From:	Joyce Donohue
To:	Donohue, Joyce
Subject:	Fw: Answering Sussman"s Questions on Fluoride
Date:	Thursday, May 02, 2013 2:14:59 PM

Joyce M. Donohue, Ph.D.
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----- Forwarded by Joyce Donohue/DC/USEPA/US on 05/02/2013 01:51 PM -----

From: Joyce Donohue/DC/USEPA/US
To: Michael Doherty/DC/USEPA/US@EPA
Cc: Christina Swartz/DC/USEPA/US@EPA, Cynthia Dougherty/DC/USEPA/US@EPA, Elizabeth Doyle/DC/USEPA/US@EPA, Eric Burneson/DC/USEPA/US@EPA, Kelly Sherman/DC/USEPA/US@EPA, William Jordan/DC/USEPA/US@EPA, Wynne Miller/DC/USEPA/US@EPA
Date: 11/22/2010 01:55 PM
Subject: Re: Fw: Answering Sussman's Questions on Fluoride

I put our numbers in red next to yours in your second Table. It is pretty clear that there is a considerable difference in the mean water intake as well as difference in food and beverage totals

Michael Doherty---11/22/2010 01:05:14 PM---All, The numbers I sent out last week were pulled together from our risk assessment document and a f

From:	Michael Doherty/DC/USEPA/US
To:	Joyce Donohue/DC/USEPA/US@EPA
Cc:	Christina Swartz/DC/USEPA/US@EPA, Cynthia Dougherty/DC/USEPA/US@EPA, Elizabeth Doyle/DC/USEPA/US@EPA, Eric Burneson/DC/USEPA/US@EPA, Kelly Sherman/DC/USEPA/US@EPA, William Jordan/DC/USEPA/US@EPA, Wynne Miller/DC/USEPA/US@EPA
Date:	11/22/2010 01:05 PM
Subject:	Re: Fw: Answering Sussman's Questions on Fluoride

All,

The numbers I sent out last week were pulled together from our risk assessment document and a few

older dietary runs. In order to confirm the values I was getting, I re-did the numbers today using new dietary modeling runs. The 1-4 age group has been divided into 1-2 and 2-4 in order to be able to make aggregate estimates that leave out F from toothpaste for those under 2 (per FDA recommendations). The 1-4 group is also portrayed intact. Below are my assumptions and what I came up with.

Hopefully this helps clarify where the OPP estimates are coming from.

Mike

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Assumptions:
- Average consumption of foods, beverages, and drinking water
- Indirect water (beverages) = 0.87 mg F/L
- Direct water (drinking water) = 0.00 mg F/L
- SF and soil are the only other contributors (no contribution from toothpaste)

Exposure estimates and fluoride concentration determinations

Age Range (years)	Food + Beverages (mg/kg/day)	SF (mg/kg/day)	Soil (mg/kg/day)	Total (mg/kg/day)	RfD - Total (mg/kg/day)	Body Weight (kg)*	Avg. Drinking Water Consumption (L/day)*	Maximum F Conc. in Drinking Water (mg/L)
0.5 - 1	0.03996	0.0027	0.0018	0.04446	0.036	10.4	0.173	2.1
1-2	0.03132	0.003**	0.0027**	0.03702	0.043	12.7	0.242	2.3
2-4	0.02743	0.003**	0.0027**	0.03313	0.047	15.6	0.322	2.3
1-4	0.02868	0.003	0.0027	0.03438	0.046	14.5	0.292	2.3
4.7	0.02215	0.0029	0.0019	0.02695	0.051	21.0	0.383	2.9

* Averages taken from CSFII via DEEM-FCID.
** Assumed to be the same as the 1-4 year old group

Here are the same numbers accounting for body weight at the front end (i.e., exposure in mg/day) for easier comparison w/ OW estimates.

Age Range (years)	Food + Beverages (mg/day)	SF (mg/day)	Soil (mg/day)	Total (mg/day)	RfD - Total (mg/day)	Body Weight (kg)*	Avg. Drinking Water Consumption (L/day)*	Maximum F Conc. in Drinking Water (mg/L)
0.5 - 1	0.416 0.25	0.028	0.019 0.02	0.462	0.370	10.4 9	0.173 0.467	2.1
1-2	0.398	0.038**	0.034**	0.470	0.546	12.7	0.242	2.3
2-4	0.428	0.047**	0.042**	0.517	0.731	15.6	0.322	2.3
1-4	0.416 0.52	0.044	0.039 0.04	0.499	0.661	14.5 14	0.292 0.349	2.3
4.7	0.465 0.89	0.061	0.040 0.04	0.566	1.114	21.0 21	0.383 0.442	2.9

* Averages taken from CSFII via DEEM-FCID.
** Assumed to be the same as the 1-4 year old group on a mg/kg/day basis

Joyce Donohue---11/19/2010 04:25:19 PM---Is the water in your beverage category fluoride free? In the three age groups represented in our da

From: Joyce Donohue/DC/USEPA/US

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Date: 11/19/2010 04:25 PM

Subject: Re: Fw: Answering Sussman's Questions on Fluoride

Is the water in your beverage category fluoride free? In the three age groups represented in our data all of the water used to prepare the beverages was deionized distilled. I realize that would not explain why your values are always lower than those in the studies we selected. Our beverage values did come from a study conducted in the South during summer months.

