

## HLWYM HEmails

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**From:** Keith Compton  
**Sent:** Monday, March 20, 2006 1:05 PM  
**To:** Donald Hooper; Roland Benke  
**Cc:** Brittain Hill  
**Subject:** Comments on courtesy draft of DOSE2 IM on "Description of Abstracted Model for Tephra ..."

Roland, Don

I looked over the preliminary presubmittal draft this morning. I have a number of noodles, but the following are the major comments. I would recommend submitting with predecisional headers in case we need to revise the report - it would help to make it more clear which was the final version if both were pulled up from ADAMS. We can discuss in more detail when I am down there next month. -KLC

### MAJOR COMMENTS:

- 1) We need to make it clear that this report documents a model developed for a beta version of the TPA code. If code and/or input parameter changes were to occur before finalization of the TPA code, this deliverable could create confusion, as it appears to be documentation of the final version. Please add a paragraph in Section 1 indicating the developmental status of the TPA code and clarify that the model described herein is not \*necessarily\* the final version that may be found in the eventual final code. Also, please ensure that references to the TPA 5.1 code are changed to reference a beta version of the code.
- 2) On p 1-2, it is stated that "Ash redistribution processes may significantly affect the thickness of the ash deposit near the receptor location and the extent of potential mixing of the ash with the underlying soil, which both factor into the proportion of ash in the airborne mass load used for calculating inhalation dose to the reasonably maximally exposed individual." However, we explicitly do not model thickness or extent of mixing. This statement appears to be inconsistent with our modeling approach. Our argument is that redistribution provides a fresh supply of material to be resuspended, and we don't model blanket thickness or mixing with underlying soil. That is what ASHRMOVO does, not what ASHREMOB does (as far as I can tell).
- 3) On p 2-5, it is stated that "Simple mass-balance scoping calculations (Hill and Connor, 2000; Hooper, 2005) indicate the accumulation rate of remobilized tephra may exceed the decay rate in airborne mass load from the initial volcanic deposit at the receptor location. Thus, remobilization of tephra deposits may sustain estimated airborne mass loads and associated inhalation doses for longer periods of time than suggested by simple decay relationships for the initial volcanic deposits (e.g., Bechtel SAIC Company, LLC, 2003a,b)." CF also p 2-17, "For the fluvial remobilization contribution, data suggest that fluvial remobilization events are frequent enough to replenish the deposition region of Fortymile Wash with fresh sediment to roughly offset the reduction in airborne mass load with time for an aged deposit." These statements are more consistent with the rationale for our modeling than the statement made on p 1-2 referenced above. However, we need to be more clear about the difference between, and connection between, redistribution and resuspension. I don't see any explanation for the connection between sediment supply and decay of airborne mass load, and as it stands it seems to be a comparison of two unrelated processes. Not that there is none, but this is a key assumption and we need to explain it (and probably make it more prominent). This connection is a perennial source of confusion (again, I'm not saying that it is wrong), so it needs to be clearly spelled out.
- 4) on p 2-11 it is stated that "Although ash remains in the Fortymile Wash catchment basin, the airborne mass load above the sediment deposit, is set equal to the value of the TPA code input parameter for the outdoor airborne mass load of ash above a fresh deposit for light disturbance {AirborneMassLoadAboveFreshAshBlanketLightDisturbance[g/m3]}." Likewise, on p 2.18, It is stated that "Because long-term heavy disturbance of fluvial deposits in the Fortymile Wash is not expected, the product of the airborne mass load of ash for light disturbance and a weighting factor is used to determine the contribution

for fluvial redistribution." These appear to be a significant approximations. The mass load that is selected to persist for up to thousands of years is likely to be important. What is the basis for it?

5) ASHREMOB is essentially a drop-in replacement for ASHPLUMO/ASHRMOVO/DCAGS. Why is DCAGS treated in a separate chapter, but there is apparently no discussion of ASHPLUMO/ASHRMOVO? I would be receptive to simply referencing the relevant reports for the ASHPLUMO/ASHRMOVO/DCAGS side , dropping any further discussion from this report, and focusing only on ASHREMOB.

6) Would it not make more sense to give the assumptions of the model (Section 2.4) before giving the model formulation (Section 2.2)? Also, you have a separate section for ASHREMOB outputs (Section 2.3). Would it make sense to have a corresponding section for the inputs, pulled out from the discussion in Section 2.2?

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**From:** Keith Compton

**Created By:** Keith.Compton@nrc.gov

**Recipients:**  
"Brittain Hill" <Brittain.Hill@nrc.gov>  
Tracking Status: None  
"Donald Hooper" <dhooper@cnwra.swri.edu>  
Tracking Status: None  
"Roland Benke" <rbenke@cnwra.swri.edu>  
Tracking Status: None

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