

### March 29, 2007

The question was raised at the dioxin HHRA meeting on 3/21/07 whether people whose soil was highly contaminated and who ate vegetables from their own property had elevated blood dioxin levels. Dr. Garabrant indicated that the UMDES data could answer this question. To answer this question, the following things were done:

1. The TEQ<sub>DF17\_2005</sub> of the garden soil was recalculated using the 2005 WHO TEFs, restricting the TEQ to the 17 PCDD and PCDF congeners (excluding the 12 PCB congeners).
2. The blood TEQ<sub>DF17\_2005</sub> was recalculated using the 2005 WHO TEFs, restricting the TEQ to the 17 PCDD and PCDF congeners (excluding the 12 PCB congeners).
3. The regression analysis was re-run using the model we have already completed (Model 4), which include all significant predictors. The outcome variable was the  $\log_{10}(\text{blood TEQ}_{DF17_2005})$  and the following predictors were forced into the model:
  - a. the soil dioxin TEQ<sub>DF17\_2005</sub> from the garden soil,
  - b. the number of meals of root vegetables that were grown on the participant's property during the last 5 years
  - c. an interaction term which multiplied the soil TEQ<sub>DF17\_2005</sub> by the number of meals of root vegetables that were grown on the participant's property during the last 5 years.
  - d. the number of meals of fruits and vegetables that were grown on the participant's property during the last 5 years
  - e. an interaction term which multiplied the soil TEQ<sub>DF17\_2005</sub> by the number of meals of fruits and vegetables that were grown on the participant's property during the last 5 years.

Predictors	Estimate	P-value
<b>Main effects</b>		
soil TEQ <sub>DF17_2005</sub> concentration for garden soil (Soil Contact Zone)	0.0004054	0.240
The number of meals of <b>root vegetables</b> that were grown on the participant's property during the last 5 years	0.0000015	0.963
The number of meals of <b>other fruit or vegetables</b> that were grown on the participant's property during the last 5 years	-0.0000061	0.753
<b>Interaction terms</b>		
soil TEQ <sub>DF17_2005</sub> concentration for Soil Contact x The number of meals of <b>root vegetables</b> that were grown on the participant's property during the last 5 years	0.0000008	0.341
soil TEQ <sub>DF17_2005</sub> concentration for Soil Contact x The number of meals of <b>other fruit or vegetables</b> that were grown on the participant's property during the last 5 years	-0.0000003	0.691

Saved in:

N:\Secure\UMDES\Data\_Statistics\Risk Assessment\For Web\HHRA\_2\_03292007.doc

Created by BH, March 28, 2007

The results show that

1. The soil  $TEQ_{DF17,2005}$  from the garden soil was not a significant predictor of blood  $TEQ_{DF17,2005}$  (parameter estimate 0.0004054,  $p = 0.240$ )
2. The number of meals of root vegetables that were grown on the participant's property during the last 5 years was not a significant predictor of the blood  $TEQ_{DF17,2005}$  (parameter estimate 0.0000015,  $p = 0.963$ )
3. The interaction term between root vegetable meals and soil  $TEQ_{DF17,2005}$  was not a significant predictor of the blood  $TEQ_{DF17,2005}$  (parameter estimate 0.0000008,  $p = 0.341$ ). The parameter estimate from the interaction terms mean that the effect of eating root vegetables from contaminated soil is not significantly different from the effect of eating root vegetables from soil having no contamination.
4. Similar results were observed for the number of meals of other fruit or vegetables that were grown on the participant's property during the past 5 years. The parameter estimate from the interaction terms mean that the effect of other fruits or vegetables from contaminated soil is not significantly different from the effect of eating root vegetables from soil having no contamination.