

PAC Lessons Learned Quiz

**Performance Assessment
Committee
Chuck Jochems**

Lessons Learned Quiz

- These questions are mostly issues that have been identified during Performance Assessments, but not necessarily deficient answers.
- Discuss each question with your table.
- Each table to provide their answers through discussion.
- READY?

Question 1 (Numeric)

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 1 (Numeric) - 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.

Under Admin Guidance 15 (Scenario 6), Ministry preapproval is required.

Question 2 (Numeric)

What standards apply to an engineered watercourse on or off-Site?

- a. Contaminated Sites Regulation Schedule 3.2 Freshwater Aquatic Life standards
- b. BC Surface Water Quality Guidelines
- c. All of the above
- d. None of the above

Question 2 (Numeric) - Answer

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Answer (a) – The CSR Freshwater Aquatic Life standards apply to engineered watercourses because they may (or likely) present a freshwater ecosystem, which may include phytoplankton, zooplankton, benthos, macrophytes and fish. [Source – Section 1, Contaminated Sites Regulation.]

Question 3 (Numeric)

What standards apply to a natural watercourse on or off-Site?

- a. Contaminated Sites Regulation Schedule 3.2 Freshwater Aquatic Life standards
- b. BC Surface Water Quality Guidelines
- c. All of the above
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Question 3 (Numeric) - Answer

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- b. BC Surface Water Quality Guidelines
- c. All of the above
- d. None of the above

Answer (a) – For the same reasons as Question 2. The BC Surface Water guidelines do not apply because they are only guidelines and not regulation.

Question 4 (Numeric)

Soil vapour concentrations taken from below a commercial building slab are found to be above the Upper Cap Concentrations. Ambient air samples taken within the building 24 hours after the HVAC system was turned off, found concentrations to be within the applicable Schedule 3.3 standards for Commercial Land Use. Is the site a High-Risk Site?

- a. Yes
- b. No

Question 4 (Numeric) - Answer

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- a. Yes
- b. No

Answer (a) – Yes, the Ministry considers this to be a Risk Managed High Risk situation.

Question 5 (Numeric)

A Site has total dissolved solids in shallow groundwater over 4,000 mg/L and is not suitable for drinking purposes. Is any other information required to make a P21 assertion that DW is not applicable:

- a. No. Because of TDS related water quality
- b. Yes. The existence of deeper aquifers and/or confining layers
- c. Yes. The source of TDS should be determined (natural or anthropogenic)
- d. Yes. If the site is near a marine environment salinity should be tested.

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Answer (b, c and d), per P21.

Question 6 (Numeric)

A Site situated within 500m of a marine environment has naturally occurring sodium concentrations greater than the drinking water standard across the site and is not suitable for drinking purposes. Is any other information required to make a P21 assertion that DW is not applicable?

- a. No, because Na exceeds the DW standard and is naturally occurring
- b. No. Other lines of evidence can be presented (i.e. proximity to marine of estuarine foreshore)
- c. Yes. Natural occurrence of Chloride at concentrations greater than the DW standard is also needed.

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- c. Yes. Natural occurrence of Chloride at concentrations greater than the DW standard is also needed.

Answer (c) – Per P21

Question 7 (Numeric)

An off-Site service station (situated across a roadway) was assessed as part of a Stage 2 as part of a proposed development for high-density residential land use. Soil and groundwater BTEX concentrations were encountered but found to be within applicable standards. Soil vapour assessment conducted off-Site in the roadway contained Benzene above the RLHD standards with application of a subslab attenuation factor. However, if a conservative Lateral Attenuation Adjustment Divisor (LAAD) were applied, the concentrations would meet standards. Can this be done?

- a. Yes
- b. No

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- a. Yes
- b. No

Answer (b) – LAAD can only be applied if the vapour sample is taken beyond the boundary of detectable soil and groundwater.

Question 8 (Numeric)

Is it possible to have no Schedule B conditions on a Certificate of Compliance in situations where vapour assessments have been conducted?

- a. Yes
- b. No

Question 8 (Numeric) - Answer

Is it possible to have no Schedule B conditions on a Certificate of Compliance in situations where vapour assessments have been conducted?

- a. Yes
- b. No

Answer (a) – Yes, as long as no attenuation factors were applied.