In my opinion, 2 mg/L would not pass the logic test unless the dietary contribution of fluoride has not changed at all since the 1930's when it was about 13% of the total.

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Michael Doherty---11/19/2010 04:06:09 PM---All, The mathematics being used by our two offices match up. The difference in the "allowable" leve

From: Michael Doherty/DC/USEPA/US

To: Elizabeth Doyle/DC/USEPA/US@EPA

Cc: Cynthia Dougherty/DC/USEPA/US@EPA, Eric Burneson/DC/USEPA/US@EPA, Joyce Donohue/DC/USEPA/US@EPA, Kelly Sherman/DC/USEPA/US@EPA, William Jordan/DC/USEPA/US@EPA,

Wynne Miller/DC/USEPA/US@EPA, Christina Swartz/DC/USEPA/US@EPA

Date: 11/19/2010 04:06 PM

Subject: Re: Fw: Answering Sussman's Questions on Fluoride

All,

The mathematics being used by our two offices match up. The difference in the "allowable" level in water is due, primarily, to differences in the numbers being used for the contribution from foods and beverages.

For foods and beverages, we have the following differences (estimates in mg/day)

Office	0.5 - 1 year	1 - 4 year	4 - 7 year
OW	0.25	0.52	0.89
OPP	0.42	0.42	0.46

There are also a difference in body weight for the youngest group (OW = 9 kg, OPP = 11 kg) and a slight difference for the 1-4 year olds (OW = 14 kg, OPP = 14.6 kg).

In terms of the precision of the numbers available to us, I don't think there's any difference between 1.94 and 1.5 mg F/L that we should hang our hats on. I still maintain that given the different way that our two offices are deriving their estimates, the values are in remarkable agreement. There are strengths and weaknesses with both approaches, and I don't think that one is better than the other. My recommendation would be that for this type of determination, we round to the nearest whole number, in this case 2 mg/L.

Mike

Elizabeth Doyle---11/19/2010 01:42:55 PM---Kelly, The concentrations by age for the mean intake are exactly that. We believe that your estimat

From: Elizabeth Doyle/DC/USEPA/US

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Cc: Cynthia Dougherty/DC/USEPA/US@EPA, Eric Burneson/DC/USEPA/US@EPA, Joyce Donohue/DC/USEPA/US@EPA, Michael Doherty/DC/USEPA/US@EPA, William Jordan/DC/USEPA/US@EPA, Wynne Miller/DC/USEPA/US@EPA

Date: 11/19/2010 01:42 PM

Subject: Re: Fw: Answering Sussman's Questions on Fluoride

Kelly,

The concentrations by age for the mean intake are exactly that. We believe that your estimate is too high in all cases.

Kelly Sherman---11/19/2010 12:55:49 PM---Thanks, Joyce. Your concentration calcuations are helpful, but they don't directly answer Sussman's

From: Kelly Sherman/DC/USEPA/US

To: Joyce Donohue/DC/USEPA/US@EPA

Cc: Cynthia Dougherty/DC/USEPA/US@EPA, Elizabeth Doyle/DC/USEPA/US@EPA, Eric Burneson/DC/USEPA/US@EPA, William Jordan/DC/USEPA/US@EPA, Wynne Miller/DC/USEPA/US@EPA, Michael Doherty/DC/USEPA/US@EPA

Date: 11/19/2010 12:55 PM

Subject: Re: Fw: Answering Sussman's Questions on Fluoride

Thanks, Joyce. Your concentration calcuations are helpful, but they don't directly answer Sussman's question, which is -- what changes have to happen to the other sources of fluoride exposure in order to keep the sulfuryl fluoride tolerances.

Specifically, he wants to know what the water concentration would have to be to keep the aggregate exposure estimate for children younger than 4 years below the RfD of 0.08 if we assume (1) no fluoride exposure from toothpaste; (2) mean water intake; and (3) SF is a source of exposure.

Our calculations show that the answer to that question is 1.97 mg F/L. Do you get the same answer to that question?

Re the population estimates - thanks for the information. We need to caucus here to figure out exactly what to relay back to Sussman.

Thanks!

Kelly Sherman
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 305-8401

Joyce Donohue---11/19/2010 11:47:37 AM---Dear Kelly: Attached are our calculations for the three youngest age levels in our analysis. Our re

From: Joyce Donohue/DC/USEPA/US

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Date: 11/19/2010 11:47 AM

Subject: Re: Fw: Answering Sussman's Questions on Fluoride

Dear Kelly:

Attached are our calculations for the three youngest age levels in our analysis. Our results differ from those in your e-mail. We did the calculations using our 1 tooth brushing per day. Using two brushings would decrease the water concentrations left for drinking water. We also provided the concentrations at the 90th percentile drinking water intakes which are used by the Office of Water. Please let me know if you have any questions?

[attachment "Concentration and population estimates_wfm.doc" deleted by Elizabeth Doyle/DC/USEPA/US]

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