



# PERFORMANCE ASSESSMENT COMMITTEE

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## Lessons Learned

David Mitchell  
& Tara Siemens-  
Kennedy

# PAC: Lessons Learned Quiz

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- These questions are mostly issues that have been identified during Performance Assessments, but did not necessarily result in a deficient finding.
- Discuss each question with your table.
- Each table to provide their answers by a show of hands.
- READY?

David  
Mitchell  
and Tara  
Siemens  
Kennedy

# Question 1

Is depth delineation a requirement for a flow through site (i.e. affected parcel)?

- a. Yes
- b. No

# Question 1 - Answer

Is depth delineation a requirement for a flow through site (i.e. affected parcel)?

- a. Yes
- b. No

Answer – Yes. Full delineation of a plume for a flow through site is a requirement.

## Question 2

Is it possible to obtain a Determination without analytical data?

- a. Yes
- b. No

## Question 2 - Answer

Is it possible to obtain a Determination without analytical data?

- a. Yes
- b. No

Answer - Yes. Determinations have been issued for sites without APECs.

## Question 3

A small diesel tank was removed from a Site 25 years ago. Some amount of soil was removed and sent to a treatment facility. As is typical of the time, no samples of the affected soils had been collected and recent work demonstrated the remaining soils were clean. What is the appropriate instrument to apply for?

- a. Determination
- b. Numeric Certificate of Compliance
- c. Either, use your professional judgement

## Question 3 - Answer

A small diesel tank was removed from a Site 25 years ago. Some amount of soil was removed and sent to a treatment facility. As is typical of the time, no samples of the affected soils had been collected and recent work demonstrated the remaining soils were clean. What is the appropriate instrument to apply for?

- a. Determination
- b. Numeric Certificate of Compliance
- c. Either, use your professional judgement

Answer C. Either – Both can be acceptable. The question to ask is what is more likely... was it contaminated, or not? If contaminated, then make an educated guess as to the contaminants (e.g. LEPH and HEPH).



## Question 4

If the only contamination encountered on a Site is attributable to a Beneficial Use (e.g. zinc around a galvanized pipe), the appropriate instrument that must be applied for would be:

- a. Determination
- b. Numeric Certificate of Compliance
- c. Risk-Based Certificate of Compliance

## Question 4 - Answer

If the only contamination encountered on a Site is attributable to a Beneficial Use (e.g. zinc around a galvanized pipe), the appropriate instrument that must be applied for would be:

- a. Determination
- b. Numeric Certificate of Compliance
- c. Risk-Based Certificate of Compliance

Answer (c) – The Beneficial Use does not negate the presence of contamination. Protocol 13 (Screening Level Risk Assessment) is the document that speaks to Beneficial Uses. Since contamination is still present, the appropriate instrument is a Risk-Based COC.

## Question 4b

Does such an application require a Protocol 6 pre-approval?

- a. Yes
- b. No

## Question 4b - Answer

Does such an application require a Protocol 6 pre-approval?

- a. Yes
- b. No

Answer - Yes – Under Admin Guidance 15 (Scenario 6), Ministry preapproval is required.

## Question 5

A historic metal foundry from 1920 to 1940 operated across a number of legal lots. A single parcel from within the former operation was purchased by a developer with the intent to construct new housing. The surrounding lots from the historic foundry now have a mix of industrial and commercial occupants. In order to obtain a Certificate, one would need to:

- Delineate and remediate the full extent of contamination on all lots from which the foundry operated.
- Delineate the full extent of contamination, but only remediate the parcel for which development is sought.
- Delineate and remediate the Site only.

## Question 5 - Answer

Answer (c) – If contamination is attributable to a Wide Area Contamination, then you only have to deal with the single parcel, per Admin Guidance 15, Scenario 5B.

Note: “Wide Area Contamination” means contamination which:

- is associated with specific substances from known sources;
- is associated with one or more identified responsible persons; and
- covers an extensive geographic area comprising many individual parcels, many or all of which are contaminated with one or more of the specific substances.

## Question 5b

Does such an application require a Protocol 6 pre-approval?

- a. Yes
- b. No

## Question 5b - Answer

Does such an application require a Protocol 6 pre-approval?

