

# Human Health Risk Assessment (HHRA) - Flin Flon / Creighton Technical Advisory Committee (TAC)

February 24, 2010

## Attendance

MB Conservation:	Dave Bezak, Audrey Romanchuk, Mike Gilbertson (part of meeting)
MB Health:	Lawrence Elliott, Susan Roberecki
MB IEM:	Doina Priscu
MB Water Stewardship:	Kevin Jacobs
SK MOE:	George Bihun
SK Health:	James Irvine, David Sampson
Health Canada:	Sandra Slogan, Doug Haines (part of meeting via telephone)
HBMS:	Alan Hair, Ian Cooper, Shirley Neault
Intrinsic Environmental:	Elliot Sigal, Adam Safruk
Facilitator:	Sheldon McLeod
Observers:	Tom Lindsey, Dave Price
Goss Gilroy:	Blair Jackson, Celine Pinsent, Murray Lee

## Introduction

- The agenda was reviewed and accepted.

## Review of the Evaluation of Exposure Study Draft Report

- Goss Gilroy personnel lead a discussion on the draft Exposure Study Report:
  - The sample plan overestimated the number of children living in West Flin Flon.
  - The household response rate was similar for all four regions (61% overall), while the individual response rate was higher than normal following the interview component (94%). Therefore, the communication effort appears to have paid off.
  - Fifty percent of the urine samples had non-detectable levels of mercury. Eighteen percent of the samples had non-detectable levels of arsenic. But the samples cannot be removed from the overall results, nor can they be counted as zero, so the values were imputed to ensure that numbers in the range of 0 to detection limit were used.

Question: Is the elevated lead level noted in the older children similar to other studies?

Response: It is a bit different (normally it is two year olds) but appears to be influenced by other factors (e.g. gender).

- In a few places in the draft report, tables did not match text. These have been corrected already.
- It is important to remember that creatinine adjustments result in different units of measurement so are for descriptive purposes and are not statistical comparisons.
- One half of all of the mercury samples were below detection limits and none were at the medical follow-up level. Creighton samples were a little higher than the remaining three regions in the study area.

Question: How is this community's data different or the same as data from other studies?

Response: If the U.S. study data has breakdowns of rural versus urban residents, then some comparison could be made. But it is unlikely that a similar community could be found. This will be a communication issue. There is a small volume of data from a study completed in Belledune, New Brunswick. Health Canada personnel could provide the information (see action #152).

- So the answer to the third question in the Evaluation of Exposure Study, “Based upon the current scientific literature, what are the health risks from the levels of arsenic and inorganic mercury in urine and lead in blood found in children in the Flin Flon area?” is none for mercury, none for arsenic and yes, but... for lead. None of the blood lead levels measured in the Flin Flon area are associated with symptomatic clinical effects. The main source of the “but” is the use of the more conservative level of 5 µg/dL instead of 10 µg/dL as the level at which medical follow-up is recommended. Thirty children in this study were referred for follow-up but only four children would have been referred had 10 µg/dL been used. Adding to the uncertainty regarding the health risks for blood lead is assessing the significance of 1-2 IQ points in a six-year old.
- Dr. Murray Lee has spoken with each of the families of the 30 children referred for medical follow-up. None have followed up with Public Health agencies.
- The epidemiologist is looking at how to communicate the data while ensuring that specific children cannot be identified.
- When discussing the response to the fourth study question, “What personal factors are associated with the level of measured internal exposure of children in the Flin Flon area?” it is important to remember that correlations (not causes) to determine why levels may be elevated give an indication but not an interpretation.
- One of the predictors noted when the survey data was evaluated was average hours spent away from home. This predictor may be a reflection of blended families who share time between two residences, potentially in different regions within the overall study area.
- Renters often do not know how old the home is or what type of pipes are in the home. The age of the house could be better determined through tax rolls (see action #153).

Comment: The IEUBK model prediction was close to the actual results.

Response: The bridge document will highlight this comparison.

### **Review of HHRA Final Comments**

- No substantive comments were received from the TAC members but a table will be prepared outlining all of the comments and responses.
  - The recently supplied Manitoba drinking water arsenic data will make some difference compared to the currently used Ontario data.
  - The cancer risks description will be expanded.
  - The second objective of the HHRA regarding risk management will be dealt with in the summary document.
  - A clearer final conclusion will be provided.

Question: Will there be effects-based concentrations instead of PRGs? What about Flin Flon / Creighton applicable triggers? CCME triggers?

Response: The CCME numbers are used to trigger follow-up, not ensuring that all soil everywhere is below those numbers, so a true measure of exposure is the follow-up. The CCME guideline for soil is for arsenic from soil only and does not include other sources (e.g. food). So cleaning up soil in the Flin Flon area will not reduce the risk of exposure to arsenic.

Comment: A flow chart should be developed that could be used in all of the reports so that if somebody reads only one report, it is obvious that other parts exist and are important to avoid drawing the wrong conclusion.

Response: Agreed that a flow chart may be useful (see action #154).

- Publication of the report was discussed. The report will be available in three formats: hard copy, disc copy and downloadable from the website. Hard copies will be required for the Manitoba Conservation library, the Flin Flon Public Library, Flin Flon City Hall, Creighton Town Hall, HBMS and the various Government Departments (see action #155).
- The revised executive summary needs to be circulated again for comment (see action #156).

