Stage 8 Amendments to the Contaminated Sites Regulation

Stage 8 amendments to the Contaminated Sites Regulation (the Regulation) under the *Environmental Management Act* (the Act) came into effect on January 24, 2013.

The amendments modify the Generic Numerical Water Standards for iron and manganese in Schedules 6 and 10 of the Regulation and also establish new Matrix Numerical Soil Standards in Schedule 5 of the Regulation.

The changes to the water standards are expected to provide significant relief for clients who have sites with high natural background levels of iron and manganese in groundwater or own sites such as service stations, which have temporary elevated iron and manganese levels in groundwater associated with the presence of petroleum hydrocarbon contamination.

Changes to numerical water standards

Schedule 6 Generic Numerical Water Standards

The amendments restrict the application of the water standards for iron and manganese to sites with specific activities that used iron and manganese. Footnotes have been added to Schedule 6 which explain that the water standards for iron and manganese only apply to sites with one or more Schedule 2 Industrial and Commercial Purposes and Activities (Schedule 2 activities) listed in those footnotes.

Iron numerical water standards

Footnote 58 indicates that the water standards for iron apply to the following Schedule 2 activities:

- A6. ink or dye manufacturing or wholesale bulk storage
- A7. leather or hides tanning
- A8. paint, lacquer or varnish manufacturing, formulation, recycling or wholesale bulk storage
- A11. textile dying
- C1. foundries or scrap metal smelting
- C2. galvanizing
- C3. metal plating or finishing
- C4. metal salvage operations
- C6. welding or machine shops (repair or fabrication)
- D2. coal coke manufacture, wholesale bulk storage or shipping
- D3. coal or lignite mining, milling, wholesale bulk storage or shipping
- D5. nonferrous metal concentrate wholesale bulk storage or shipping
- D6. nonferrous metal mining or milling
- E4. coal gasification (manufactured gas production)
- H14. mine tailings waste disposal

Footnote 59 states that the water standards for iron apply to sites used for the following additional Schedule 2 activities, but only if they occurred in conjunction with one or more of the Schedule 2 activities listed in footnote 58:

- H11. industrial waste lagoons or impoundments
- H20. hazardous waste storage, treatment or disposal

Manganese numerical water standards

Footnote 60 states that the water standards for manganese apply to sites used for the following Schedule 2 activities:

B1. battery (lead acid or other) manufacturing or wholesale bulk storage
C1. foundries or scrap metal smelting
C3. metal plating or finishing
C4. metal salvage operations
D2. coal coke manufacture, wholesale bulk storage or shipping
D3. coal or lignite mining, milling, wholesale bulk storage or shipping
D5. nonferrous metal concentrate wholesale bulk storage or shipping
D6. nonferrous metal mining or milling
E4. coal gasification (manufactured gas production)
H3. battery (lead acid or other) recycling
H14. mine tailings waste disposal

Footnote 61 indicates that the water standards for manganese apply to sites used for the following additional Schedule 2 activities but only if they occurred in conjunction with one or more of the Schedule 2 activities listed in footnote 60:

H11. industrial waste lagoons or impoundments
H20. hazardous waste storage, treatment or disposal

Schedule10. Generic Numerical Soil and Water Standards

Schedule 10 of the Regulation repeats the generic numerical water standard in Schedule 6 for manganese for drinking water use. This Schedule 10 standard has been amended by restricting its applicability in the identical manner to that for the drinking water standard for manganese in Schedule 6.

Why have amendments been made to the generic numerical water standards?

The Act provides relief from responsibility for naturally occurring contamination caused by substances which exceed natural background (non-human influenced) levels. This has resulted in savings for site owners and in reducing unnecessary work for ministry staff.

Determining the natural background level of a substance can be technically complex and expensive. Based on studies done by the ministry, many of the soil standards in the Regulation have been adjusted to reflect natural background levels across B.C. The Act also provides owners the option of adopting background soil levels for their sites based on published regional averages. These provisions for soil have often relieved owners from the need to determine natural background soil levels at their sites.

