Subject: FW: Request for peer review on proposed MCNP runs for BPRG surface factor runs
Attachments: ATT00001.txt; BPRG MCNP matrix of runs FINAL rev3 STUART.DOCX

-----Original Message-----
From: Filips, Michael R CIV USARMY CEHNC (USA) <Michael.R.Filips@usace.army.mil>
Sent: Monday, July 13, 2020 9:20 AM
To: Garufi, Katherine <Garufi.Katherine@epa.gov>; Walker, Stuart <Walker.Stuart@epa.gov>
Cc: Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>; Meyer, Richard J CIV USARMY CEHNC (USA) <Richard.J.Meyer@usace.army.mil>
Subject: FW: Request for peer review on proposed MCNP runs for BPRG surface factor runs

Kate,
Please see below response from Corps team.
Thanks
Mike

Michael Filips P.E.
US Army Corps of Engineers
Environmental Center of Expertise
CEHNC-EM/EMS
1616 Capitol Ave, STE. 9200
Omaha, NE 68102
402-697-2625
michael.r.filips@usace.army.mil

-----Original Message-----
From: Clements, Julie A CIV (USA)
Sent: Monday, July 13, 2020 7:51 AM
To: Filips, Michael R CIV USARMY CEHNC (USA) <Michael.R.Filips@usace.army.mil>
Subject: RE: Request for peer review on proposed MCNP runs for BPRG surface factor runs

Good morning Mike!

Dave Hays (CENWK), Jon Rankins (CEMVS), and I reviewed the attached document.

We do not have any comments or concerns.

Julie

From: Meyer, Richard J CIV USARMY CEHNC (USA)
Sent: Thursday, June 25, 2020 9:20 AM
To: Liles, Darrell R CIV USARMY CEHNC (USA) <Darrell.R.Liles@usace.army.mil>; Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>
Cc: Filips, Michael R CIV USARMY CEHNC (USA) <Michael.R.Filips@usace.army.mil>

Subject: FW: Request for peer review on proposed MCNP runs for BPRG surface factor runs
Importance: High

Darrell and Julie,

Just realized that Mike might not have been able to ask you about this – can you provide me a yes/no on doing the review within 3 weeks…see below. If it is yes I will let Kate know, if not within 3 weeks what amount of time is needed or can't it be done?

Regards,

Rich

Richard J. Meyer, Ph.D. (CEHNC-EMS)

Chief, Environmental Sciences Division

Environmental and Munitions CX

Huntsville Engineering and Support Center

U.S. Army Corps of Engineers

1616 Capitol Avenue

Omaha, NE 68102-4901

402-697-2563

[redacted]

Please let us know how we are meeting your requirements by conducting the brief survey located at the link below:

https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fice.disa.mil%2Findex.cfm%3Ffa%3Dcard%26sp%3D135322%26s%3D1202%26dep%3D*DoD%26sc%3D32&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665702583&sdata=FF2c98kzQK4o2cnEG7CmgfBxhoJfFWOKmeCYHLtcmXk%3D&reserved=0 Thank you!

From: Garufi, Katherine <Garufi.Katherine@epa.gov>
Sent: Monday, June 22, 2020 11:31 AM

To: Filips, Michael R CIV USARMY CEHNC (USA) <Michael.R.Filips@usace.army.mil>
Cc: Meyer, Richard J CIV USARMY CEHNC (USA) <Richard.J.Meyer@usace.army.mil>
Subject: [Non-DoD Source] FW: Request for peer review on proposed MCNP runs for BPRG surface factor runs

Mike (and Rich),

Attached and below is a request from Stuart Walker (HQ EPA) for the EMCX to provide radiation support under my generic IA (DW96957990). Can you coordinate and see if your rad folks can turn this around in the next three weeks?

Thanks.

Kate Garufi

Environmental Engineer

Office of Superfund Remediation and Technology Innovation

[redacted]

From: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Sent: Friday, June 19, 2020 3:23 PM
To: Garufi, Katherine <Garufi.Katherine@epa.gov <mailto:Garufi.Katherine@epa.gov> >
Subject: Request for peer review on proposed MCNP runs for BPRG surface factor runs

Hi Kate, can you ask the Corps to review the proposed plan of action in the attached Word file, which is describing the planned MCNP runs to provide surface factors to adjust the external slope factors and dose conversion factors to better model the gamma radiation fields used in our BPRG calculator.

Below is an email chain which may help the reviewers understand some of the rationale behind the choices in the Word attachment.

