

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY

LAND REMEDIATION SECTION Program Update

CSAP Professional Development Workshop
November 16, 2017

STAGE 10/11 IMPLEMENTATION

Danielle Grbavac
Operations Manager,
November 16, 2017



Ministry of
Environment and
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STAGE 10 & 11 CSR AMENDMENTS

- The Stage 11 (Housekeeping) amendments to the Stage 10 (Omnibus) amendments to the Contaminated Sites Regulation (CSR) and related consequential amendments to the Hazardous Waste Regulation (HWR) and Organic Matter Recycling Regulation (OMRR) were approved October 31, 2017.
- The amendments made to the regulations are summarized in the October 31, 2017 Update entitled [“Stage 10 \(Omnibus\) and Stage 11 \(Housekeeping\) Amendments to the Contaminated Sites Regulation”](#) on the Site Remediation website.
- **These changes came into legal force on November 1, 2017.**

PROTOCOLS AND GUIDANCE DOCUMENTS

- 12 documents were posted November 2, 2017 and are available on the ministry's website under Guidance and Resources.
 - Protocol 16: Determining the Presence and Mobility of Nonaqueous Phase Liquids and Odorous Substances
 - Protocol 17: Requirements for Notifications of Independent Remediation and Offsite Migration
 - Protocol 21: Water Use Determinations
 - Protocol 30: Classifying Substances as Carcinogenic
 - Technical Guidance 7: Supplemental Guidance for Risk Assessment
 - Technical Guidance 8: Groundwater Investigation and Characterization
 - Technical Guidance 15: Concentration Limits for the Protection of Aquatic Receiving Environments
 - Technical Guidance 16: Soil Sampling Guide for Local Background Reference Sites
 - Technical Guidance 17: Background Soil Quality Database
 - Administrative Guidance 6: Site Profile Decisions and Requesting Releases Where Local Government Approvals are Required
 - Procedure 9: Procedures for processing site profiles
 - Fact Sheet 13: Environmental Quality Guidelines

PROTOCOLS AND GUIDANCE DOCUMENTS

- 9 documents are being posted November 17, 2017 and are available on the ministry's website under Guidance and Resources.
 - Protocol 2: Site-Specific Numerical Soil Standards
 - Protocol 4: Determining Background Soil Quality
 - Protocol 6: Eligibility of Applications for Review by Approved Professionals
 - Protocol 11: Upper Cap Concentrations of Substances
 - Protocol 22: Application of Vapour Attenuation Factors to Characterize Vapour Contamination
 - Protocol 27: Soil Leaching Tests for Use in Deriving Site-Specific Numerical Soil Standards
 - Technical Guidance 4: Vapour Investigation and Remediation
 - Technical Guidance 9:
 - Technical Guidance 24:
 - Administrative Guidance 5: Approved professional recommendations relating to low and moderate risk sites

PROTOCOLS AND GUIDANCE DOCUMENTS

- There are more documents to post or provide updates on in the coming weeks. We will provide notification and information via CS elink.
 - Protocol 10: Hardness Dependent Site-Specific Freshwater Quality Standard for Cadmium and Zinc
 - Protocol 13: Screening Level Risk Assessment
 - Protocol 18: Criteria for Establishing Multiple Land Uses at Sites
 - Technical Guidance 3: Environmental Quality Guidelines
 - Technical Guidance 13: Groundwater Model
 - Administrative Guidance 3: Applying for contaminated site services
 - Administrative Guidance 22: Application of Wildlands Land Use
 - Procedure 8: Definitions and Acronyms for Contaminated Sites
 - Procedure 10: Requirements for Service Applications Resubmissions, Withdrawals, and Amendments
 - Procedure 17: Establishing Land-Use at a Site

WEBINARS

Title	Date	Time
Webinar 1: Overview of Stage 11 housekeeping amendment and errata, documents and next steps.	Tuesday November 21, 2017	10 am
Webinar 2: Summary of risk assessment updates. Background concentrations in soil update.	Tuesday November 21, 2017	1 pm
Webinar 3: Updates to provincial vapour standards and policy.	Thursday November 23, 2017	10:30 am
Webinar 4: Updated Contaminated Soil Relocation Agreement (CSRA) process and the Organic Matter Recycling Regulations (OMRR) Order In Council.	Tuesday November 28, 2017	10 am
Webinar 5: Protocol 2, site specific numerical soil standards model, and Protocol 27, leachate protocol.	Tuesday November 28, 2017	1:30 pm
Webinar 6: Screening Level Risk Assessment (SLRA) update.	Friday December 1, 2017	10 am

WHAT'S NEXT?

