Human Health and Ecological Risk Assessment at the Summerhill Developments in Newmarket, Ontario

Elliot Sigal and Ruth Hull

Intrinsik Environmental Sciences Inc.

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Overview

Who is Intrinsik?

What is risk assessment and how long does it take?

Why is arsenic in soil?

How are people exposed to arsenic?

Are there health risks associated with arsenic?

How can people decrease their exposure and risk?

How can people obtain more information?

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Who is Intrinsik?

Intrinsik:

- is a small consulting firm specializing in toxicology and risk assessment
- has been hired to complete a risk assessment for the woodlot and trail areas
- has worked on numerous sites containing arsenic in soil
- provides advice to clients regarding health and environmental risks

ELLIOT A. SIGAL, B.Sc., QP_{RA}
Executive Vice President, Senior Toxicologist

- 19 Years of Experience in risk assessment and toxicology, specializing in human health related issues
- Member of the Society of Toxicology (SOT)
- Senior project management and regulatory liaison
- QP_{RA} Responsible for 10+ RA under O. Reg. 153/04 and hundreds outside this regulation
- External reviewer of human health risk assessment, toxicology and risk assessment policy for the MOE
- Contact Info:
  - esigal@intrinsikscience.com
  - 905-364-7800 ext. 222
  - www.intrinsikscience.com

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RUTH N. HULL, M.Sc., QP_{RA}
Senior Ecotoxicologist

- 17 years of ecological risk assessment (ERA) experience
- Member of the Society of Environmental Toxicology and Chemistry (SETAC) since 1990
- QP_{RA} responsible for several risk assessments under O. Reg. 153/04 and outside this regulation
- External reviewer of ecological risk assessment, toxicology and risk assessment policy for the MOE
- Contact Info:
  - rhull@intrinsikscience.com
  - 905-364-7800 ext. 207
  - www.intrinsikscience.com

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What is risk assessment?

Risk assessment:

- determines the potential for adverse health effects to occur from exposure to chemicals.
- typically uses mathematical models to calculate risks.
- is conducted for human health effects and ecological effects (e.g., effects on plants, animals).
- is done to determine the potential, type and severity of risks, and if actions should be taken to reduce the potential for adverse effects.

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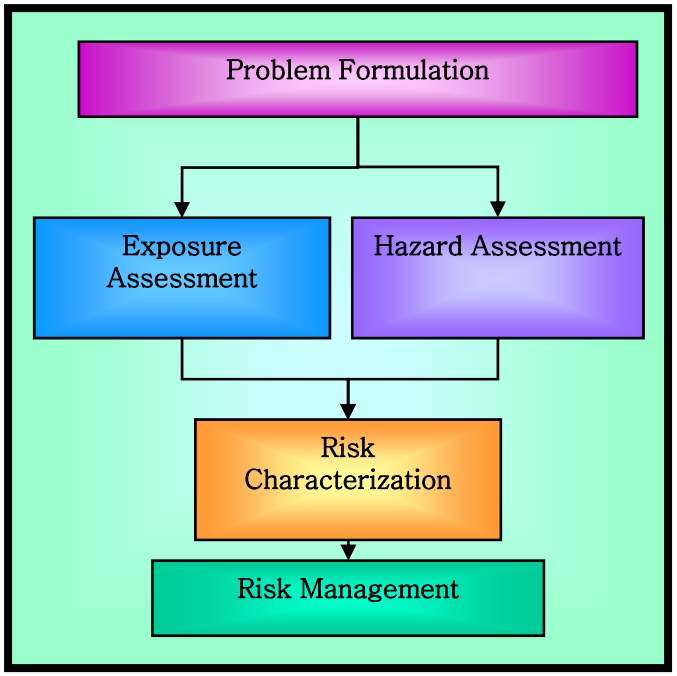
What is the risk assessment process in Ontario?

