

# Letter Health Consultation

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2008 NUISANCE GEESE

LANSING, MICHIGAN

MARCH 3, 2008

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

2008 NUISANCE GEESE

LANSING, MICHIGAN

Prepared By:

Michigan Department of Community Health  
Under 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  
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JANET OLSZEWSKI  
DIRECTOR

January 23, 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 15 goose meat samples collected in 2007. These geese were collected by the Michigan Department of Natural Resources (DNR) from lakes, apartment complexes, parks, golf courses and businesses where the goose population was creating a nuisance. The samples were analyzed for metals and 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 samples collected in 2007 contain detectable levels of polychlorinated biphenyls (PCB or Arochlor 1254), dichlorodiphenyldichloroethylene (DDE), dichlorodiphenyltrichloroethane (DDT), dieldrin, heptachlor epoxide, and chromium. In previous years, I provided screening levels of 5.6 parts per million (ppm) for DDE and 0.2 ppm for PCBs. I have used a similar approach to evaluate previously undetected contaminants.

To evaluate the human health risks and identify contaminant screening levels for this scenario, I assumed that a family (adults and children) might receive two geese per year every year for five years. Per our previous discussions, I 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.

Table 1 provides the range of contaminated concentrations detected in 2007 samples and the calculated screening levels. These values are applicable only to the assumed exposure scenario and are to be used for screening purposes only. Levels of these contaminants in goose meat that exceed the screening levels may be acceptable on a case-by-case basis depending on the intended use of the meat. Attachment A provides a more detailed discussion of adult and child exposure assumptions, non-cancer reference doses, oral cancer slope factors, and the equations used in this analysis. Screening levels were calculated for cancer and noncancer health effects using both child and adult exposures assumption. The most protective value was chosen as the screening level presented in Table 1.

Table 1. Chemical Contaminants In Nuisance Geese Collected by the DNR in 2007

Contaminant	Range of Detections ppm	Screening Level ppm	Basis for Screening Level
PCB-1254	0.1	0.2	Child - Noncancer
DDE	<LOD to 0.08	5.6	Child - Cancer & Noncancer
DDT	<LOD to 0.06	4.0	Child - Noncancer
Dieldrin	<LOD to 0.007	0.1	Child - Cancer
Heptachlor epoxide	0.01	0.1	Child - Noncancer
Chromium	0.36	38	Child - Noncancer

LOD = level of detection

None of the contaminants were detected at levels that exceed their respective screening levels. Therefore human consumption of the goose meat does not appear to pose a human health risk for either children or adults.

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

Sincerely,

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)	= Chemical-specific from Table 2
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 days/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)	= $10^{-5}$
BW (Body Weight)	
Adults	= 70 kg
Children	= 15 kg
AT (Averaging Time)	= 25,550 days
SF (Oral Cancer Slope Factor)	= Chemical-specific from Table 2
EF (Exposure Frequency)	= 6 days/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)

Table 2. Chemical-specific Oral References Doses and Cancer Slope Factors

Contaminant	Noncancer Oral Reference Dose mg/kg-day	Cancer Oral Slope Factor (mg/kg-day) <sup>-1</sup>
PCB-1254	2.0E-5	2.0
DDE	7.0E-4	2.0E-1
DDT	5.0E-4	2.0E-1
Dieldrin	7.6E-5	8.0
Heptachlor epoxide	8.5E-6	2.9
Chromium	4.8E-3	NA

NA = Not Available

Source: Michigan Department of Environmental Quality (MDEQ). 2005. 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

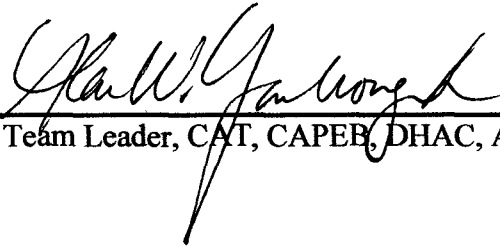
This **Nuisance Geese** Letter Health Consultation was prepared by the Michigan Department of Community Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures. Editorial review was completed by the cooperative agreement partner.



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Technical Project Officer, Cooperative Agreement Team (CAT),  
Cooperative Agreement Program Evaluation Branch (CAPEB),  
Division of Health Assessment and Consultation (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, CAT, CAPEB, DHAC, ATSDR