- Continued implementation of Stage 10 & 11 changes
- Intentions papers are in progress:
 - Site Identification
 - Soil Relocation
- Setting priorities for the next year

VAPOUR POLICY UPDATE

Peter Kickham
Manager, Risk Assessment and Remediation
November 16, 2017

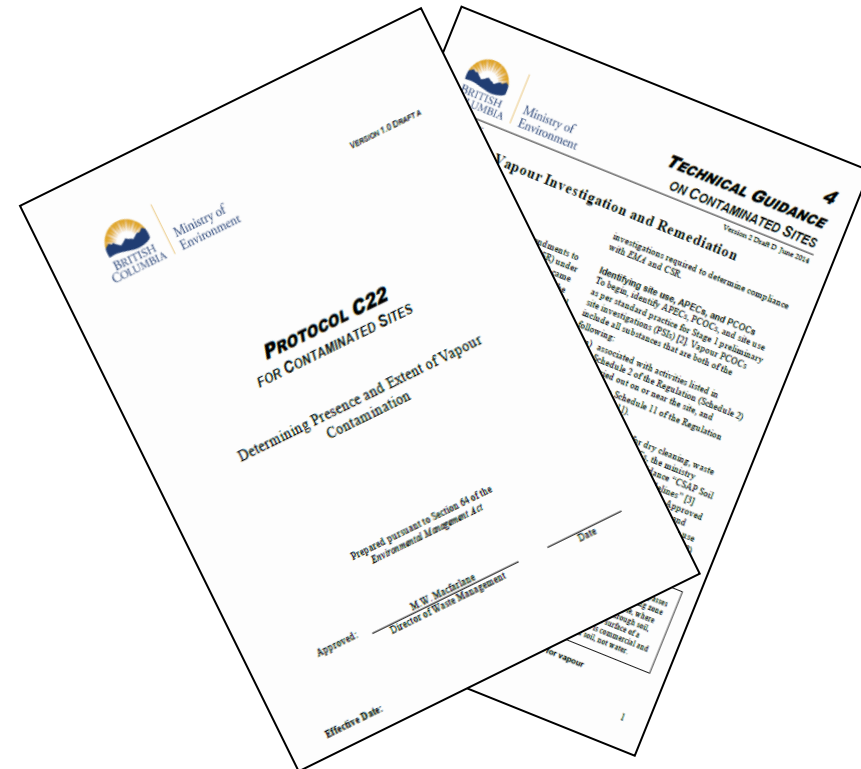


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VAPOUR POLICY RELEASE IMMINENT

Many Comments Received

- Documents will be finalized with minor edits.
- ENV looking to begin work addressing some of the issues identified in the near future.
- Three main issues identified



DEVELOPMENT OF PARKADE SPECIFIC DEFAULT VAFS

Parkade use column added: Parkade VAFs equal to AL/UP/RL

- Complete derivation of parkade specific VAFs
- Make any necessary adjustments to Parkade Attenuation Adjustment Divisor (PAAD).

Table 1. Vertical vapour attenuation factors (vertical VAFs)

Sample Location	Sample Depth ^{2,3,4}	Vertical Vapour Attenuation Factor (α_i, α_o) ¹			
		Outdoor Exposure (α_o)	Indoor Exposure (α_i)		
			Agricultural, Urban Park, Residential Use	Commercial, Industrial Use	Parkade Use
Below unlined crawlspace, earthen basement, or wooden ⁵ basement	0.45 to 5 m	-	1.0 x 10 ⁻¹	-	-
Subslab ⁶	-	-	2.0 x 10 ⁻²	-	-
In preferential flow pathway ⁷	-	1.0 x 10 ⁻⁴	2.0 x 10 ⁻²	-	-
	< 1.0 m	1.0 x 10 ⁻⁴	2.0 x 10 ⁻² (8)	-	-
	1.0 m	1.5 x 10 ⁻⁶	2.8 x 10 ⁻³	3.7 x 10 ⁻⁴	2.8 x 10 ⁻³

EXPANSION OF “REFINEMENT STEP”