Due to the high variability of natural background substance levels, parallel provisions have not been feasible for any of the water standards in the Regulation. As a result, natural background groundwater levels can only be established site-specifically, often at significant cost to site owners. On the other hand, if natural site-specific background groundwater levels are not determined, sites can be inappropriately identified as contaminated, which could result in unnecessary investigation and cleanup costs for site owners.

This has been a particular problem for iron and manganese in groundwater. These substances often occur at naturally high levels within the environment. In the absence of provincial and regional natural background groundwater levels for iron and manganese, sites are often captured as contaminated sites based not on man-made iron and manganese pollution, but rather on high naturally occurring groundwater concentrations of those substances.

Changes to the matrix numerical soil standards

Schedule 5 Matrix Numerical Soil Standards

The Stage 8 amendments also contain a number of new human health protection soil standards for industrial land use in Schedule 5

of the Regulation. (Note that there is no new lead matrix standard for industrial land use for the intake of contaminated soil site-specific factor.) The changes to Schedule 5 include the following new standards:

Substance	New Matrix Numerical Soil Standard[1, 2]
Arsenic	300
Barium	>1 000[3]
Benzene	6 500
Benzo[a]pyrene	50
Cadmium	3 500
Chloride ion	>1 000[3]
Chromium	20 000
Copper	200 000
Dichloro-diphenyl-trichloroethane	3 500
Ethylbenzene	700 000
Ethylene glycol	>1 000[3]
Mercury	2 000
Pentachlorophenol (PCP)	35 000
Polychlorinated biphenyls (PCBs)	50
Polychlorinated dioxins and furans (PCDDs and PCDFs)	0.07
Sodium ion	>1 000[3]
Tetrachloroethylene (PERC)	70 000
Toluene	550 000
Trichloroethylene (TCE)	10 000
Xylene	>1 000[3]
Zinc	>1 000[3]

[1] Standards are for the site-specific factor intake of contaminated soil for industrial land use.
[2] All values are in units of µg/g unless otherwise noted.
[3] Value is in mg/g

Why have amendments been made to the matrix numerical soil standards?

Until these amendments were made, there were no human health protection soil ingestion standards for industrial land use in Schedule 5 of the Regulation. In addition to filling an important regulatory gap, the new standards provide a basis for assessing human health risk using numerical standards at sites where the protection of soil invertebrates and plants is not a priority, such as might occur at paved industrial operations.

Why has a new matrix numerical soil standard not been included for lead?

Recently Health Canada and other international environmental and human health regulatory agencies such as the US Environmental Protection Agency, UN World Health Organization and the US Centers for Disease Control and Prevention have extensively reviewed the toxicology of lead. These reviews have shown that exposure to lead can produce serious chronic toxic effects in humans at levels much lower than previously recognized. As a result many agencies are now revising their human health protective environmental quality guidelines and standards for lead. For example, the Canadian Council of Ministers of the Environment (CCME) has recently released for public review and comment, draft proposed new "Canadian Soil Quality Guidelines for Lead." The ministry is now reviewing the draft proposed new CCME guidelines for lead as part of preparing our own proposed updated lead standards for adoption in the Regulation.

New Director's Interim Standard for lead

The science related to how to best update environmental quality standards for lead has yet to be finalized. For example, the proposed CCME soil guidelines for lead may be further modified before being finalized and adopted. Consequently, the ministry did not consider it appropriate to propose new standards for lead as part of the Stage 8 amendments to the Regulation. Instead, a Director's Interim Standard for lead in soil for human health protection for industrial land use is expected to be issued. That interim standard would be in

effect for 1 year, allowing time for national soil quality guidelines for lead to be finalized and to be reviewed by the ministry before we develop new human health protection soil standards for lead for proposed adoption in Schedule 5 of the Regulation.

Note: This document is solely for the convenience of the reader. It does not contain and should not be construed as legal advice. The current legislation and regulations should be consulted for complete information.

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