

## HLWYM HEmails

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**From:** Pavan Shukla  
**Sent:** Thursday, April 26, 2007 10:14 AM  
**To:** Christopher Grossman; Yi-Ming Pan; Tae Ahn  
**Cc:** Bret Leslie; Sheena Whaley; Xihua He; Andy Jung  
**Subject:** RE: TAhn comments - Fwd: DSFAIL-EBSFAIL TPA Users Guide Chapter Comments

All,

Both dry-air oxidation and humid-air corrosion are invoked in the reference case. Because corrosion rate of these corrosion processes is very small, they don't have any significant effect on waste package thickness.

One can test this by executing the TPA code for one realization for a given subarea, and checking the output file failt.out. This file lists the corrosion modes and corresponding corrosion rate for each time step. The dry air-oxidation is activated when relative humidity of in-drift environment is less than 0.05, and humid-air is implemented when relative humidity is between 0.05 and 0.2.

In the present version of TPA code, general corrosion due to dust deliquesce corrosion is not explicitly implemented, instead, the default value of relative humidity for aqueous corrosion was lowered to 0.2 from previous value of 0.3. As a result, the general corrosion is activated for additional period of 150-300 years than previous case (i.e., relative humidity being 0.3), and average corrosion rate of 0.5 micrometer/year is applied in this duration. This will result in additional reduction waste package thickness approximately by 150 micrometers (0.15 mm).

-Pavan

-----Original Message-----

**From:** Christopher Grossman [mailto:cjg2@nrc.gov]  
**Sent:** Thursday, April 26, 2007 8:39 AM  
**To:** Pavan Shukla; Yi-ming Pan; Tae Ahn  
**Cc:** Bret Leslie; Sheena Whaley  
**Subject:** Re: TAhn comments - Fwd: DSFAIL-EBSFAIL TPA Users Guide Chapter Comments

Tae-

We can discuss your comments today as well to see if there are any questions or need for clarification. I'll check, but I think we provided guidance to CNWRA on how to handle dry-air oxidation and humid air corrosion that are still present in the model, but not invoked for the reference case.

We'll need to transmit a list of formal comments to CNWRA (with the language from Bret's email) so the authors know what they need to address and can provide their response to our comments clearly when resubmitting as part of the final users guide. By the end of today's meeting, we should have that list developed so you can transmit them formally when closing the ticket.

Chris

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>>> Tae Ahn 04/25/07 3:04 PM >>>

I am generally happy with the IM. A few comments:

- (1) 8.1.2, 1st paragraph, the reason for not giving credit to the inner container is wrong.
- (2) 8.1.2, if dry oxidation or humid air corrosion is never activated, you may delete them and refer them to TPA4.
- (3) Figure 8-1, define ENV III separately.
- (4) 8.2.2, what corrosion rates will be used in the deliquescence general corrosion?
- (5) 8.7, the sensitivity check of critical RH is recommended.

We'll go over Chris' comments tomorrow.

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Yiming, below is Chris' comments. I will add some comments today too.

Sheena, Chris and I would like to have a meeting tomorrow, 4/26, in the afternoon. I am thinking 2:00 pm of our time. Please let me know your best time. Thank you, Tae

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>>> Christopher Grossman 04/24/2007 8:50 PM >>>

Tae-

Attached are my comments on the subject CNWRA deliverable. Please arrange a teleconference with CNWRA for Thurs. to discuss our comments to resolve any uncertainties prior to delivery. I'll be working from Charlottesville on Thurs., so please arrange a bridgeline. If you want to discuss our comments prior to then, I'll be happy to meet on Wed. as your schedule permits.

Thanks  
Chris

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