Question 9 (Numeric and Risk)

Non-High Risk Metals contamination was encountered in the soil of a Site at a remote location. Off-Site soils disposal was found to be prohibitively expensive. Risk management is proposed to enable redevelopment. The remediation plan is to consolidate and encapsulate the contaminated soils with a minimum 1m cap of clean soil. Does this situation qualify for a Protocol 6 submission?

- a. Yes
- b. No

Question 9 (Numeric and Risk) - Answer

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- a. Yes
- b. No

Answer (b) - Ministry approvals are required to consolidate and bury contaminated soils.

Question 10 (Numeric)

Groundwater at a site is located at 1.5 m below grade; vapours have been collected just above the groundwater table. The site is currently vacant, and development plans include a residential building with a one level basement to be used for storage. The building will be built according to the 2012 BC Building Code. What Protocol 22 Vapour Attenuation Factor is applicable for the estimation of indoor air concentrations?

- a. The sub-slab VAF of 0.02
- b. The 1.0 m VAF of 2.8E-03
- c. No attenuation factors can be applied to predict indoor air concentrations

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- c. No attenuation factors can be applied to predict indoor air concentrations

Answer (c) – No attenuation factors can be applied. The precluding conditions regarding groundwater contact with the slab and active pumping or drawdown of the water table only apply for parkades built to the 2012 Building Code or later.

Question 11 (Risk)

Can Protocol 13 Screening Level Risk Assessment be used for a site where groundwater contamination has migrated beyond the source site property boundary to an adjacent roadway?

- a. No, P13 cannot be used for sites where contamination has migrated off-site
- b. Yes, but only in the case that the groundwater plume has been demonstrated to be stable or decreasing
- c. Yes, as long as the results of the soil leachate and groundwater transport modelling are favorable

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- c. Yes, as long as the results of the soil leachate and groundwater transport modelling are favorable

Answer (b) – Yes, but only in the case that the groundwater plume has been demonstrated to be stable or decreasing

Question 12 (Risk)

The following is true regarding the Parkade Attenuation Adjustment Divisor:

- a. It is based on an increased air exchange rate associated with a parkade ventilation system
- b. It can only be used in conjunction with the sub-slab VAF
- c. It can only be used in a risk assessment
- d. Use of the PAAD is considered to be risk management of vapours
- e. All of the above
- f. None or some of the above

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- d. Use of the PAAD is considered to be risk management of vapours
- e. All of the above
- f. None or some of the above

Answer (e) – All of the above.

Question 13 (Risk)

Can a Standards AP review/make a submission that has used the PADD?

- a. No, the PAAD can only be used in a risk assessment, and therefore only a Risk AP can review/make a submission that uses the PAAD
- b. Yes, Standards AP can review/make a submission that has used the PAAD if attenuated vapour meets the numerical standards, and it is used in an SLRA
- c. No, a Standards AP cannot review/make a submission that involves risk management of vapour

Question 13 (Risk) - Answer

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- b. Yes, Standards AP can review/make a submission that has used the PAAD if attenuated vapour meets the numerical standards, and it is used in an SLRA
- c. No, a Standards AP cannot review/make a submission that involves risk management of vapour

Answer (b) – TG 4 indicates that at sites where vapour contamination is risk-managed to meet the CSR numerical standards, and where no risk assessment is conducted other than P13 SLRA, that a submission can be reviewed/made by a Standards AP.

Question 14 (Risk)

Is a Protocol 6 preapproval needed if an existing guideline or ecological receptor TRV (e.g., a BC WQG or an EcoSSL database TRV) is adjusted to be site-specific (i.e., is this considered a *de novo* TRV derivation)?

- a. Yes, this is considered a *de novo* TRV derivation and P6 approval is required.
- b. No, adjusting an existing guideline or TRV is not considered a *de novo* derivation, and P6 preapproval is not required.

Question 14 (Risk) - Answer

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- a. Yes, this is considered a *de novo* TRV derivation and P6 approval is required.
- b. No, adjusting an existing guideline or TRV is not considered a *de novo* derivation, and P6 preapproval is not required.

Answer (b) – ENV has indicated that they would generally consider a *de novo* derivation to involve a compilation of data from the primary literature, and subsequent derivation of a *de novo* TRV using that data. No P6 preapproval is required if an existing guideline or ecological TRV is adjusted on a site specific basis.

THANK YOU