- Standard approaches exist for completing risk assessments.
- In Ontario, there is a regulation (O.Reg. 153/04) that dictates what must be done in the risk assessment.
- Risk assessments are reviewed by the Ontario Ministry of the Environment.



http://www.ene.gov.on.ca/envision/land/decomm/condition.htm

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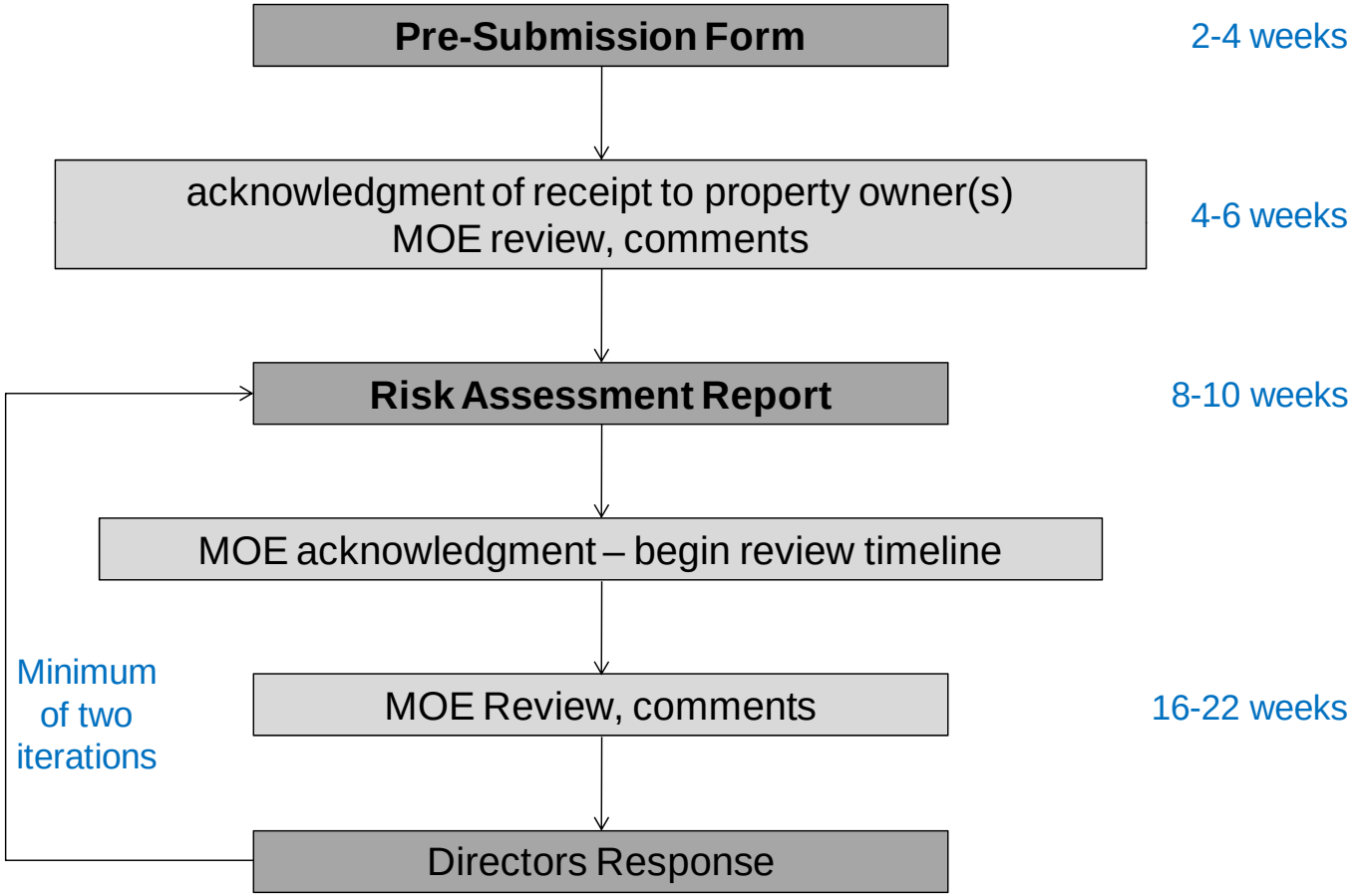
How long does a risk assessment take?