Note that the choices in the Word file were informed by the site-specific analysis the ACE (Dave Hayes and Johnathon Rankin) conducted on the EPA (e.g., BPRG/BDCC) and DOE (RESRAD Build) models for risk and dose assessment for receptors inside of contaminated buildings.

Stuart Walker

Superfund Remedial program National Radiation Expert

Science Policy Branch

Assessment and Remediation Division

Office of Superfund Remediation and Technology Innovation

W (703) 603-8748

[redacted]

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Friday, June 19, 2020 11:41 AM
To: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Subject: FW: BPRG surface factor runs

Just some internal discussions along the way.

fred d.

From: Dolislager, Fredrick G.
Sent: Thursday, April 30, 2020 3:41 PM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

316L it is. Don’t forget the “L”

fred d.

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >

Sent: Thursday, April 30, 2020 3:33 PM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

Fred,

316 is used for a lot of nautical applications and architecture near the ocean, so I think it's as good as any. I know 302 was used for the Chrysler building and the St. Louis arch was built with 304. I think it's one of those things where we just have to pick one.

Separate simulations have to be run for each material type anyway, so there would be no additional runs.

And, yes. Steel, adobe, and soil were only included for tasks 2-6 (soil only for the floor when we get to the yellow and red cases).

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, April 30, 2020 11:02 AM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

Caleigh,

Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.sciencedirect.com%2Fscience%2Farticle%2Fpii%2FS1738573319304516&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665702583&sdata=UBoCynf%2BqM8Tn0ENNa%2Fra3rraTS%2Bt4bVvc2HNgEKbzE%3D&reserved=0 <Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.sciencedirect.com%2Fscience%2Farticle%2Fpii%2FS1738573319304516&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665702583&sdata=UBoCynf%2BqM8Tn0ENNa%2Fra3rraTS%2Bt4bVvc2HNgEKbzE%3D&reserved=0> Stuart and I like 316L as it seems to be prevalent in the literature as the baseline for comparison to other steels. We looked at other papers too besides the link above. Would you concur?

We also like the plan to use 2mfp for the wall thicknesses. Question, does having different wall thicknesses for different materials create more MCNP runs? Soil wouldn't be a wall, FYI, see your table below.

Recall:

1. For dust ACF (ground plane only) decided to do 4 scenarios:

a. Composite 1

b. Composite 2

c. Wood floor, drywall walls, drywall ceilings

d. Concrete floor, drywall walls, drywall ceilings

Contact me with any questions.

Fred Dolislager

Oak Ridge National Laboratory

P.O Box 2008, Building 2040, MS 6309

Oak Ridge, TN 37831

(865) 576-5451 w

(865) 241-5523 f

[redacted]

fdolislager@utk.edu <mailto:fdolislager@utk.edu>

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<Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=http:%2F%2Fvolweb.utk.edu%2F~dolislag%2F&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665702583&sdata=I%2BCOScb1oRjMQgAkOc4%2B4DLJ4u96zHao%2F0zi5tSSzog%3D&reserved=0>

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >

Sent: Thursday, April 30, 2020 7:51 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

They wanted there to be enough wall for the particles to scatter in. That being said, the 50 cm seems arbitrary. Dr. Hertel and I agree that a wall thickness of 2 mfp would simulate an essentially infinite wall, maximizing the scatter. Although this would create some thick walls, it will produce conservative results. Doing this would give the following wall thicknesses based on 10 MeV photons.

Wall Thickness (cm)

Material

Surface

1 cm

5 cm

15 cm

Infinite (100 cm)

Concrete

40.2

41.2

45.2

55.2

140.2

Wood

155

156

160

170

255

Glass

37.9

38.9

42.9

52.9

137.9

Drywall

38.2

39.2

43.2

53.2

138.2

Adobe

51.5

52.5

56.5

66.5

151.5

Soil

51.5

52.5

56.5

66.5

151.5

Steel

More information required

I think varying the wall thickness based on the mfp is the best option. Alternatively, we could vary it based on realistic wall thicknesses. Either way, I will need additional information about the steel. The composition of steel is highly variable. I can easily access the composition for boron stainless steel, carbon steel, HT9 stainless, stainless 202, stainless 302, stainless 304, stainless 304L, stainless 316, stainless 316L, stainless 321, stainless 347, stainless 409, and stainless 440.

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Wednesday, April 29, 2020 11:06 AM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

It's certainly not like it's a fixed ratio. Those are some thick walls for 15 and 100cm source thicknesses. Do you care to ask Lauren or Nolan?

fred d.