## **Integration and Summary Report**

- To deal with the slightly elevated risk predicted for methyl mercury ingested by eating local fish, it was initially suggested that a fish advisory may be necessary. Instead, a recommendation should be made in the summary report that this risk does not appear to be facility-related and further study may be needed.
- To ensure privacy is maintained, maps will not be used beyond internal purposes. However, there is a need to balance privacy concerns with transparency and openness. So the maps should be used as an interpretation tool for arsenic and mercury and as a communication tool for lead.
- There is no apparent correlation between blood lead, outdoor soil and indoor dust. However, the sample size is small (six).
- Individual levels proven not to be facility-related will become public health issues.
- A screening level ecological risk assessment will be a component of the summary report, with a recommendation to conduct an ERA. This is meant to address the data gap, not add pages to the summary report.
- The weight of evidence used to reach the final conclusions is not only based on the HHRA and Evaluation of Exposure studies, but also on the literature, epidemiology, population size, etc.

Comment: The lack of a control group for lead might be a concern. We don't have a Canadian community without a point source to use as a control group.

Response: This could become a recommendation for going forward, but the study was designed with internal controls.

- The slightly elevated lead levels, compared to an ideal sample, leave us with two questions:
  1. Do we need to do something?
  2. If so, what do we do?
- A tiered approach is recommended to:
  1. Narrow the list of potential sources.
  2. Collect more data.

Question: The model predicted issues with arsenic and mercury too but none were found. Does that change the risk result found for lead?

Response: No, it does not change the lead risk. But, lead attribution is hard for levels found below 10 µg/dL. It is that much harder for levels found below 5 µg/dL. It will be hard to find the benefit of one action versus another. The bottom line is will soil remediation impact future blood lead levels and is it worth it for 1-2 IQ points?

- The risk management plan then potentially consists of:
  - Individual follow-up (has already occurred);
  - Determination of the need for community-wide intervention;
  - Short term (tier 1) actions consisting of community education; and
  - Long term (tier 2) actions consisting of source attribution (paint analysis, visual inspection and 1<sup>st</sup> draw samples to assess leaded plumbing, further soil and dust testing and continued air monitoring beyond Smelter closure) and follow-up community-wide blood monitoring.
- Potential risk management activities consist of:
  - Dust control;
  - Focused soil removal;
  - Revegetation;
  - Soil isolation / amendment;
  - Plumbing / water main replacement; and
  - Paint related remediation.
- This discussion concluded with consistent yes responses to the following two questions:

- Does something need to be done?
- Does the tiered approach to risk management make sense?

Question: Who is responsible for the remaining actions that are not attributable to HBMS?

Response: It needs to be thought about, but the remaining issues need to be answered by the Provinces.

- Final thoughts, comments and questions included:
  - There is no immediate health issue but continual improvement is desired.
  - Because there is no immediate issue, we don't want to rush things. Careful thought about risk communication is needed.
  - There is good news; six chemicals of concern have been reduced to minor concern regarding lead in West Flin Flon. So six COCs have been reduced to one and four community areas have been reduced to one.
  - Cost effective mitigation is desired so will likely be a mixture of potential solutions.
  - How low do you go? All levels below 3? 95% Other?
  - We need to be respectful of and mindful to the community expectations.
  - A two-step in-camera process for updating the CAC was agreed to. So general sharing of information will occur in March followed by a workshop in May.
  - Who should the "4-pager" be from? HBMS? Intrinsic? TAC?

### Overall Schedule

- The schedule previously supplied by George was reviewed and slightly modified with the understanding that further slight modifications may be required but that no major slippage can be afforded (see actions 157-160).

**NEXT MEETING: TBD  
Teleconference**

#	Action	Responsibility	Target Date	Status
143	Poll TAC members for suggestions for providing sufficient technical information to the CAC to enable confidence in process / results	Sheldon McLeod	2010-01-15	2009-12-08, new 2010-01-12, ongoing 2010-02-08, ongoing 2010-02-24, <b>Complete</b>
145	Supply comments on the draft HHRA and responses to the IERP	TAC Members	<del>2010-02-08</del> 2010-02-12	2010-01-12, new 2010-02-08, ongoing 2010-02-24, <b>Complete</b>
146	Test availability of CAC members for a workshop & meeting	Sheldon McLeod	2010-02-26	2010-01-12, new 2010-02-08, ongoing
148	Prepare an additional response to the resident with the cadmium concern	Lawrence Elliott	2010-02-22	2010-01-12, new 2010-02-08, ongoing
149	Arrange a meeting of the CWG to prepare a communications plan.	George Bihun	2010-01-19	2010-01-12, new 2010-02-08, ongoing 2010-02-24, <b>Complete</b>
150	Provide comments on the draft Exposure Study report	TAC Members	2010-02-24	2010-02-08, new
151	Prepare an agenda for the February 24 <sup>th</sup> meeting	Alan Hair / Elliot Sigal	2010-02-22	2010-02-08, new 2010-02-24, <b>Complete</b>

#	Action	Responsibility	Target Date	Status
152	Provide Belledune lead study data to TAC members	Doug Haines	2010-03-01	2010-02-24, new
153	Obtain age of home information from the tax rolls	Goss Gilroy	2010-03-05	2010-02-24, new
154	Draft a flow chart that could be used in all of the reports	Intrinsik	2010-03-12	2010-02-24, new
155	Provide specific number of hard copies of the HHRA report needed for HBMS and Government Departments	Alan Hair / Govt. reps	2010-03-31	2010-02-24, new
156	Circulate the revised executive summary for comment	Intrinsik	2010-03-10	2010-02-24, new
157	Provide comments / responses re HHRA to Sheldon so that he can provide them to TERA	Intrinsik	2010-03-05	2010-02-24, new
158	Send revised Evaluation of Exposure study for peer review	Goss Gilroy	2010-03-19	2010-02-24, new
159	Arrange for in-camera meeting of the CAC for either March 24 or 25	Sheldon McLeod	2010-03-05	2010-02-24, new
160	Arrange for in-camera workshop for the CAC for early May	Sheldon McLeod	2010-03-10	2010-02-24, new