The process required by the Ministry for the risk assessment itself, as well as the review of the risk assessment, takes approximately one year to complete.

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What does a risk assessment involve?

- identification of:
  - Study area
  - Chemicals of concern (those that exceed MOE standards)
  - Receptors (people, plants and animals) of interest
  - Relevant exposure pathways (breathing, ingestion and skin contact)
  - Exposure scenarios
  - Data gaps

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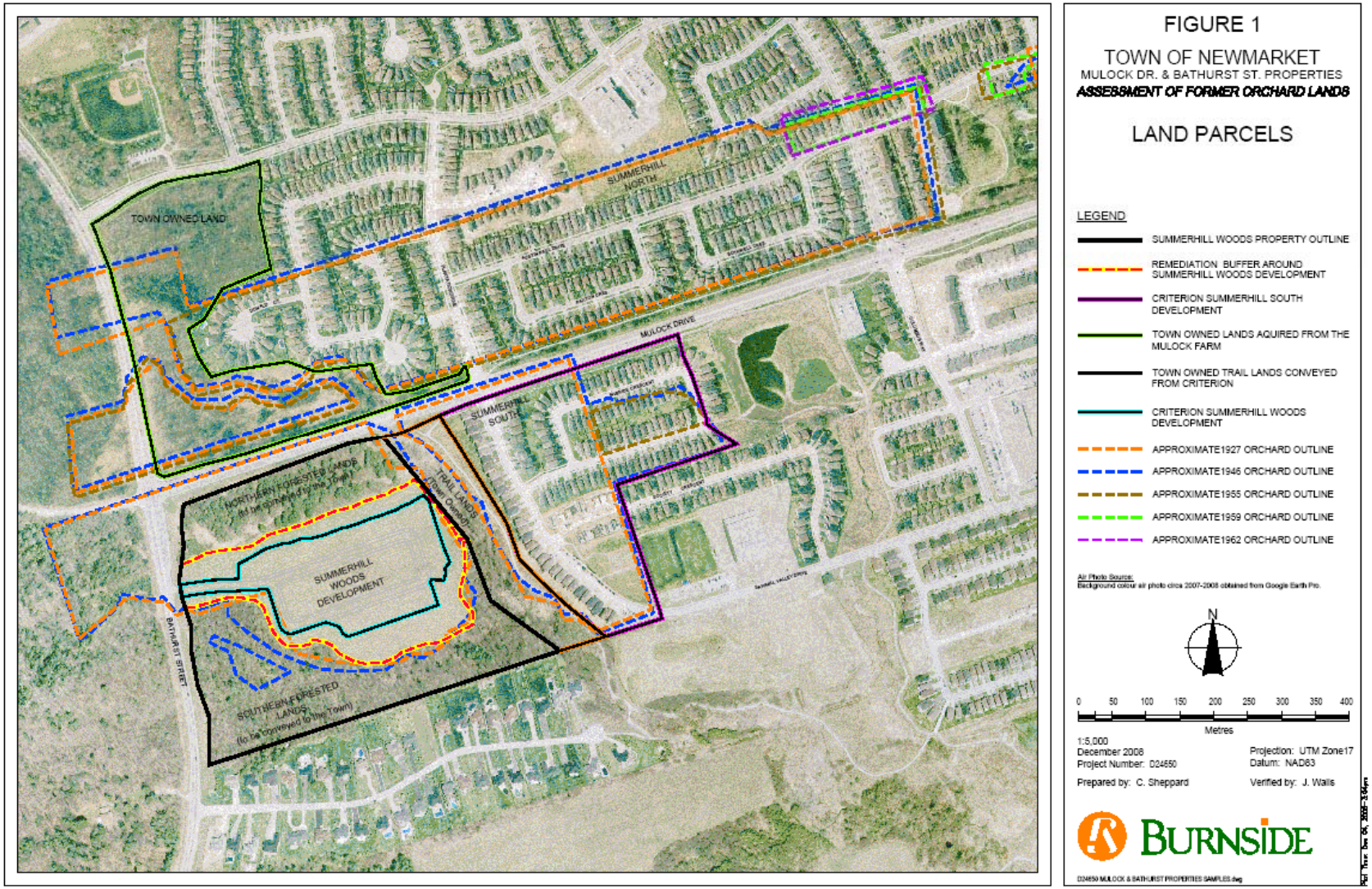
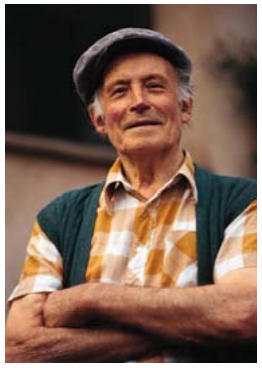
The area under study