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Wednesday, April 29, 2020 10:45 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

I was referring to all 6 tasks (ACF runs included). I would think that wall thickness would vary by material, but now that you mention it, room size could be a factor as well.

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Wednesday, April 29, 2020 10:40 AM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

Howdy Caleigh,

Why can't anything be simple? 😊 I assume you are asking about the BPRG ACF runs. I would think that the wall thickness would vary by room size not contamination thickness. Do you have a suggestion?

fred d.

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Wednesday, April 29, 2020 10:21 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

Hi Fred,

I have a quick BPRG question for you. Previously, the thickness of the walls were variable(200 cm for surface contamination, 51 cm for 1 cm depth, 55 cm for 5 cm depth, 65 cm for 15 cm depth, and 150 cm for 100 cm depth). Is that how you would like to run the new set or would you like to use a standard wall thickness? There didn't seem to be an explanation for the variation.

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, April 2, 2020 2:50 PM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

Caleigh,

Sounds good. So test run is next?

fred d.

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Thursday, April 2, 2020 12:07 PM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

Fred,

Yes, the F4 tally is the average flux over an entire cell that I was referring to. Lauren's extends floor-to-ceiling (not at 1-m). I looked into it a bit more and can get around the 40-cm thick issue, so the only question with a slab will be runtime. As far as the grid is concerned, it is not required in order to get the average over the entire room and would again increase runtime.

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, April 2, 2020 11:01 AM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

Caleigh,

I decided to look at Lauren's report <Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fepa-bprg.ornl.gov%2Fdocuments%2FFinkleaRoomThesisFinal.pdf&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665702583&sdata=dLzKMekgEPRJr6E%2B63r7rCEsvSH%2B6hX3kp8hhK1fqig%3D&reserved=0> …. Apparently, the average was done with a F4 tally negating the need to divide the room into cells. My concern then is if the F4 is at 1m. I then looked at Keith's old paper and he divided the rooms into 19 by 19 grid. He did 1 meter. He used the 361 cells to get the average. Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fepa-bprg.ornl.gov%2Fdocuments%2FContaminated_Room_Dose_Rate_03_01_07.pdf&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665702583&sdata=rbFHyW3zP%2B6Noon2cFkggWVyQu8jmkONmfX2n8cYOfw%3D&reserved=0 <Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fepa-

bprg.ornl.gov%2Fdocuments%2FContaminated_Room_Dose_Rate_03_01_07.pdf&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665702583&sdata=rbFHyW3zP%2B6Noon2cFkggWVyQu8jmkONmfX2n8cYOfw%3D&reserved=0>

My idea of Average = (center+ (center wall x 4)+(corner x 4))/9 now seems very bad.

fred d.

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Thursday, April 2, 2020 10:41 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

Fred,

Putting the tally at a height of 1-m makes sense to me as well. The downsides are that it could increase the runtime and the way the point tallies are currently defined would require the slab to be at least 40-cm thick. Let me run a test to see if I can get around those problems.

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, April 2, 2020 10:11 AM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

Caleigh,

Interesting. I would presume the corner, center wall and center tallies are done at 1m. The average should also be one meter if that’s the case for other 3. LMK what you think of that.

fred d.

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Thursday, April 2, 2020 9:25 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

Yes, we can have multiple tallies without increasing runs.

MCNP has a tally which gives the average flux over an entire cell. For Lauren's room ratios, she defined the entire room as the cell (floor to ceiling, wall to wall). That is what I was planning on doing here as well. I would expect the formula below to be close, but using an average flux tally across the entire room would be more accurate. We could also define a wall-to-wall slab centered at 1 m if you want the average across the room at a height of 1 m.

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, April 2, 2020 8:54 AM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

One more thing on the BPRG ACF. We can have multiple tally points and not increase number of runs, right? I'm considering adding the same positions that the 3D has. That would give an appearance of consistency between the dust and 3-D. Also if it is that "easy" folks would ask why didn't you just do multiple tallies? My only concern is what to do about 'average'. If I recall, each room was divided into 9 sectors to get the average. Does MCNP just give an average without post processing? Or is post processing to determine 'average' simple enough because center, center wall, and corner are enough to get average? Does this formula work?

Average = (center+ (center wall x 4)+(corner x 4))/9.

LMK your thoughts and I'll run by Stuart or we'll just do it.

Thanks.

Caleigh,

Yesterday was very busy. Interesting about the shortage of cores. Maybe more expensive cores are still available in more expensive machines? How much would the MCNP license/source code cost? In general, I'm hoping that you can start in some fashion soon.

