Understanding Risk Management at Federal Contaminated Sites

What is a Contaminated Site?

A *contaminated site* is a property where soil, groundwater, surface water and/or sediments have been impacted by substances as a result of human or industrial activities.

A site may be contaminated if testing shows levels of substances, such as heavy metals or petroleum products, are higher than those recommended in the *Canadian Council of Ministers of the Environment* (CCME) *Environmental Quality Guidelines* (**http://ceqg-rcqe.ccme.ca/**). Further evaluation may be needed to determine whether humans or the environment could be harmed from exposure to these higher levels and what action, if any, should be taken.

Federal Government Responsibility to Manage Risk at Contaminated Sites

Custodial departments are federal government departments and agencies that manage properties or sites on behalf of the Government of Canada. Custodial departments are responsible for the environmental conditions of those sites, and for managing risks to humans and the environment. If there is a potential for harm to humans from exposure to substances at a site, a plan is developed to manage or reduce those risks. This process is called Risk Management.

The Risk Management Plan: Do Nothing or Take Action?

If soil quality meets the CCME guidelines, then no further action is needed. However, if certain contaminants are found at levels higher than the guidelines, then a scientific study called a *Human Health Risk Assessment* (HHRA) is conducted to assess the potential harm to human health. Once the HHRA determines that potential risk exists, then decisions must be made about how to manage those risks.

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Risk Management Decision-Making at a Glance

STEP 1: WHAT are the conditions of the site?

Environmental Site Assessment:

- biological, physical, and chemical characteristics

STEP 2: SO WHAT does this mean?

Risk Assessment:

- type, amount, and location of substances present
- people or wildlife who visit or live on or near the site
- routes of exposure (how substances may enter the body)
- the physical and environmental characteristics of the site

STEP 3: NOW WHAT should we do about this?

Risk Management:

- determine what, if anything, should be done if potential risks are identified at a site, and consult with stakeholders

Do Nothing

When:

- risks are minimal and expected to decline over time
- contaminants expected to break-down or living things may adapt

Monitor Situation

When:

- risks are *acceptable* today but may increase over time (may depend on the future use of the site)
- a contaminant might become more toxic over time
- the site is very remote

Reduce Exposure

When:

- unacceptable risk has been identified
- access to the site can be limited
- exposure pathways, such as drinking water, could be terminated
- removing contamination would cause more harm than good

Remove Materials of Concern

When:

- unacceptable risk has been identified
- contamination is easily accessible

The overall impacts need to be considered before deciding to clean up the site. A Risk Management plan may identify options other than remediation or cleanup, such as restricted access to the site or other initiatives. For example, if removing soil or sediment is expected to cause greater harm to humans or the environment, then it is better to leave those materials in place. The goal of Risk Management is to deal with environmental contamination without causing greater harm to human health or the environment.

The action taken will depend on various factors. For example, not all contaminants behave the same way. They may break down naturally over time, stay in place, move through soil, air, or water, or break down into other materials that behave differently. As well, in cases where there is wide-spread contamination it may be preferable to preserve the existing site, rather than disrupt existing wildlife habitat.

Public Involvement and Risk Management

Actively involving the public in understanding, assessing or resolving issues of concern helps to improve decision-making, and is an important part of risk management. In some instances, custodial departments and agencies are legally obligated to ensure that the public is engaged on matters relating to contaminated sites. Even when no legal obligation exists, custodians often recognize the value of public involvement in risk management.

Reference Materials

1. CCME Guidelines and related documents: http://documents.ccme.ca

2. Provincial and Territorial environmental objectives and standards: Visit your provincial or territorial environmental ministry's Web sites.

3. Human health risk assessment and public involvement at federal sites: Health Canada has a number of guidance documents on how human health risks are assessed at contaminated federal sites, and on conducting effective public involvement and risk communication. Visit Health Canada's Web site at:

   www.hc-sc.gc.ca/ewh-semt/contamsite/index-eng.php or contact:

   Contaminated Sites Division
   Health Canada
   Address Locator: 4905A 4th Floor
   269 Laurier Avenue W.
   Ottawa, Ontario K1A 0K9
   E-mail: cs-sc@hc-sc.gc.ca

For information on federal contaminated sites in Canada see the Federal Contaminated Sites Inventory (FCSI) at:
www.tbs-sct.gc.ca/fcsi-rscf/

For information on a specific contaminated site, please contact the responsible federal department or agency.

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