Human Receptors

Identifying receptors (people) that may be exposed to the chemicals of concern

- Have access to potentially contaminated media;
- May be likely to experience higher rates of exposure than other receptors;
- May be especially susceptible to the toxicity of the chemicals of concern;
- Are the subject of concern of the general public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How are people exposed to arsenic in a park?

Dust inhalation

Soil/dust ingestion

Absorption of soil/ dust through skin

Health risks associated with arsenic exposure

- People everywhere are exposed to chemicals, like arsenic, as part of their daily lives.

- The effects of exposure depend on the type of exposure (oral, inhalation, or skin contact), the quantity of exposure, type of substance and its concentration, and the length of time of exposure.

- The body regulates levels of arsenic, and arsenic is readily excreted in urine in 1 to 3 days unless excess exposure occurs.

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Health risks associated with arsenic exposure

- Prolonged, repeated exposure to arsenic, at sufficiently high levels, has been associated with cancer.

- The risk assessment will evaluate the risks of developing cancer from exposure to excess arsenic.

- The levels identified in the Summerhill area indicated that there are NO IMMEDIATE HEALTH RISKS related to potential arsenic exposure

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Arsenic levels in Summerhill vs. other sites in Ontario

	Deloro	Falconbridge	Summerhill	
			Woodlot/Trail area	Development areas
# Soil Samples	147	449	144	78
Maximum Soil Arsenic (ppm)	605	555	87	21.5
95th %ile Arsenic (ppm)	308	255	54.7	10.4
Mean Soil Arsenic (ppm)	111	79	24.5	3.2
Health / Epidemiology Review?	Yes	Yes	NA	NA
Urinary Arsenic Study?	Yes	Yes	NA	NA
Recommendation / Conclusion	No soil remediation	No arsenic soil remediation	-	-

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How to decrease exposure

The soil in your yards meets regulatory standards.
There are some very simple steps that can be taken to reduce your exposure to chemicals in the woodlot/trail areas.

- Discourage your kids or pets from digging in the dirt, or eating anything from this area;
- Avoid bringing outdoor dirt inside by removing outdoor shoes;
- Brush pets outside after visiting the area;
- Wash your hands and face after playing in the area, before eating;
- Wash children's and pet's toys, if they were used in the area; and,
- Clean your home regularly to remove soil and dust.

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More information

For general information on arsenic in Ontario, the Ministry of the Environment has an arsenic Fact Sheet online at: http://www.ene.gov.on.ca/cons/3792e.pdf

The United States has a similar “Public Health Statement” online at: http://www.atsdr.cdc.gov/toxprofiles/tp2-c1-b.pdf

For regular updates on the risk assessment and issues surrounding the woodlot and Summerhill subdivision, please visit the Town of Newmarket website at www.newmarket.ca.

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