- a. Yes
- b. No

Answer – No – Under Admin Guidance 15 (Scenario 5b), Ministry preapproval is not required.



## Question 6

True or False, soil vapour refinement can be completed for any regulated soil vapour substance:

- a. True
- b. False

## Question 6 - Answer

True or False, soil vapour refinement can be completed for any regulated soil vapour substance:

- a. True
- b. False

Answer - False – Soil vapour refinement can only be completed for “gasoline and diesel substances”.

## Question 7

Which of the following circumstances would qualify for soil vapour refinement from a gasoline or diesel source:

- a. Non-detect concentrations of regulated substances in soil and groundwater associated with the gasoline or diesel source.
- b. Non-detect soil and groundwater concentrations for all substances regulated in soil vapour associated with the gasoline or diesel source.
- c. Partitioned concentrations of soil and groundwater hydrocarbons meet soil vapour standards.

## Question 7 - Answer

Which of the following circumstances would qualify for soil vapour refinement from a gasoline or diesel source:

- a. Non-detect concentrations of regulated substances in soil and groundwater associated with the gasoline or diesel source.
- b. Non-detect soil and groundwater concentrations for all substances regulated in soil vapour associated with the gasoline or diesel source.
- c. Partitioned concentrations of soil and groundwater hydrocarbons meet soil vapour standards.

Answer (b) – In order to refine soil vapour, the full suite of substances must be analyzed in soil or groundwater (see Table 1 of GD4). This includes n-hexane, n-decane, 1,3,5-Trimethylbenzene, etc...

## Question 8

The groundwater flow model detailed in Protocol 13 is being used to assess the risk of dissolved Benzene to Drinking Water receptors. The correct distance to use in the equations is:

- a. The distance to Drinking Water wells.
- b. The distance to the site boundary.

## Question 8 - Answer

The groundwater flow model detailed in Protocol 13 is being used to assess the risk of dissolved Benzene to Drinking Water receptors. The correct distance to use in the equations is:

- a. The distance to Drinking Water wells.
- b. The distance to the site boundary.

Answer (b) – The Drinking Water standards must be applied at the Site boundary.

## Question 8b

Would you change your answer if the substance was Pentachlorophenol?

- a. Yes
- b. No

## Question 8b - Answer

Would you change your answer if the substance was Pentachlorophenol?

- a. Yes
- b. No

Answer - Yes – Pentachlorophenol is an ionizing organic substance, which precludes the usage of a Protocol 13 approach.



## Question 9

Is it possible for a Non-High Risk Site to be a Risk-Managed High Risk Site?

- a. Yes
- b. No

## Question 9 - Hint

Is it possible for a Non-High Risk Site to be a Risk-Managed High Risk Site?

- a. Yes
- b. No

Hint: Definitions:

**High Risk Site** means a site determined to be a high risk site under a director's protocol.

**Risk-Managed High Risk Site** is a situation where high risk conditions are addressed through Risk Management.

**Risk Management** means "actions, including monitoring, designed to prevent or mitigate risks to human health or the environment caused by contamination at a site. Risk management may include institutional controls and engineering controls."

## Question 9 - Answer

Is it possible for a Non-High Risk Site to be a Risk-Managed High Risk Site?

- a. Yes
- b. No

Answer - Yes – A Risk-Managed High Risk Site is a situation where high risk conditions are addressed through Risk Management.

For example, Upper Cap Concentration exceedances capped with 1m of an engineered control (e.g. rip rap), may constitute a Risk Managed High Risk Site, even though you may not be a High Risk Site.

## Question 9b

Does such an application require a Protocol 6 pre-approval?

- a. Yes
- b. No

## Question 9b - Answer

Does such an application require a Protocol 6 pre-approval?

- a. Yes
- b. No

Answer (b) – No, it's not a High-Risk site.

## Question 10

- The ENV has recently communicated revised requirements for PVPs. Which of the following risk controls is most likely to require a PVP?
  - A. Asphalt must remain in place within Granville St., Vancouver, BC.
  - B. Groundwater from the Site must not be used as drinking water.
  - C. Asphalt must remain in place at an industrial site with heavy machinery use.

# Question 10 - Answer

- ANSWER:

- C. Asphalt must remain in place at an industrial site with heavy machinery use.

