



Evaluation of Exposure

- HHRA link to additional studies
- Overview of evaluating exposure
- Some suggested approaches to evaluating exposure
- Next steps

Community Advisory Committee Meeting, Monday, June 1st, 2009

Areas for discussion

- What is the status of the HHRA?
- How does the HHRA link to further studies (e.g. evaluation of exposure)?
- What is an evaluation of exposure?
- What questions can an evaluation of exposure answer?
- Who would participate in an evaluation of exposure? How?
- When would an evaluation of exposure likely occur?

Status of the HHRA

- Draft report submitted to TAC January 2009
 - Approximately 2000 page document with main report and 18 appendices
- TAC conducted a technical review of the draft HHRA and provided comments
- Intrinsic revised draft to reflect new information as well as to address input from TAC
- Intrinsic provided 'Final Draft for 'Independent Expert Review Panel (IERP) Review' to TAC and IERP in April
- IERP process is on-going
 - 8-10 person panel of toxicologists and risk assessors from Canada and US
 - Panel now has the document and the review is ongoing

How does the HHRA link to further studies (e.g. evaluation of exposure)?

- An HHRA can determine that **additional information** is required to **validate** information from models
- Preliminary info from the HHRA for the Flin Flon area indicates that further information may be required to more **fully understand exposure** to potential human health risks associated with **some metals** in the community
- The most direct way to obtain **additional information** on human health risks is to assess human exposure through **biological samples** (e.g. blood, urine)
- This additional information can be used to **supplement** the HHRA

Where do we go from here?

- Consideration of this type of study has been ongoing since the beginning of the HHRA process, but a decision was deferred until more information became available to better shape and develop this type of study.
- Planning stages for an evaluation of environmental contaminant exposures is now ongoing
- Planning is being conducted under the oversight of a sub-committee of the TAC
 - Manitoba Health and Healthy Living; Manitoba Conservation
 - Saskatchewan Ministry of Health; Saskatchewan Ministry of Environment
 - Health Canada

What is an evaluation of exposure?

- An evaluation of exposure examines the levels of **internal exposure** to selected chemicals that a person or group of people encounters
- Sometimes referred to as **biomonitoring**, which refers to studies that focus on measuring exposures and effects in humans through the use of **biomarkers**
 - Biomarkers are measurements of chemicals that are found in people's fluids or tissues
 - For example: lead in blood, arsenic in urine, etc.

What is an evaluation of exposure?

- Evaluations of exposure through biomonitoring provide information on **actual exposures** received by people
- These measures account for exposures from **all** potential sources, pathways and routes that a person encounters (e.g, food, soil, air, water, etc.)
- **Environmental monitoring** (such as measuring chemicals in soil, air and water) is useful for assessing risk
- **Biomonitoring** can then be used to **validate** risk models developed from the environmental monitoring data

What questions can an evaluation of exposure study answer?

- Can answer some **very specific** questions
- Is not able to answer all questions
- The specific research questions need to be tailored to address **two purposes**:
 - The questions the community would find useful to have answered
 - Provide data that would help validate the information from the HHRA

Some potential evaluation exposure questions

1. *What are the current levels of internal exposure to specific chemicals in the population residing in or about the contaminated areas of Flin Flon?*
2. *Do Flin Flon Area residents have higher levels of specific chemicals than residents living in other parts of Canada?*
3. *Based upon the current scientific literature, what are the health risks from the levels of specific chemicals in urine and blood found in people in the Flin Flon Area?*
4. *What personal factors are associated with the levels of measured internal exposure to specific chemicals of people in Flin Flon Area (e.g., place of residence, level of chemicals in soil, age, gender, diet, personal habits, etc.)?*

Who would participate in an evaluation of exposure?

- Children, in general, are **more sensitive** to exposure to environmental contaminants than adults
- When compared with adults, children eat more food, drink more water, and breathe more air **relative to their size** – as a result, they may be exposed to relatively higher levels of contaminants
- **Behavior and habits** are also a factor. Children's normal activities, such as putting hands in their mouths or playing on the ground, create additional opportunities for exposures

Who would participate in an evaluation of exposure?

- Environmental contaminants may affect children disproportionately because their immune defenses are not fully developed or their growing organs are more easily harmed
- In other words, **if an effect exists, it will be more apparent in children**
- Study would most appropriately focus on a **sample** of Flin Flon/Creighton area children under 15 years of age
 - Approximately 400 children
 - Urine and blood samples (finger prick)
 - Parent/guardian participates in interview
- Study team would contact parents of children from random sample, explain the study, and then they would **voluntarily choose to participate** or not

How would the information be used?

- Study team will attempt to answer all the selected study questions with both interview data and results from the urine and blood samples
- Each child's parents/guardians and their physician will receive his/her own results along with a description of results for the community overall
- All individual results will remain confidential. No results will be linked to specific individuals in any reports.
- Information will be integrated into the overall HHRA findings and reported back to the community

Who would be involved in conducting an evaluation of exposure?

- The following groups would need to be involved:
 - **Habitat** (Principal Investigator and communications)
 - **EOHP+** (advisor to Principal Investigator)
 - **Goss Gilroy** (interviews and sample collection)
 - **Intrinsik** (overall coordination and link to HHRA)
 - **CAC** (community voice and guidance)
 - **TAC** (technical guidance)
 - Local health care community, including physicians

When would an evaluation of exposure likely occur?

- Planning for Fall 2009
 - Fall is optimal time to assess exposure, after a long period of interaction with air, soil, and water
- Will need to take into consideration...
 - HHRA information
 - Senior Public Health Officials' advice
 - Ethics review
 - Peer review
 - CAC and TAC guidance

What information is needed from the community?

We need to know...

- Community expectations for the study
- Particular issues the community would like the study to address
- How the community would like to be kept informed of study progress
- Any additional information you believe might assist the team in progressing with the study

Next Steps

- Decision to proceed with the study
- Refine study design based on CAC and TAC input
- Ethics review
- Peer review
- Provide update information to the community
- Recruit participants from sample
- Conduct evaluation of exposure
- Report back to the community and individual participants