

INFORMATION BULLETIN
June 2016

ASSESSMENT CRITERIA FOR GROUNDWATER

1.0 Introduction

The purpose of this document is to provide guidance for Environmental Professionals in the selection of appropriate criteria for the assessment of risk to human and ecological receptors from contaminants in groundwater at sites in Manitoba.

2.0 Recommended Approach

Before selecting the groundwater assessment criteria for a site, the environmental professional conducting the assessment (the assessor) should first thoroughly characterise the environmental conditions at the site including the identification of:

- the contaminants of concern (COC) for the groundwater at the site,
- the potential receptors, and
- the operative pathways between the COCs and the potential receptors.

A COC can be any constituent that:

- is expected to be present, **or**
- has the reasonable potential to be present in the groundwater, **and**
- is known to have adverse effects on human and/or environmental health.

Potential receptors include all living things that may be exposed to the groundwater. Groundwater exposure pathways also include its discharge to surface water.

An operative pathway is one that connects the COC to the receptor and can include:

- ingestion of the groundwater, and/or
- inhalation of vapours partitioning off the groundwater,

When the above characterization indicates that there is an operative pathway between a COC and a potential receptor, the assessor must select the appropriate criteria to assess the significance of the risk. For this, Manitoba Sustainable Development recommends the following reference documents.

3.0 Recommended Reference Documents

Note that the numerical values in the referenced guidance documents below should be seen as assessment tools rather than as numerical targets. Whatever criteria are used to assess the significance of the contamination, the onus is on the assessor to justify why the criteria selected are the most appropriate for the site.

Where a site assessment indicates that the site groundwater is within an aquifer that supplies drinking water, assessors should use the *Guidelines for Canadian Drinking Water Quality* (Health Canada, October 2014).

Where the groundwater at a site is used for agricultural purposes such as providing water for livestock and crop irrigation, assessors should use the *Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses* (CCME, 1999).

Where groundwater from the site discharges to surface water, assessors should use the following Canadian Environmental Quality Guidelines:

- *Guidelines for Canadian Recreational Water Quality – Third Edition* (Health Canada, 2012)
- *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (CCME, 1999)

Where the above noted documents do not provide guidance for the risk to receptor via a particular pathway present at the site, or for a particular COC, Manitoba Sustainable Development will accept assessment criteria derived from the following documents:

- *Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites* (Environment Canada, 2013)
- *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act* (Ontario Ministry of the Environment, July 2011)
- *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* (Alberta Environment and Parks, May 2014)
- *Alberta Tier 2 Soil and Groundwater Remediation Guidelines* (Alberta Environment and Parks, May 2014)

4.0 For more information

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