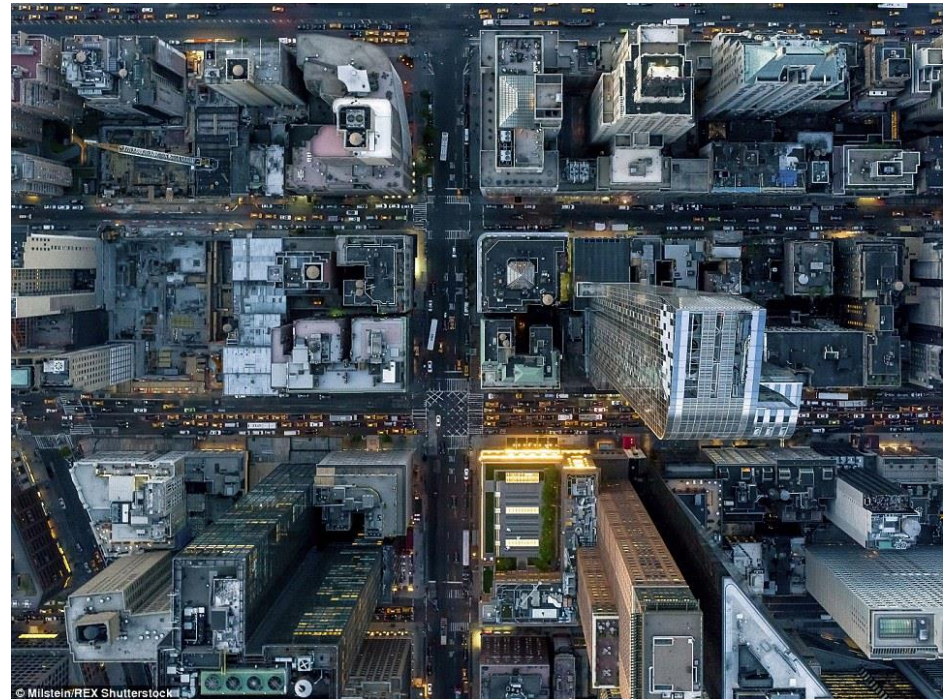
Vapour “Refinement Step” applicable only to gasoline and diesel substances

- If all major constituents of gasoline and diesel mixture are below analytical detection limit in soil and groundwater, they need not be evaluated in soil vapour.
- Determine if evidence would support extending the refinement step to other substance classes (e.g., drycleaning solvents).

IMPERVIOUS SURFACE COVER AND BIODEGRADATION

Use of Biodegradation Attenuation Adjustment Divisor (BAAD) limited by presence of impervious surface cover.

- Evaluate impervious surfaces for their ability to limit gas transport, and differentiate between asphalt and concrete.
- Evaluate adjusting the precluding condition for surface cover



BRIEF COMPLIANCE REFRESHER AND BROWNFIELDS UPDATE

Alan McCammon

Manager, Remediation Assurance & Brownfields
November 16, 2017



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COMPLIANCE REFRESHER

MINISTRY OF ENVIRONMENT'S COMPLIANCE GOAL

Compliance with all regulatory requirements established to protect the environment, human health and safety.



MINISTRY OF ENVIRONMENT'S COMPLIANCE OBJECTIVES

Setting Requirements

To establish regulatory requirements that are clear, practical and enforceable.

Promoting Compliance

To achieve high rates of voluntary compliance.

Verifying Compliance

To ensure the Ministry has the information necessary to determine compliance, compliance rates and to inform program management.

Enforcing Requirements

To enforce regulatory requirements using a consistent, clear and predictable approach.

EXAMPLES (Contaminated Sites)

- CSR standards; protocols; 54(3)(d) requirements; AiPs/CoCs
- TGs, AGs etc.; CS e-Link; public presentations, Conference
- Both proactive (Oracle database queries; Site Registry) and reactive (complaint follow up)
- Orders, AMPs, etc



BROWNFIELDS UPDATE

- What happened to “BC Brownfields 2.0”?
 - Several key accomplishments in 2016:
 - Research on best practices for brownfield programs and the business case for brownfield redevelopment;
 - Development of options for future consideration
 - During 2017, continue to provide occasional guidance/assistance to groups such as local government, BC Housing, Ministry of Jobs, Trade and Technology, etc.
- Brownie Awards finalists include several from BC
 - Contaminated Sites Approved Professionals Society, British Columbia
 - BC Hydro Rock Bay Project, Victoria, British Columbia
 - SunMine, Kimberley, British Columbia
 - North Pacific Cannery Conservation Master Plan, Municipality of Port Edward, British Columbia



CONTAMINATED SITES BOREHOLE LOG DATABASE

Shanti Gill

Co-op Student (ENV), Groundwater Mapping Assistant

Presented by Heather Osachoff

A/Manager, Risk Assessment and Remediation

November 16, 2017



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PROJECT OBJECTIVE

Objective: To provide summarized hydrogeological information that may be useful for environmental investigations

- Supporting information includes geological stratigraphy and hydraulic conductivity (if known)
- This information may help to...
 - reduce environmental investigation costs
 - lessen the amount of drilling into natural confining barriers such as clay
 - provide supporting information to help assess water use at contaminated sites (e.g. determining the potential presence of natural confining barriers in the subsurface, or the absence of a drinking water aquifer)

