

**GEOENVIROLOGIC PROFESSIONAL DEVELOPMENT
AND
THE CSAP SOCIETY**

**EXAM PREPARATION WORKSHOP
SESSION 1 – ROSTER REVIEW PROCESS AND EXAM OVERVIEW**

Session 1: Roster Review Process and Exam Overview

8:15 - 8:30 Registration and Breakfast

8:30 – 8:45 Introductions and Forming of Study Groups

8:45 – 9:15 Roster Process:

- Director's Roster, Protocol 6, Administrative Guidance #5
- CSAP Society role and membership requirements
- Roster Practice Guidelines and checklists

9:15 – 10:00 Exam Process:

- qualification requirements
- syllabus and format
- preparation of questions
- exam writing strategy

10:00 – 10:15 Break

10:15 – 11:15 Study Plan:

- reference materials (documents and websites)
- study groups
- sample questions
- discussions

11:15 – 12:00 Next Sessions and “Homework”

- mock mini-test
- overview of next sessions
- group assignments

Examination Schedule and Location

Standards Assessment Technical Part - Tuesday, Nov 17, 2009 from 8:30am to 1:30pm (5 hours)

Risk Assessment Technical Part - Thursday, Nov 19, 2009 from 8:30am to 1:30pm (5 hours)

Regulatory Part - Wednesday, Nov 18, 2009 from 8:30am to 12:30pm (4 hours)

The examination is offered in a computer-based format and will be held at the following computer test lab:

ICBA Computer Test Lab

211 - 3823 Henning Street, Burnaby, BC, Canada V5C 6P3

Internet

- Connect to: tcc-guest
- Username: Walker
- Password: tcclub

The Standards for Educational and Psychological Testing

Developed jointly by: American Educational Research Association (AERA); American Psychological Association (APA); National Council on Measurement in Education (NCME)

Revised significantly from the 1985 version, the 1999 *Standards for Educational and Psychological Testing* has more in-depth background material in each chapter, a greater number of standards, and a significantly expanded glossary and index. The new *Standards* reflects changes in federal law and measurement trends affecting validity; testing individuals with disabilities or different linguistic backgrounds; and new types of tests as well as new uses of existing tests. The *Standards* is written for the professional and for the educated layperson and addresses professional and technical issues of test development and use in education, psychology and employment. This book is a vitally important reference for professional test developers, sponsors, publishers, users, policymakers, employers, and students in education and psychology. (See an [overview of organization and content](#).)

CSAP Examinations Summary

November 2008 Examination Summary:

- Regulatory: 66% of candidates passed
- Standards Assessment Technical: 87% of candidates passed
- Risk Assessment Technical: 42% passed
- Candidates were invited to complete feedback forms following each part of the exam and the feedbacks have been [collated](#) [pdf 89kb].

October 2007 Examination Summary:

- Regulatory: 70% of candidates passed
- Standards Assessment Technical: 50% of candidates passed
- Risk Assessment Technical: 33% of candidates passed

Questions and Answers (Q&As)

The following is a collection of questions and detailed answers regarding the interpretation of applicable contaminated sites legislation, policies, protocols and procedures.

Additional information regarding the application of the contaminated sites regime is presented on our website in numerous [fact sheets](#), [guidance documents](#), [protocols](#), [procedures](#) and [policies](#).

If you require further assistance, please view our [contact list](#) to direct your question to the appropriate ministry staff member.

[Regulatory](#)

[Administrative](#)

[Technical](#)

[Interim Guidance for Site Vapour Assessment](#)

[Draft Guidance for Vapour Investigation and Remediation](#)

Frequently Asked Questions (FAQs)

The following is a collection of answers to commonly asked questions relating to contaminated sites in B.C. and the basic application of the contaminated sites provisions of the *Environmental Management Act*.

