

TO: Carol van Strum
FROM: Tom Webster
DATE: 11 May 1993
RE: 2,4-D

Dear Carol,

I have made some TEQ calculations on the 2,4-D data. The enclosed table shows the TEQ estimate based on the observed maximum concentrations: 2.7 ppb. We can't tell from the data whether the maximums for each isomer came from the same or different samples.

The true average concentration cannot be calculated from the data in the memo. A lower bound on the average is around 0.39 ppb, calculated as:

$$\begin{array}{rcl} \text{average 2378-TCDD} & + & \text{average 1,2,3,7,8-PeCDD} * (\text{TEF}) \\ (0.07 \text{ ppb}) & + & (0.63 \text{ ppb}) * (0.5) \\ & & = 0.39 \text{ ppb} \end{array}$$

The estimate does not include any contribution from the other isomers. Although the authors are not completely clear, I assume that the average concentrations listed for these two isomers in the table notes are the averages over all eight samples. (Note that it is unclear how they have dealt with 'non detects.' Sometimes calculations will use half of the detection level.)

It's interesting that the 12378-PeCDD isomer dominates the total TEQ. Has this been found before?

I haven't run across 'logs' before in my section of the dioxin biz. It does not appear to reflect the analytic chemistry, since concentrations are reported which are far below some of the logs. Instead, it appears to be some regulatory (reporting?) requirement with an imperfect connection to the TEF values. The logs are higher for less toxic isomers, but (with the exception of the hepta isomers) not proportional to the TEFs. Of course, a 'rational' regulation might be based on the total TEQ. Note that the analysis leaves out the octa isomers, isomers which now have TEF values.

Perhaps Cate J. might know where the logs come from.

I think you have a case. Good luck. Tom.