HLWYM HEmails

From: Roland Benke
Sent: Thursday, May 25, 2006 6:43 PM
To: John Trapp
Cc: Donald Hooper
Subject: RE: Tpa questions

John,

See my limited responses to 1. and 2. below. I hope they help. Call me at 522-5250 if you would like more information.

Roland

1. Weighting factors

There are five input parameters for outdoor mass load in the TPA code:
2 mass loads above fresh ash under heavy & light disturbance
2 mass loads for soil under heavy & light disturbance
1 mass load for offsite areas

To avoid large increases in the number of input parameters for airborne mass load (e.g., adding fluvial tephra heavy, fluvial tephra light, eolian tephra heavy, eolian tephra light plus possible additions for fluvial sediment heavy, and so on), we picked one of the five mass loads above for fluvial and eolian and applied a separate weighting factor. The weighting factors can account for (i) differences in the magnitudes of mass load above the three types of source region and (ii) spatial effects to account for the receptor being located some distance away from the fluvial and eolian deposits (e.g., the mass load over the fluvial is x, but the mass load at the receptor location from the resuspension of the fluvial deposit may be ~0.1x). The 1/3 values simply allow us to evaluate the relative contribution of each source region as a starting point. The weighting factors can be adjusted to coincide with any decision on where to model the receptor (let me know if a decision has been made). If the receptor spends very little time near the fluvial deposition region, the fluvial weighting factor would be reduced.

Calculated Doses
At a high level, gross differences can be associated with amount of tephra deposited in each of the three source regions. For the case with w_i=1, only about 12% of the realizations put a tephra deposit at the receptor location. When the receptor location gets an initial tephra-fall deposit, it is effective at delivering dose, but this is weighted down by the majority of realizations without a tephra-fall deposit at the receptor location. Since the fluvial and eolian source regions, in general, get a lot of tephra in each realization, they yield higher mean doses over many realizations. The fluvial region captures more tephra mass than the eolian region, on average in the lookup table, and sustains the mass load for a longer period of time, so I'm not surprised to see the fluvial dose higher than the eolian dose.

2. No heavy disturbance for fluvial and eolian

Assumption recap:
- Receptor does not live in Fortymile Wash or on its depositional area
- Receptor does not spend a lot of time in the depositional region of Fortymile Wash, implying that the annual-average mass load under heavy disturbance is not affected greatly by any short-term heavy disturbance of the fluvial deposit
- Receptor is responsible for long-term heavy surface-disturbing activities,

that is the receptor's annual-average mass load under heavy disturbance is assumed to be dominated by the receptor's actions

All regions could be considered eolian, but the some distinction was needed to develop a model with an initial intent including estimated contributions from eolian areas far away from the receptor location that contribute some of the inhalation dose.

-----Original Message-----
From: Don Hooper [mailto:dhooper@cnwra.swri.edu]
Sent: Wednesday, May 24, 2006 12:12 PM
To: rbenke@cnwra.swri.edu
Subject: FW: Tpa questions

Roland: John Trapp said your address didn't go through on his end and he asked me to forward this to you.

-Don

-----Original Message-----
From: John Trapp [mailto:JST@nrc.gov]
Sent: Wednesday, May 24, 2006 11:57 AM
To: Roland Benke; <Don Hooper; Christopher Grossman; James Rubenstone; Keith Compton
Subject: Tpa questions

Just starting to run the code and have some questions. I am sure I will have more as I mess around.

1.What are the three weighting factors trying to represent and why (Wi, f, and e) ? (Default is set to 1/3,1/3,1/3)

If I run the code with everything else the same and set Initial to 1 and fluvial and eolian to zero , I get about ½ the value that I get when I set Fluvial to 1 or set Alluvial to 1. (ratio is 2: 4.7: 3.2) (This is based on 100 runs.)

Just trying to figure out what is really going on. Can someone tell me?

2. Please explain to me why there can be no heavy disturbance in fluvial and Eolian material. An argument can be made that the receptor will not live in a wash, but he sure can drive or walk into a wash. If the RMEI can leave the area and get no dose, why can't he go to an area of fluvial stuff and get a high disturbance dose? In addition, the Eolian source region is part of the same area where the REMI exists. I can't see the logic.

I think this really is just a case of being poorly presented in the write-up, not a case of anything really not making sense, but I would like a straight forward explanation.

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Sent Date: 5/25/2006 6:43:16 PM
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From: Roland Benke

Created By: rbenke@cnwra.swri.edu

Recipients:
"Donald Hooper" <dhooper@cnwra.swri.edu>
Tracking Status: None
"John Trapp" <jst@nrc.gov>
Tracking Status: None

Post Office: cnwra.swri.edu

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MESSAGE	4901	5/25/2006 6:43:20 PM

Options
Priority: Standard
Return Notification: No
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