

## University of Michigan Dioxin Exposure Study Response to Questions Posed by Participants in Human Health Risk Assessment Meetings

May 10, 2007

### Question 1 from Lisa Yost of Exponent

We have appreciated your participation and that of Drs. Franzblau and Hong in our ongoing meetings regarding HHRAs for Midland and the Tittabawassee River. In returning to the UMDES results to further consider wildlife sampling, we discovered that the specific information for UMDES participants in Midland and the Floodplain areas indicate that people did not consume ANY of the other category wildlife items including frog and turtle *from the floodplain or Midland/Saginaw area* (See UMDES results G10b). I left the meeting thinking that ~24 or so people from the survey of 1,324 people were consuming these resources *from the study area*, but I find my understanding was not consistent with UMDES result 10b. The apparent discrepancy may have arisen from the fact that some UMDES participants residing within the study areas indicated that they do consume some of these items *at all* (See UMDES result G10 below). Thus, it appears that although people reported consuming an array of 'other' foods including frogs and turtle within the last 5 years, *no Midland or Saginaw Floodplain resident participants reported consuming these items collected from the floodplain or Midland Saginaw area.*

Can you take a look at these forms and confirm or correct my current understanding that in fact *no turtles or frogs collected from the Tittabawassee River, Midland /Saginaw study areas were consumed by UMDES participants residing in the study area.*

### University of Michigan Response

Table 10 from our website shows that 5.8% of all 1324 participants ate 'other game meat' (which includes raccoon, opossum, groundhog, woodchuck, muskrat, wild turtle, and frog). These 5.8% of the participants were made up by 59 subjects (sampling weights were used in calculating the percentage of the population that ate other game meat, so 5.8% of 1324 does not equal 59 exactly).

Among these 59 participants, 4 participants had ever eaten any other game meat that were raised or taken in the Tittabawassee River floodplain, or Saginaw River or Bay floodplain, and 54 participants had ever eaten any other game meat that were raised in or taken from another area or from an unknown area (The information is shown in the tabulated table G10a, G10b, G10c, and G10d in attached word file of SecG\_March302007.doc)

### Question 2 from Lisa Yost of Exponent

In addition, can you clarify how many individuals who are within the *Midland /Saginaw Out FP area* (i.e., people outside of the area) consumed frog or turtles (shown now as '0.6%' in row 4 and then as '--', in row 10 of G10b). I understand that confidentiality requirements will need to be maintained and appreciate any clarifications you can provide.

### University of Michigan Response

From the information of "0.6% Yes" for participants in M/S Out FP region, we can estimate that about  $309 * 0.6\% = 1.9 \approx 2$  participants who lived in M/S Out FP region had ever eaten any other game meat including frog and turtle. We can NOT provide the following information to maintain

confidentiality of study participants: for these ~2 participants, (1) where the game meat was raised or taken from and (2) what types of the game meat.

Tables are attached giving the frequencies of responses to questions regarding

- Having eaten (yes/no) each type of 'other game' during the last 5 years (question G10a),
- Consumption of 'other game' during the last 5 years from the Tittabawassee River (question G10b),
- Consumption of 'other game' during the last 5 years from the Saginaw River/Saginaw Bay (question G10c),
- Consumption of 'other game' during the last 5 years from other areas (not Tittabawassee River, Saginaw River/Saginaw Bay) or from an unknown area (question G10d).

These tables were distributed to the HHRA participants previously on March 29, 2007.

**University of Michigan Dioxin Exposure Study**

**Section G: Current Diet**

March 29, 2007

The question was raised at the dioxin HHRA meeting on 3/21/07 whether UMDES data could provide the actual counts of participants who had eaten meals of various types of game from the Tittabawassee River flood plain during the past 5 years. A request was made to provide the frequencies of meals eaten for questions G6, G7, G8, G9, and G10. The answers are tabulated below, by the frequencies that were reported for each game type. It should be noted a few numbers in the tables below differ slightly from the numbers posted to the UMDES website because the UM investigators re-imputed the data during winter 2007, which resulted in small changes in the estimated frequencies.

A specific request was made regarding the number of subjects who ate turtle. These responses are tabulated in table G10. We have tabulated the responses for each of the specific game meats reported in this question. These are the actual counts of responses, not imputed estimates. It should also be noted that these responses do not specify where the game was taken, so they are not specific to the Tittabawassee River flood plain.

**G10:** (during the last 5 years) have you ever eaten any other game meat not already mentioned such as Raccoon, Opossum, Groundhog, Woodchuck, Muskrat, Wild Turtle or Frog? (Note: 59 people answer yes among the 1324 participants.)