PROJECT PROGRESS

Database size

August 2017	November 2017	December 2017
939 sites	1208 sites	1400+ sites (projected)

The Past – Archives

- Municipalities with a high concentration of contaminated sites are targeted for data uploading
- Files are pulled and information is entered into database
- Time for one archived site to be entered: ~15-20 minutes (depends on file size and availability-electronic or paper copy only)

PROJECT PROGRESS – CONTINUED

The Present – Applicant Excel Spreadsheets

- Applicants enter information into Excel Spreadsheet template
- Information reviewed and transferred into the database
- Time for one site to be entered: ~5-8 minutes (depends on how much information needs to be changed)

The database will be updated at a faster rate once archives have been uploaded and the focus is on present sites.

The Future

- Publically available data entry allowing for applicants to enter data directly as well as ministry staff
- Sites updated more frequently

Data Organization

- Data is extracted from report content and borehole logs, collected and formatted in a database and then uploaded to iMapBC

Locating Data

- Each site is georeferenced in iMapBC – navigating tools can be used to find sites
- iMapBC application and Training Manual available on Ministry Website:
Home > Data > Geographic Data > Web-based Mapping > iMapBC
- Sites uploaded are under the Provincial Layer as follows:
Waste > Borehole Lithology Sites – Total Depth

DATA ON IMAPBC – CONTINUED

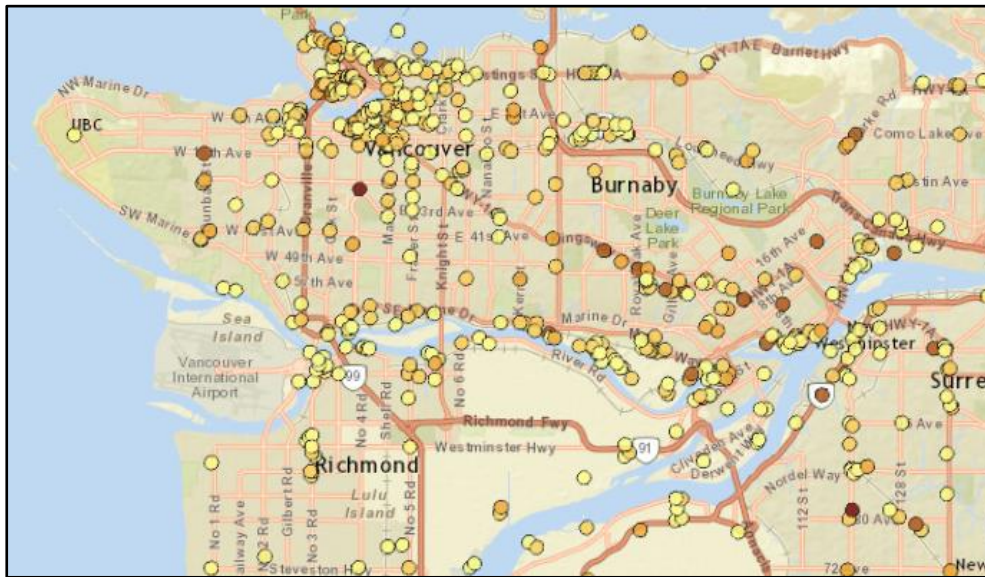


FIGURE 1 – Borehole Data Layer



FIGURE 2 – Point Analysis

Total Depth 14.3	Borehole Lithology ID 470	Hydraulic Conductivity N/A
Date Drilled Jun 1, 1997 5:00 PM	Borehole Name 97-14S/D	From Unit Depth 0
TOC Elevation N/A	Latitude 49.22	Depth to Bottom of Screen N/A
Depth to Top of Screen N/A	Borehole Municipality Vancouver	To Unit Depth 0.3
Surface Elevation N/A	Depth To Water Below Surface N/A	Unit Description sand (medium) and gravel (fill)
Longitude -123.0409	Depth to Water Below TOC N/A	Unit Number 1
Borehole Site ID 327	OBJECTID 470	

FIGURE 3 – Point Information

OTHER PROJECTS

Manager for Contracts:

- GPM 2017
- Stage 11 webinars
- Background Metals
- Leachate validation

Case files:

- Decision maker on P6 and P9 approvals, roster applications for instruments, HR site submissions
(Backfill for Peggy)

Stage 10/11 Amendments:

- Water standards lead
- Vapour policy co-lead
- Documents: P22, TG4, P10, TG9, P28 chapter (water)

Committees:

- BC ELTAC (Environmental Laboratory Technical Advisory Committee)
 - + subcommittee on toxicology and microbiology
- SAB CS Board of Directors as ENV rep

THANK YOU



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