HLWYM HEmails

From: Vijay Jain [vjain@cnwra.swri.edu]
Sent: Wednesday, February 23, 2005 9:15 AM
To: Roberto Pabalan; Osvaldo Pensado
Cc: 'Darrell Dunn'; David Pickett; Jude Mcmurry
Subject: RE: ReferencepH

We need to look at our comments on TBD 7. I don't agree with the DOE abstraction and the range of pH values. I believe they are non-conseravtive.

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-----Original Message-----
From: Bobby Pabalan [mailto:rpabalan@cnwra.swri.edu]
Sent: Tuesday, February 22, 2005 4:49 PM
To: Osvaldo Pensado
Cc: Darrell Dunn; Vijay Jain
Subject: FW: ReferencepH

FYI.

-----Original Message-----
From: David Pickett [mailto:dpickett@cnwra.swri.edu]
Sent: Tuesday, February 22, 2005 4:35 PM
To: rpabalan@cnwra.swri.edu
Subject: RE: ReferencepH

Bobby,

Here's what DOE does for TSPA. In all cases, they use a uniform distribution between the min and max values for pH:

CSNF

For 0 to 600 years
min = 4.5
max = 7.0 to 8.1, depending on f(CO2). Model for the latter yields f(CO2) values that imply max pH of between 7.4 and 7.9.

For 600 to 20,000 years
min = 4.5
max = 7.0

Codisposal

For all times
min = 4.5
max = 7.0 for flux < 150 L/yr, 8.0 for flux > 150 L/yr

These seem reasonable to me. The lower limit (4.5) is based on 90 degree C simulations. If you want to only consider up to 50 degree C, the minimum could be 5.0. DOE models WP surface temperatures of >90 C up to 2000 years, and >50 C up to 13,000 years.

The maximum value of (usually) 7.0 is a function mainly of schoepite buffering. Higher pH is only modeled when water flux rates are high enough to reduce the effectiveness of the buffering. That explains the codisposal abstraction. Sitakanta tells me that flux > 150 L/yr is unlikely.

I conclude that, if we want to be consistent with the DOE in the absence of independent calculations, a uniform distribution between 4.5 and 7.0 would be reasonable. By the way, notes supporting this analysis are in notebook 172.

David

-----Original Message-----
From: Bobby Pabalan [mailto:rpabalan@cnwra.swri.edu]
Sent: Tuesday, February 22, 2005 4:12 PM
To: David Pickett
Subject: FW: ReferencepH

Any comments on this?

bobby

-----Original Message-----
From: Osvaldo Pensado [mailto:opensado@cnwra.swri.edu]
Sent: Tuesday, February 22, 2005 3:46 PM
To: Darrell Dunn; Vijay Jain; Roberto Pabalan
Subject: ReferencepH

There is a TPA parameter, ReferencepH, that is used only for spent fuel and glass dissolution rate determinations. That is to say, this pH value is an in-package value. I do not like using the normal distribution for two reasons: i) it has infinite tails, and ii) presumes that the additional information is available to defend the selection of normal distribution.

Instead, I propose using a uniform distribution. Otherwise, we could use a triangular distribution if you have a good guess of the most likely value (neutral pH maybe?).

Please comment …

ReferencepH	pH of water	normal	3.6, 8.1	LB	EBSFAIL	477	Lower boun uptake effic **OPR: This package p degradatio degradatio needs to v distributio**

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From: Vijay Jain

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