[Contaminated Sites Legal Instruments](#)

[General](#)

[Legislation and Regulations](#)

[Liability](#)

[Ministry Services & Fees](#)

[Site Information Requests & the Site Registry](#)

[Site Investigation and Remediation Process](#)

[Standards](#)

[Types of Contamination](#)

[Interim Guidance for Site Vapour Assessment](#)

Mini quiz – 7 Questions

Answer the following 7 questions. Please note that each exam has been prepared with the expectations that the average candidate would complete the exam in 3 hours. However, additional time has been allowed to minimize time pressure and focus on testing for competency (rather than how quickly someone can recall, process or look up information).

This means that you have:

- A. *3.4 minutes per regulatory question*
- B. *4.3 minutes per risk or standard question*

***Assuming you are an average candidate,
you should complete the Mini quiz in 18 minutes***

Mini quiz Q1 – Soil Vapour

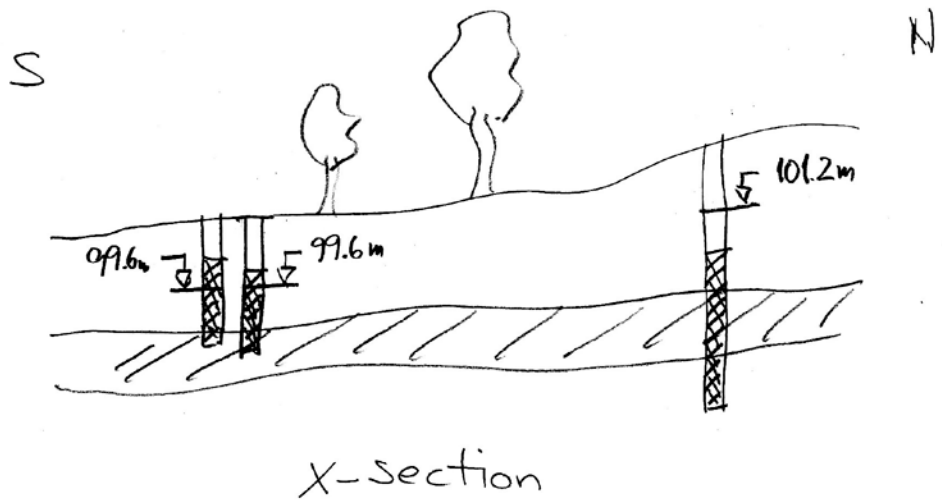
At one area of potential environmental concern (APEC), the benzene concentration in vapour exceeds the Schedule 11 standard. However, benzene is not detectable in the soil, sediment, or water of this APEC. Is it acceptable to exclude benzene as a vapour PCOC at this APEC, and why?

- A. *Yes, as long as you have thoroughly investigated the soil, sediment, and water at this APEC.*
- B. *No, because an exceedance of a scheduled standard require further investigation and/or remediation according to the CSR.*
- C. *Yes, if you have reviewed typical background concentrations and concluded that the concentration measured falls in the reported range.*
- D. *No, because even the most detailed site investigation may not identify all sources of contamination in soil, sediment and water.*

Mini quiz Q2 – Groundwater

For a service station site, the site investigator concluded that shallow groundwater is flowing in a southward direction. Is the information shown on the figure below sufficient to support this interpretation, and why?

- A. Yes, because the hydraulic gradient appears to be in a southerly direction
- B. No, because one well penetrates the underlying confining layer
- C. No, because the well screens lengths are different
- D. Yes, because the flow in unconfined aquifers follows the slope of the land which is to the south



⊕ 99.5m

⊕ 101.2

⊕ 99.6m

Plan with Watertable elevations

Mini quiz Q3 – P6

This service station site is located in the Vancouver. Gasoline leaked from a UST and resulted in on-site soil and groundwater contamination including LNAPL. The on-site contamination has been removed through a lot-line-to-lot-line excavation. However, dissolved groundwater contamination still exists off-site under the adjacent sidewalk and street.

You have been asked to roster a submission for a numerically-based COC for this site. Based on the information provided, would this submission meet the Protocol 6 requirements, and why?

