

# Letter Health Consultation

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EVALUATION OF CONTAMINATION OF GOOSE MEAT  
GENESEE and MACOMB COUNTIES, MICHIGAN

FEBRUARY 24, 2009

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

## **Health Consultation: A Note of Explanation**

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

EVALUATION OF CONTAMINATION OF GOOSE MEAT  
GENESEE and MACOMB COUNTIES, MICHIGAN

Prepared By:

Michigan Department of Community Health  
Under a cooperative agreement with the  
U.S. Department of Health and Human Services  
Agency for Toxic Substances and Disease Registry



STATE OF MICHIGAN

DEPARTMENT OF COMMUNITY HEALTH  
LANSING

JENNIFER M. GRANHOLM  
GOVERNOR

JANET OLSZEWSKI  
DIRECTOR

December 11, 2008

Dr. Daniel O'Brien, Wildlife Veterinarian  
Wildlife Disease Laboratory  
Michigan Department of Natural Resources  
4125 Beaumont Road, Room 250  
Lansing, MI 48910-8106

Dr. O'Brien:

At your request, I've reviewed the test reports for two goose meat samples collected in 2008 by the Michigan Department of Natural Resources (DNR); one from a lake in Genesee County and the other from a golf course in Macomb County. The samples were analyzed for persistent organic chemicals to determine if the meat presents an unacceptable risk to families that might receive and consume the goose meat.

The data that you provided indicate that the two samples each contain levels of polychlorinated biphenyls (PCBs) 1254 and 1260 at concentrations of 0.5 micrograms per gram (ug/g) and 0.1 ug/g respectively. One of the samples also contained a level of 0.1 ug/g of dichlorodiphenyldichloroethylene (DDE). In a previous letter dated January 31, 2008, I provided a screening level of 0.2 ug/g for total PCBs and a screening level of 5.6 ug/g for DDE. While the detected level of DDE in these samples does not exceed the screening level, the concentration of PCBs in these two samples presents some concerns.

To evaluate the human health risks and identify the contaminant screening levels provided in my previous letter, I assumed that a family (adults and children) might receive two geese per year every year for five years. I also assumed that each goose yields approximately three pounds of edible meat for a total of six pounds per year. This may overestimate the amount of meat consumed, but provides a conservative (i.e., more protective) estimate of the risk. The screening values were selected to be protective for children because they are assumed to be most sensitive to the effects of chemical contaminants. The screening values are applicable only to the exposure scenario described here.

The total PCB concentrations can be estimated by adding the detected PCB-1254 and PCB-1260 concentrations together for a total of 0.6 ug/g. This simple approach may be an underestimate of the total as other PCBs that were not analyzed for may be present in the samples. A child consuming goose meat with PCBs at this concentration under the assumptions described above would ingest three times the acceptable amount of PCBs.

Based on the discussion above, I recommend that the DNR not provide these geese to individual families for their sole consumption. However, the geese could be safely used in a meal to be shared by many people at a "soup kitchen" or under similar circumstances.

This concludes my review. If you have additional concerns or questions please contact me at 517-335-8566 or at [dykema1@michigan.gov](mailto:dykema1@michigan.gov).

Sincerely,

A handwritten signature in cursive script that reads "Linda D. Dykema". The signature is written in black ink and is positioned above the printed name and title.

Linda D. Dykema, Ph.D., Manager  
Toxicology and Response Section

## Attachment A

**Screening Levels**

Screening Levels for consumption of goose meat are calculated using the following equations.

**Noncarcinogens:**

$$\text{Screening Level} = \frac{\text{RfD} \times \text{BW} \times \text{AT}}{\text{EF} \times \text{ED} \times \text{IR}}$$

Where:

RfD (Noncancer Oral Reference Dose)	= 2.0E-5 mg/kg-day for PCBs = 7.0E-4 mg/kg-day for DDE
BW (Body Weight)	
Adults	= 70 kg
Children	= 15 kg
AT (Averaging Time)	= 1825 days (5 years x 365 days per year)
EF (Exposure Frequency)	= 6 meals/year
ED (Exposure Duration)	= 5 years
IR (Ingestion rate)	
Adults	= 0.23 kg/meal (1/2 pound)
Children	= 0.15 kg/meal (1/3 pound)

**Carcinogens:**

$$\text{Screening Level} = \frac{\text{TR} \times \text{BW} \times \text{AT}}{\text{SF} \times \text{EF} \times \text{ED} \times \text{IR}}$$

Where:

TR (Target Risk)	= 10 <sup>-5</sup>
BW (Body Weight)	
Adults	= 70 kg
Children	= 15 kg
AT (Averaging Time)	= 25,550 days
SF (Oral Cancer Slope Factor)	= 2.0 (mg/kg-day) <sup>-1</sup> for PCBs = 0.2 (mg/kg-day) <sup>-1</sup> for DDE
EF (Exposure Frequency)	= 6 meals/year
ED (Exposure Duration)	= 5 years
IR (Ingestion rate)	
Adults	= 0.23 kg/meal (1/2 pound)
Children	= 0.15 kg/meal (1/3 pound)

Source: Michigan Department of Environmental Quality (MDEQ). 2006. RRD Operational Memorandum No. 1, Table 4. Lansing, Michigan. January 23, 2006.

[http://www.deq.state.mi.us/documents/deq-rrd-OpMemo\\_1-Attachment1Table4ChemicalPhysical.pdf](http://www.deq.state.mi.us/documents/deq-rrd-OpMemo_1-Attachment1Table4ChemicalPhysical.pdf)

## Certification

The Michigan Department of Community Health prepared this Letter Health Consultation, Evaluation of Contamination of Goose Meat, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). At the time this Health Consultation was written, it was in accordance with the approved methodologies and procedures. Editorial review was completed by the Cooperative Agreement partner.



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Technical Project Officer, Cooperative Agreement Team, CAPEB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.



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Team Leader, Cooperative Agreement Team, CAPEB, DHAC, ATSDR