STATE OF MICHIGAN
DEPARTMENT OF HEALTH AND HUMAN SERVICES
LANSING

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August 26, 2015

Members of the Fish and Wild Game Contaminant Advisory Committee (FAWCAC)
In care of: Joe Bohr, Aquatic Biologist
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Members of the Fish and Wild Game Contaminant Advisory Committee:

I have updated the 2008 Eat Safe Wild Game fact sheet for the Bay, Midland, and Saginaw Counties in response to the technical and outreach updates completed with the Michigan Fish Consumption Advisory Program. Data used in the wild game advisory were from a 2007 Dow Chemical Company report "Analytical Report for Wild Game Sampled from the Tittabawassee and Saginaw River Floodplains in Support of Human Health Risk Assessment" (December 17, 2007). The report presented dioxin-like chemical levels (DLCs, dioxins, furans, and coplanar polychlorinated biphenyls [PCBs]) in wild game taken from the Tittabawassee River flood plain near Imerman Park, and the Shiawassee National Wildlife Refuge and Crow Island State Game Area on the Saginaw River. Game meat was analyzed from cottontail rabbit (skin-off), fox squirrel (skin-off), white-tailed deer (skin-off), Canada goose (skin-on and skin-off), wild turkey (skin-on and skin-off), and wood duck (skin-on and skin-off) along with white-tailed deer liver.

DLC levels were multiplied by the toxic equivalency factors (TEFs) to convert the nanograms per kilogram wet weight to parts per trillion of toxic equivalents (ppt-TEQ) of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). The TEFs used were those published in 2005 by the World Health Organization and recommended for use by the U.S. Environmental Protection Agency and the National Academy of Sciences (MDCH 2012)[1]. Half of the detection limit was used when specific DLCs were not detected in a sample.

In 2012, the U.S. Environmental Protection Agency released a final reference dose for TCDD. Subsequently, the Michigan Department of Health and Human Services (MDHHS)[2] updated screening levels and methodology used to develop fish consumption guidelines. The 95% upper

[1] Michigan Department of Community Health (MDCH). 2012. Technical support document for polychlorinated dibenzo-p-dioxins, dibenzofurans, and dioxin-like polychlorinated biphenyls reference dose (RfD) as the basis for Michigan fish consumption screening values (FCSVs). State of Michigan. Lansing, Michigan.
www.michigan.gov/documents/mdch/Dioxin_FCSV_HC_Jan_25_2013_409444_7.pdf

[2] The Michigan Department of Health and Human Services was created in April 2015 by Executive Order 2015-4 merging the Michigan Department of Community Health and the Michigan Department of Human Services.

confidence limit of the mean ppt TEQ (wet weight) levels in the game meat were compared to the DLCs screening values (wet weight) developed for the Michigan Fish Consumption Advisory Program. The fish consumption screening levels were developed using standard risk assessment equations, exposure assumptions, and the EPA reference dose for TCDD, and are also valid for wild game. The Michigan Fish Consumption Advisory Program Guidance Document describing the calculation of the screening values can be found at: http://www.michigan.gov/documents/mdch/MFCAP_Guidance_Document_Version_2.0_468977_7.pdf.

Table 1 (attached) presents the arthritic mean, maximum, 95% upper confidence limit of the mean, the number of servings (MI Servings), and the pounds per year of meat for an 80 kilogram (kg) adult using an 8 ounce (oz) serving. The MI Servings are scalable based on body weight, for example 4 oz for a 40 kg child and 2 oz for a 20 kg child. Therefore, the MI Servings are applicable for everyone, including children under the age of 15 and people of reproductive age. Samples from multiple locations were evaluated together as they were collected in 2007 and may no longer represent the animal populations today.

Please contact me (517-373-7672 or grayj@michigan.gov) if you have any comments or questions.

Sincerely,

Jennifer Gray

Jennifer Gray, PhD

CC: Kory Groetsch, MS, Manager, Toxicology and Response Section, Michigan Department of Health and Human Services

Table 1: Dioxin-like chemical levels (in parts per trillion of Toxic Equivalents [ppt-TEQ]) in wild game from the Tittabawassee and Saginaw River areas analyzed in 2007.

Game	Sample size	Mean (ppt-TEQ)	Maximum (ppt-TEQ)	95% UCL (ppt-TEQ)	MI Serving[a]	Pounds per year[b]
Canada goose muscle (skin-off)	24	0.87	1.80	1.0	4 per month	24
Canada goose muscle (skin-on)	24	1.41	3.95	1.73	4 per month	24
Cottontail rabbit muscle (skin-off)	33	0.84	1.95	0.93	4 per month	24
Fox squirrel muscle (skin-off)	24	0.72	0.84	0.74	8 per month	48
White-tailed deer liver	22	3.46	16.19	5.09	1 per month	6
White-tailed deer muscle (skin-off)	22	0.69	0.74	0.70	8 per month	48
Wild turkey muscle (skin-off)	21	4.98	12.85	6.89	1 per month	6
Wild turkey muscle (skin-on)	21	7.58	21.65	10.77	6 per year	3
Wood duck muscle (skin-off)	24	1.46	5.0	1.95	2 per month	12
Wood duck muscle (skin-on)	24	6.44	28.9	9.28	6 per year	3

a = The number of ounces in a MI Serving changes with body weight. For example, a MI Serving is 8 ounces for an 80 kilogram (kg) person, 4 ounces for a 40 kg person, and 2 ounces for a 20 kg person.
b = Pounds per year was calculated using an 8 oz serving for an 80 kg adult.