- A. No, because there is off-site contamination which is not allowed for P6 submissions
- B. Yes, because a separate instrument could be obtained for the off-site contamination
- C. No, because the off-site contamination exceeds Schedule 6 standards
- D. Yes, but only if the service station owner has provided a notification of off-site contamination to MOE and the City.

Mini Quiz Q4 – Soil Vapour

A former city works yard site with two APECs: i) sandblasting and a ii) gasoline UST, were found to have soil and groundwater contamination as shown in the table below. The site is being redeveloped for residential use. Is a soil vapour assessment required and if so, which chemicals should be included in the assessment?

- A. No, because volatile (e.g. those chemicals included in Schedule 11) PCOC in soil and groundwater do not exceed the RL standards
- B. Yes. VPHv(6-13) should be included since LEPHs(10-19) was detected
- C. No, because the concentrations of volatile (e.g. those chemicals included in Schedule 11) PCOCs in soil and groundwater were all below the detection limits
- D. Yes. All Schedule 11 chemicals that may be present in gasoline must be assessed, even those for which no soil and groundwater standards exist (such as trimethylbenzene)

Mini Quiz Q4 – Soil Vapour

	Soil	Groundwater
	mg/kg	ug/l
Benzene	<DL	<DL
toluene	<DL	<DL
Ethylbenzene	<DL	<DL
Xylene	<DL	<DL
VPH	<DL	<DL
LEPH	2500	<standards
Copper	550	<standards
Lead	1500	<standards
Zinc	500	<standards
Other metals	<standards	<standards

Mini Quiz Q5 – Regulatory

A former industrial site has been contaminated by past historical activities. Is a notification of commencement of independent remediation required if a site profile has been submitted for a site and why?

- A. No, because the CSR provides an exemption when a site profile has been submitted
- B. Yes, because no exemptions are provided in the regulation for this situation.
- C. No, because the site profile would contain the required information.
- D. Yes, but only if the remediation is to commence within 15 days

Mini Quiz Q6 – Regulatory

If a closure plan for a recently closed municipal landfill has been approved by the Ministry of Environment (under the Solid Waste Management Regulation), is a site profile required?

- A. No, as long as the closure plan has been approved, the landfill decommissioning is not considered a Schedule 2 activity under the CSR.
- B. Yes, because landfilling of wastes is a Schedule 2 activity, whether permitted or not, and closure means the landfill operations have been decommissioning.
- C. No, because landfilling of municipal wastes are exempt from Schedule 2 activities, and the permit would not have allowed for placement of industrial wastes, hazardous wastes or other contaminated materials.
- D. Yes, because, although the closure plan has been approved, hazardous wastes may be present in contravention of the hazardous waste regulation.

Mini Quiz Q7 – Regulatory

An undeveloped site consists entirely of mature forested land except for a railway track which runs through it. Is a site profile required for this site, and why?

- A. No, because a railway track is not considered to be a Schedule 2 activity.
- B. Yes, because rail related operation is considered to be a Schedule 2 activity.
- C. No, because moving trains are not considered to contribute significant contamination.
- D. Yes, because railway ballast sometimes contain mineralized crushed rock with elevated concentrations of metals.

Example Q&A – Regulatory

If a closure plan for a recently closed landfill has been approved by the Ministry of Environment (under the Solid Waste Management Regulation), is a site profile required?

Landfilling of wastes is a Contaminated Sites Regulation Schedule 2 activity. When the landfill, permitted or not, no longer accepts waste this is considered decommissioning. At that time the owner or operator is required to submit a site profile directly to the ministry. Any landfill that has closed since April 1, 1997 should submit a site profile to the ministry advising of decommissioning, if they have not already done so.

Example Q&A – Regulatory

Are railway tracks a Schedule 2 activity under the Contaminated Sites Regulation?

No, railway tracks do not fall within the definition of either G6 or G7 in Schedule 2. A rail line would only be a Schedule 2 activity where a "rail yard", maintenance facility or other freight handling occurred.

Example Q&A – Regulatory

Chromium concentrations in soil exceed the Contaminated Sites Regulation (CSR) Schedule 7 Column III (relocation to agricultural land use land), but does not exceed regional background concentrations specified in Protocol 4, Table 1. If the soil is to be relocated to a site in the same area, is a Soil Relocation Agreement required?