- ENV requirements for PVPs:

- Only required when they 'add value' to the submission such as when there are inspection or monitoring requirements
  - Requirement determined at the discretion of the practitioner / Approved Professional
  - Rationale for not requiring a PVP should be included (in the RA report and in Section 5.2 of the SoSC)

# Question 11

- When a Protocol 13 SLRA approach is used within a DQRA, the following is true:
  - A. All potential exposure scenarios included in P13 checklist must be evaluated, including the potential for exposure to groundwater contamination (i.e., the soil leaching and groundwater transport modeling).
  - B. Select exposure scenarios can be ruled out using P13, with the remaining exposure scenarios evaluated in the DQRA.
  - C. If you use P13 to rule out exposures to terrestrial biota (based on soil contamination > 1 m bgs), you do not have to consider deep rooting vegetation.



# Question 11 - Answer

- ANSWER:
  - B. Select exposure scenarios can be ruled out using P13, with the remaining exposure scenarios evaluated in the DQRA.
- Common issues in PAs:
  - Soil leaching and groundwater transport modeling included, and contradicts groundwater data; however, DQRA states that groundwater plume is stable/declining.
  - P13 used in combination with DQRA, but deep rooting vegetation not considered, and P20 checklist not included.
  - Reminder: check precluding conditions to ensure you can use P13 SLRA.

## Question 12

- When should a CofC, Schedule B, Clause 1 assumption also be included as a risk control in Clause 2 of Schedule B:
  - A. Always.
  - B. When a future building has the potential to be in contact with groundwater.
  - C. When vapour contamination is identified in your DSI and carried forward for evaluation in your RA and alternative VAFs are used.

# Question 12 - Reminder

## Schedule B

### Requirements and Conditions

1. Any changes in <land>, <vapour>, < water> or <sediment> use<s> must be promptly identified by the responsible person<s> in a written submission to the Director. An application for an amendment or new Certificate of Compliance may be necessary. The use<s> to which this condition applies are described in Schedule C and in the site investigation documents listed in Schedule D.

The documents listed in Schedule D indicate that vapour attenuation factors were applied to meet Contaminated Sites Regulation <numerical> <and> <or> <risk-based> standard<s> at <and adjacent to> the site. These vapour attenuation factors were selected based on assumptions about the structures, locations and depths of <buildings> existing or expected at <and adjacent to> the site. These assumptions include the following:

- a) *Future buildings at the Site will be slab-on-grade; and,*
- b) *X...*

Any inconsistencies that arise between the structures, locations and depths of proposed or constructed <buildings> <or> <trenches> at <or adjacent to> the site and the range of structures, locations and depths of <buildings> <or> <trenches> assumed in the selection of vapour attenuation factors in the documents listed in Schedule D must be promptly identified by the responsible person<s> in a written submission to the Director. An application for an amendment or new Certificate of Compliance may be necessary.

2. The principal risk controls which must be present or implemented and must be maintained at the site include the following:
  - a) *Groundwater from the Site must not be used as drinking water; and,*
  - b) *X...*

# Question 12 - Answer

- ANSWER:
  - C. When vapour contamination is identified in your DSI and carried forward for evaluation in your RA and alternative VAFs are used.
- Common issues in PAs and DASs:
  - No Clause 1 assumption is included, but a risk control related to vapours is included (in this case, the assumption/risk control should be listed in Clause 1 and Clause 2).
  - If you do not have vapour contamination that has been carried forward for evaluation in the RA, only include the SVA assumptions in Clause 1 and in Section 4.4 of SoSC (not in Clause 2 or in Section 5.2 of the SoSC).
  - No Clause 1 assumptions when VAFs have been used in SVA (in DSI).

## Question 13

- Which of the following risk controls would preclude a site from being eligible for a CofC:
  - A. A vapour mitigation system must be installed in any future building constructed at the Site.
  - B. The surface of the site must be capped with 1 m of clean fill or an impervious surface prior to development.
  - C. A future building will have a one level underground parking structure and must be built according to the 2012 (or later) Building Code.

# Question 13 - Answer

- ANSWER:
  - A vapour mitigation system must be installed in any future building constructed at the Site.
  - The surface of the site must be capped with 1 m of clean fill or an impervious surface prior to development.
- Sites with Proposed Risk Management works only eligible for an AiP.