for a call. Please give me a call if you would like to discuss.

Wayne Praskins | Superfund Project Manager
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From: Praskins, Wayne
Sent: Tuesday, May 12, 2020 8:57 AM
To: Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1@navy.mil>
Subject: RE: RESRAD question

Thanks.

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From: Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1@navy.mil>
Sent: Tuesday, May 12, 2020 8:50 AM
To: Praskins, Wayne <Praskins.Wayne@epa.gov>
Subject: RE: RESRAD question

Hi Wayne,

Here is the response to your recent question:

As described for Equation 7.1 in EAD-TM-115, doses (and risks) are calculated using the DCFs (and slope factors) for infinite volume sources. A composite geometrical factor is used to adjust the dose (and risk) for area and volume sources that are not infinite in depth or extent. In EAD-TM-115, as the source thickness becomes small (assume < 1 cm and approaching zero), the FGR-12 contaminated surface DCF was used to derive the fit factors for each radionuclide rather than the DCF for a source 1 cm thick. However, the contaminated surface DCF is not used in calculating dose. For risk

calculations, it appears the fit factors derived using DCFs are used with slope factors for volumetric sources. The risk derived using other methods (such as MCNP) for a very thin source and the FGR-13 ground plane slope factors should be comparable to the risk derived using BUILD for a very thin source and the FGR-13 soil (volumetric) slope factors. While BUILD does not provide the individual fit and geometrical factors used to derive dose or risk, several verification reports support that the BUILD method compares closely with other methods.

My RESRAD person believes that USACE may be trying to manually calculate risk from a given source concentration…there is insufficient transparency in the BUILD modeling parameters to support that.

Derek

From: Praskins, Wayne <Praskins.Wayne@epa.gov>
Sent: Wednesday, May 06, 2020 11:22 AM
To: Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1@navy.mil>
Subject: [Non-DoD Source] RE: RESRAD question

Derek –

Thanks! I passed on the response to the Army Corps group and received one follow-up question:

> => The EAD-TM-115 states for dose, "In the limit source depth, ts → zero, the DCF should match the contaminated surface DCF." Is it therefore true that for ts → zero, the Slope factor should match the ground plane SF?

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From: Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1@navy.mil>
Sent: Wednesday, May 6, 2020 8:09 AM
To: Praskins, Wayne <Praskins.Wayne@epa.gov>
Subject: RESRAD question

Hi Wayne,

I received an answer to your question:

> *USACE has reviewed the RESRAD-BLD reference library options for Cancer Slope Factors (CSF) for the external exposure pathway and finds them (e.g HEAST, FGR13) to be in units of risk per pCi/g. For an area source the typical units are in activity/square cm or meter. How does the RESRAD-BLD code account for this difference in units to determine the external risk from an area source?*

Answer:

RESRAD-BUILD uses the slope factors for external exposures listed in the Radionuclide Table of HEAST (2001, https://www.epa.gov/radiation/radionuclide-table-radionuclide-carcinogenicity-slope-factors). These slope factors are in units of risk/yr per pCi/g assuming a uniformly distributed source in a soil layer of infinite thickness and area. For volume sources in RESRAD-BUILD, no adjustment is needed. RESRAD-BUILD considers area sources (concentration in pCi/cm2) as very thin (0.1 cm) volume sources and adjusts the slope factors to account for the actual finite thickness and finite area. These adjustments include multiplication by fit factors (Ka, Kb) that were derived for each radionuclide in

units of cm2/g and other unitless F-factors to account for source properties and receptor location. Risk from external exposures are thereby expressed in risk/yr by multiplying the slope factor (risk/yr per pCi/g), fit factors (cm2/g), F-factors and source concentration pCi/cm2). Detailed descriptions can be found in the 2001 RESRAD-BUILD Verification report (ANL/EAD/TM-115, https://resrad.evs.anl.gov/docs/ANL-EAD-TM-115.pdf).

Best Regards,

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