

South River Science Team Human Exposure Pathways Evaluation

Expert Panel Review
October 5th 2010



Human Exposure Evaluation

The key objectives:

- **better identify potential exposure,**
- **define potential risks and uncertainties,**
- **communicate information to the public.**

Human Exposure Evaluation

Exposure Team Members

DEQ: Don Kain, Calvin Jordan, Bill Hayden

EPA: Betty Ann Quinn

VDH: Doug Larsen, Jonathan Falk, Dwight Flammia, Karen Gruszynski

DGIF: Paul Bugas, Nelson Lafon

DACS: David Brown

DuPont: Mike Liberati, Ralph Stahl, Annette Guiseppi-Elie, Tim Ireland

Human Exposure Evaluation

Exposure scenarios to be evaluated

- √ Fish Consumption
- √ Recreational Use of River
- √ Potential Drinking Water exposures
- √ Contact with soils on the floodplain
- Other potential dietary exposures
 - Hunting consumption, e.g., waterfowl, small game
 - Domestic consumption, e.g., Garden crops, Beef, Poultry

Communicating to public on these issues

Human Exposure Evaluation

Floodplain soils

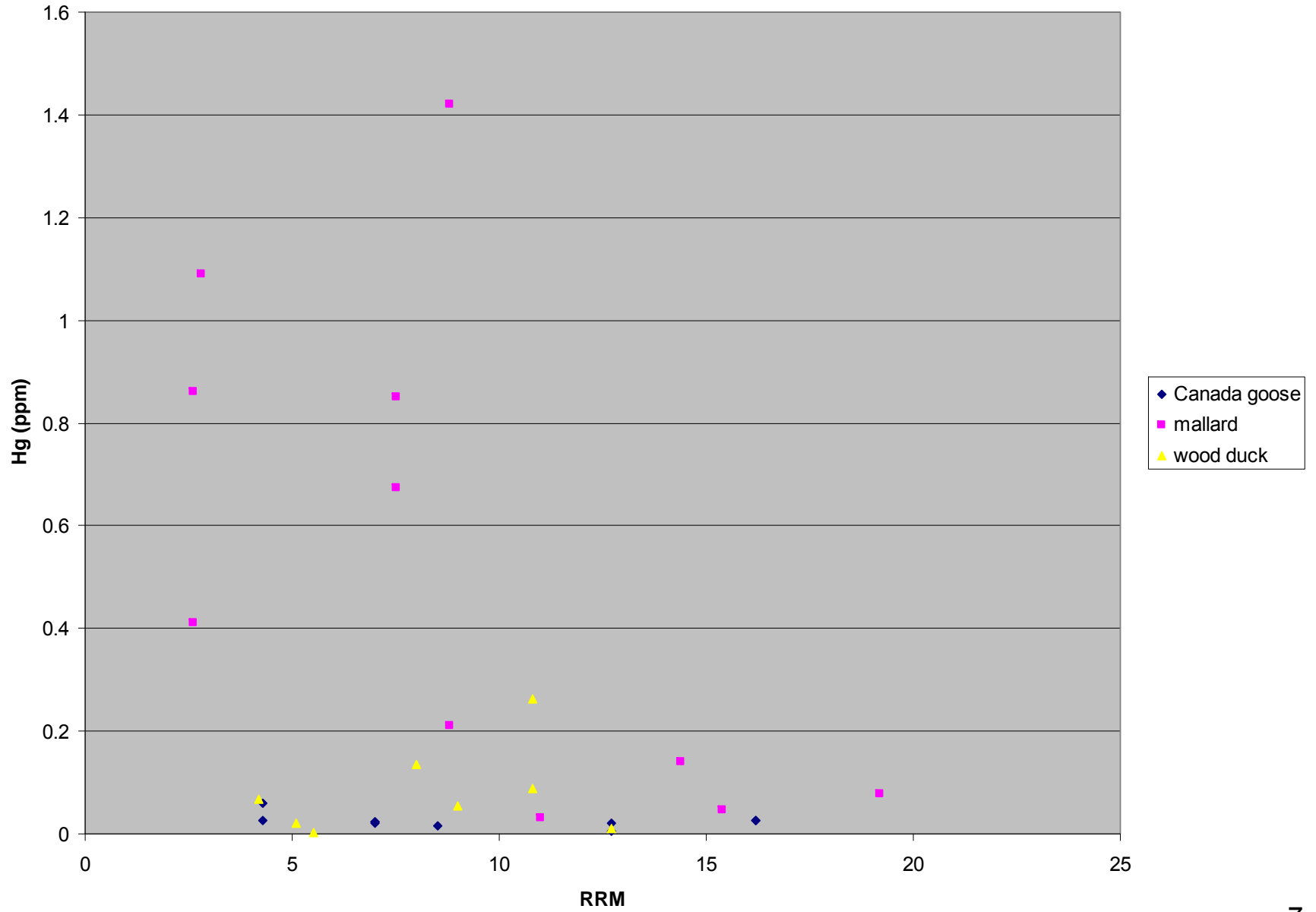
- Potential exposure evaluated:
 - √ direct contact (soil sampling);
 - √ ingestion of garden crops (2-year garden study);
 - √ ambient air (2 rounds of ambient air sampling)
 - √ Communicating results
 - √ General conclusions included in fact sheet,
 - √ Letters to landowners sent, follow up phone calls
 - √ Fact sheet on soil sampling completed
 - √ Fact sheet on garden crops
- Some additional soil sampling at specific locations, including ponds
- Peer review publication of garden crop study being revised per reviewer comments

Human Exposure Evaluation

Potential dietary exposures

- Hunting consumption, e.g., waterfowl, small game
 - √ Literature review of tissue levels completed
 - Includes domestic & game animals, total and methyl mercury
 - In general, results consistent with expectations
 - √ Waterfowl samples results available
 - 10 Canada geese, 11 Mallards, 8 Wood ducks
 - In general, results consistent with expectations
 - √ Results of small game analysis
 - Muskrats, squirrels available
- Statistical analysis of Hg concentrations and evaluation of potential consumption rates for waterfowl

Waterfowl Muscle Tissue Total Hg



Human Exposure Evaluation

Potential dietary exposures

- For wildlife evaluation, sampling plan for deer that graze on the floodplain based on likely exposure scenarios will be developed. Considerations for developing the plan include:
- Sub-team (Jordan, Quinn, Bugas, Lafon & Guiseppi-Elie)
 - Workplan complete.
 - Research permit obtained.
 - Study in progress.
 - Two deer (1 control, 1 Forestry Center)
 - Plans for collecting others this fall
- Results of prior wildlife (waterfowl, squirrels, muskrats, snapping turtles) to be evaluated

Human Exposure Evaluation

Potential dietary exposures

- For livestock evaluation, sampling plan for cattle that graze on the floodplain based on likely exposure scenarios will be developed.
- A sub-team (Jordan, Quinn, Brown, Gruszynski & Guiseppi-Elie) will draft plan for review by rest of team, implementation 2010
 - Met over the summer
 - Identifying farms on floodplain where cattle raised
 - Develop spreadsheet of options
 - Also identifying dairy farms for collection of milk samples
 - Milk samples likely first
 - Obtain background meat, milk samples (markets, etc.)
 - Other domestic consumption? Poultry?

Human Exposure Evaluation

Health survey at local clinics

- √ Local physicians (explicitly made aware of issue) have not reported any signs/symptoms
- √ Local health clinics have been provided literature (in both Spanish and English)
- Health survey to address effectiveness of consumption advisories
 - Survey completed
 - Data being analyzed