Thanks

Fred Dolislager

Oak Ridge National Laboratory

P.O Box 2008, Building 2040, MS 6309

Oak Ridge, TN 37831

(865) 576-5451 w

(865) 241-5523 f

[redacted]

fdolislager@utk.edu <mailto:fdolislager@utk.edu>

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<Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=http:%2F%2Fvolweb.utk.edu%2F~dolislag%2F&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665712585&sdata=BnK6iC8ua%2Bnk12V8DQc7CjOaCqVLtKzWu9jgQQTvQpw%3D&reserved=0>

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Wednesday, April 1, 2020 9:30 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

Fred,

I can likely start on one of the computers in my office by the end of next week (when they are done with their current simulations). I've requested a quote for a few machine options. They do have a warning on the site about backlog due to an industry wide shortage of processors though. It sounds like SHIFT may present a problem from an availability standpoint. Anthony is looking into it. In general, the clusters have limited availability at the moment. My access to Apollo is restricted to 8 cores, which are currently running simulations for my dissertation. If I buy the MCNP source code, I can be granted access to other clusters, but rumor has it that availability on those are extremely limited.

Feel free to call me anytime today. My cell is [redacted]

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Tuesday, March 31, 2020 12:09 PM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: RE: BPRG surface factor runs

Caleigh,

Perfect. I was about to check in on you. He's ready to start as soon as you are. Today he reiterated to not hesitate to buy more machines. I do like the idea of using SHIFT and other clusters if available. I'm free to discuss tomorrow

Fred Dolislager

Oak Ridge National Laboratory

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Oak Ridge, TN 37831

(865) 576-5451 w

(865) 241-5523 f

[redacted]

fdolislager@utk.edu <mailto:fdolislager@utk.edu>

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<Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=http:%2F%2Fvolweb.utk.edu%2F~dolislag%2F&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665712585&sdata=BnK6iC8ua%2Bnk12V8DQc7CjOaCqVLtKzWu9jgQQTvQpw%3D&reserved=0>

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Tuesday, March 31, 2020 11:37 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: RE: BPRG surface factor runs

Hi Fred,

I have looked at Stuart's notes. They seem pretty straightforward. I have a few end of the month deadlines, but can talk later this week if you are free.

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Friday, March 27, 2020 10:06 AM
To: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Cc: Armstrong, Anthony <armstrongaq@ornl.gov <mailto:armstrongaq@ornl.gov> >
Subject: RE: BPRG surface factor runs

Caleigh, Stuart's comments are addressed in this version. LMK when you had a chance to look at it.

fred d.

From: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Sent: Tuesday, March 24, 2020 11:58 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Cc: Armstrong, Anthony <armstrongaq@ornl.gov <mailto:armstrongaq@ornl.gov> >
Subject: RE: BPRG surface factor runs

Fred,

I'm not exactly sure what you mean by "ACFs are based on GP over soil or nothing " in the 7th item, but my understanding is that the current baseline is an infinitely thick and wide soil "floor" in open air. There are ACFs for each source thickness and a corresponding baseline with a source of equivalent thickness and infinite width.

Caleigh

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Tuesday, March 24, 2020 11:26 AM
To: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Cc: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >; Armstrong, Anthony <armstrongaq@ornl.gov <mailto:armstrongaq@ornl.gov> >
Subject: RE: BPRG surface factor runs

Stuart, pick a time after 1pm for us to talk.

fred d.

From: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Sent: Monday, March 23, 2020 3:07 PM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Cc: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >; Armstrong, Anthony <armstrongaq@ornl.gov <mailto:armstrongaq@ornl.gov> >
Subject: [EXTERNAL] RE: BPRG surface factor runs

Hmm, lets discuss. I am partly confused.

Stuart Walker

Superfund Remedial program National Radiation Expert

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[redacted]

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Monday, March 23, 2020 1:42 PM
To: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Cc: Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >; Armstrong, Anthony <armstrongaq@ornl.gov <mailto:armstrongaq@ornl.gov> >
Subject: RE: BPRG surface factor runs

Stuart,

Had a long call with Caleigh discussing the attached. Lots of questions and observations. The following are related to the first task in the attached.