**G10a:** please specify type of meat(s)

<b>G10a</b>	<b>Frequency</b>	<b>Percent</b>
NO	1265	95.54
BEAR	5	0.38
BEAR, ALLIGATOR, RATTLE SNAKE	1	0.08
BEAR, ELK	2	0.15
BEAR, ELK, MULE DEER, BUFFALO, WILD TURTLE	1	0.08
BEAR, LION	1	0.08
BEAVER	1	0.08
BEAVER, ELK	1	0.08
BUFFALO, CARIBOU, MOOSE	1	0.08
CARIBOU	3	0.23
CARIBOU, BEAR	1	0.08
ELK	2	0.15
ELK, ANTELOPE	1	0.08
ELK, BUFFALO, BEAR	1	0.08
ELK, MOOSE, DUCK, BUFFALO	1	0.08
FROG	8	0.60
FROG, ELK, MOOSE	1	0.08
GAME DINNER: VARIETY	2	0.15
MOOSE	1	0.08
MUSKRAT	3	0.23
RACCOON	5	0.38
RACCOON, MUSKRAT, TURTLE	1	0.08
RACCOON, OPOSSUM, TURTLE, SQUIRREL, RABBIT, WOODCHUCK	1	0.08
RACCOON, PORCUPINE	1	0.08
RACCOON, SQUIRREL	1	0.08
TURTLE	8	0.60
TURTLE, FROG	2	0.15
TURTLE, GOAT	1	0.08
WOODCHUCK	2	0.15

The following table shows the number of people that have ever eaten the specific type of game meat (for example, there are 12 people who have ever eaten the BEAR).

<b>G10a</b>	<b>Frequency</b>
NO	1265
ALLIGATOR	1
ANTELOPE	1
BEAR	12
BEAVER	2
BUFFALO	4
CARIBOU	5
DUCK	1
ELK	13
FROG	11
GAME DINNER: VARIETY	2
GOAT	1
LION	1
MOOSE	4
MULE DEER	1
MUSKRAT	4
OPOSSUM	1
PORCUPINE	1
RABBIT	1
RACCOON	9
RATTLE SNAKE	1
SQUIRREL	2
TURTLE	13
WILD TURTLE	1
WOODCHUCK	3

	Region	N	0<X<=1	1<X<=2	2<X<=5	5<X<=10	10<X<=60	60<X<=120	X>120
<b>G10b</b>	Overall	<5							
Others	M/S FP								
Raised/ Taken in	M/S Near FP								
	M/S Out FP								
TR Flood- plain	M/S Plume								
	Jackson/Calhoun								

Note: X is the total number of meals eaten during the last 5 years among participants who had ever eaten any other game meat not already mentioned such as Raccoon, Opossum, Groundhog, Woodchuck, Muskrat, Wild Turtle or Frog that was raised or taken in the Tittabawassee River floodplain.

<5 - Estimate not shown to maintain confidentiality of study participants.

	Region	N	0<X<=1	1<X<=2	2<X<=5	5<X<=10	10<X<=60	60<X<=120	X>120
<b>G10c</b>	Overall	<5							
Others	M/S FP								
Raised/ Taken in	M/S Near FP								
	M/S Out FP								
Saginaw River/Bay	M/S Plume								
	Jackson/Calhoun								

Note: X is the total number of meals eaten during the last 5 years among participants who had ever eaten any other game meat not already mentioned such as Raccoon, Opossum, Groundhog, Woodchuck, Muskrat, Wild Turtle or Frog that was raised or taken in the Saginaw River or Saginaw Bay floodplain.

<5 - Estimate not shown to maintain confidentiality of study participants.

	Region	N	0<X<=1	1<X<=2	2<X<=5	5<X<=10	10<X<=60	60<X<=120	X>120
<b>G10d</b>	Overall	54	22	3	16	7	5	0	0
Others	M/S FP	7	2	0	1	1	2	0	0
Raised/ Taken in	M/S Near FP	13	7	2	3	0	2	0	0
	M/S Out FP	16	8	0	5	1	1	0	0
Other Areas	M/S Plume								
	Jackson/Calhoun	16	5	2	5	3	1	0	0

Note: X is the total number of meals eaten during the last 5 years among participants who had ever eaten any other game meat not already mentioned such as Raccoon, Opossum, Groundhog, Woodchuck, Muskrat, Wild Turtle or Frog that was raised in or taken from another area (not the Tittabawassee River, Saginaw River, or Saginaw Bay), or from an unknown area.