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No, a Contaminated Soil Relocation Agreement would not be required. The need for a CSRA is exempted by CSR section 41(3)(b).

Example Q&A – Regulatory

Is the evaluation of inhalation of vapour to a site construction worker necessary when conducting a risk assessment for a CSR instrument?

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Assessment of vapour risks to trench workers, though not mandatory for a contaminated sites legal instrument, is recommended as part of the due diligence process at a site.

Example Q&A – Regulatory

At an area of potential environmental concern, VPH_v was identified as a vapour PCOC. After thorough investigation of the soil and water at this APEC, no detectable concentrations of VPH_s or VPH_w were found, but detectable concentrations of LEPH_s and LEPH_w were found. Given this, is it required to retain VPH_v as a vapour PCOC for this APEC?

Example Q&A – Regulatory

No. If you do not detect VPHs or VPHw in soil or water at your APEC, then you do not need to retain VPHv as a vapour PCOC for that APEC (i.e., you do not have to analyze vapour for VPHv), even if you do detect LEPHs or LEPHw.

(Note that this question arises because VPHv includes the C6-13 carbon range, while VPHs/w includes the C6-10 carbon range and LEPHs/w includes the C10-19 carbon range. So, screening out VPHv as a vapour PCOC where LEPHs/w is detected in soil/water equates to ignoring the potential vapour risks associated with the C10-13 range of LEPHs/w. Based on information currently available to the ministry, the C10-13 fraction of VPHv is generally a minor contributor to the overall toxicity of VPHv. As a result, the ministry considers the potential vapour risks associated with the C10-13 fraction of LEPHs/w to be quite small, and thus the elimination of VPHv as a vapour PCOC where VPHs and VPHw are not detectable in soil or water is considered to be defensible.)

(Note also that elimination of VPHv as a vapour PCOC where VPHs/w is not detectable but LEPHs/w is detectable is optional – for completeness, one may want to retain VPHv as a vapour PCOC under these conditions.)

Example Q&A – Soil Vapour

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Example Q&A – Soil Vapour

At one area of potential environmental concern (APEC), the benzene concentration in vapour exceeds the Schedule 11 standard. However, benzene is not detectable in the soil, sediment, or water of this APEC. Is it acceptable to exclude benzene as a vapour PCOC at this APEC?

Yes, as long as you have thoroughly investigated the soil, sediment, and water at this APEC. Note that the detection of benzene in vapour at your APEC may indicate inadequate soil, sediment, or water characterization; the presence of an adjacent or overlapping APEC; or sampling or laboratory error. All of these possibilities should be thoroughly investigated and discussed in the site investigation report(s) if you choose to eliminate benzene as a vapour PCOC for the APEC in question.

Example Q&A – Soil Vapour

Can we use vapour data collected from groundwater monitoring wells to characterize vapour contamination at our site?

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Yes, but note that given the scarcity of guidance on such sampling, collection and use of vapour data from groundwater monitoring wells raises many questions to which the ministry currently does not have answers. For instance, how does one collect a representative vapour sample from an apparatus that is designed specifically for groundwater monitoring? What are the potential sources of sampling error? Should vapour attenuation factors be applied to such data? If so, should they be based on the distance from the base of a building to the top of the capillary fringe, the top of the vapour sampling screen, the bottom of the bentonite seal, or some other reference point? Furthermore, is such vapour sampling appropriate for sites with potential vapour sources in soil?

Given these issues, the ministry strongly recommends that when you use vapour data collected from groundwater monitoring wells to characterize vapour contamination at your site, you (a) provide a detailed description and diagram of your sampling apparatus and how it works, (b) thoroughly discuss the representativeness of the vapour data, (c) thoroughly discuss the rationale for all professional judgement decisions (e.g., explain why a particular vapour attenuation factor was chosen), and (d) thoroughly discuss all your assumptions and uncertainties.