1. The GP ACF can indeed be added for the dust scenario as we thought.
2. These runs can be done a bit faster than the way we need to run the 3D scenarios by reversing what is the source. If we make the detector the source, we can contaminate the floor and use that measurement to get ACF. What we do for other 3D scenarios is have a contaminated surface and wait for the detector to get enough hits to lower the error and then get an ACF. I don't see this as a problem, do you?
3. We discussed the validity of having all the dust on the floor vs some on floor and some at other heights. Caleigh noted that different tally heights are possible to do but we reasoned that just having the floor contaminated is protective enough.
4. Extrapolation of ACFs and surface factors to different room sizes isn't a linear problem due to backscatter.
5. Extrapolation of ACFs and surface factors to different room sizes based on the three room sizes with 10 ft ceilings that we have won't be enough data points to get an accurate curve.
6. Extrapolation of ACFs and surface factors, though not considered a reasonable endeavor, doesn't need to be pre-entered in a database. It could be done on the fly by Katie if we had an accurate curve of room size to ACF or surface factor.

7. Caleigh confirms our suspicion that we ought to calculate ACFs with walls and ceilings present to accurately account for backscatter. That begs the question, what material do we want all 6 surfaces to be? Currently our ACFs are based on GP over soil or nothing (right Caleigh?). I suggest we make an assumption of one floor material, one wall material, and one ceiling material. Otherwise we open pandora's box like the 3D analysis in item two in the attached.

We do need to do the concrete ACF baselines again for SPRG.

We are looking at doing the soil ACFs again as well. That may be necessary based on Caleigh's research into how Bellamy/Finklea set that up.

We are looking at three months to get the dust ACF runs completed assuming one material for the six surfaces.

I think we are best served by having a new ORNL TM addressing all three ACFs.

The blue and green scenarios in item 2 in the attached are looking like 26 weeks.

I have call to prep for at two but can discuss tomorrow.

Fred Dolislager

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a6a7%7C0%7C0%7C637302433665712585&sdata=BnK6iC8ua%2Bnk12V8DQc7CjOaCqVLtKzWu9jgQQTvQpw%3D&reserved=0>

From: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Sent: Thursday, March 19, 2020 1:41 PM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: [EXTERNAL] RE: BPRG surface factor runs

ok

Stuart Walker

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From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, March 19, 2020 12:02 PM
To: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Subject: RE: BPRG surface factor runs

No we don't, but the calculator had it for a long time. If anyone used that scenario and we take it away it's bad. It's just three.

fred d.

From: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Sent: Thursday, March 19, 2020 10:39 AM

To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Subject: [EXTERNAL] RE: BPRG surface factor runs

Do we ever have a drywall floor, or a glass ceiling and floor? I guess I can envision an all wood room

Stuart Walker

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[redacted]

From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, March 19, 2020 9:58 AM
To: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Subject: RE: BPRG surface factor runs

All surfaces drywall, wood and glass. Recall the existing tool assumes all surfaces are the same material except for the two composite scenarios.

fred d.

From: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Sent: Thursday, March 19, 2020 9:45 AM
To: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >; Armstrong, Anthony <armstrongaq@ornl.gov <mailto:armstrongaq@ornl.gov> >; Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Subject: [EXTERNAL] RE: BPRG surface factor runs

Thank you. Which 3 runs did you add to the big table.

Stuart Walker

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From: Dolislager, Fredrick G. <dolislagerf1@ornl.gov <mailto:dolislagerf1@ornl.gov> >
Sent: Thursday, March 19, 2020 8:49 AM
To: Armstrong, Anthony <armstrongaq@ornl.gov <mailto:armstrongaq@ornl.gov> >; Samuels, Caleigh <samuelsce@ornl.gov <mailto:samuelsce@ornl.gov> >
Cc: Walker, Stuart <Walker.Stuart@epa.gov <mailto:Walker.Stuart@epa.gov> >
Subject: BPRG surface factor runs

Caleigh,

Quite a lot. See attached and we can discuss. The concrete work is attached to make sure it's using the right baselines. Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fepa-prgs.ornl.gov%2Fradionuclides%2FACF_FINAL.pdf&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665712585&sdata=RSwFGoMinP8LuDsB2JIKczEgzG2lQzdADb6h8QtJbTY%3D&reserved=0 <Blockedhttps://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fepa-prgs.ornl.gov%2Fradionuclides%2FACF_FINAL.pdf&data=02%7C01%7CWalker.Stuart%40epa.gov%7C7179cd6103074899e9af08d8272fb4b9%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637302433665712585&sdata=RSwFGoMinP8LuDsB2JIKczEgzG2lQzdADb6h8QtJbTY%3D&reserved=0> is for the soil ACF. I think that's all the ACFs. I'm talking about ACFs instead of surface factors because building ACFs is first on list in the Attached word file. Contact me with any questions.

Stuart, I added three runs to the big table to make sure we duplicate what was done in the past for consistency and reproducibility.

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