

1 **Phase II Property Assessment**

OAC 3745-300-07

Certified Professional  
8-Hour Training

2 **Phase II Property Assessment**

- VAP is voluntary!
- However, if you choose to go for a liability release, must follow rules.

3 **Ten Pillars of the VAP Phase II**

1. Applicability
2. Purpose
3. DQO
4. Sampling and analysis
5. Data collection activities

4 **Ten Pillars (cont.)**

6. Determinations
7. Models
8. Background
9. Demonstration of compliance
10. Phase II report

5 **Pillar 1: Applicability**

- Complete a phase I prior to starting a phase II
- Eligibility for participation in VAP?

6 **Other Phase II Types**

- CERCLA
- RCRA
- UST (Leaking Underground Storage Tank Programs)
- ASTM
- Lender requirements

7 **Goals when developing the Phase I and Phase II**

- Applicable standards for the property
- Risk assessment
- Remediation
- Engineering and institutional controls

8 **Phase I leads to Phase II**

..if a Phase I reveals ...any reason to believe that a release of hazardous substances or petroleum has or may have occurred.. on the property.'

9 **Pillar 2: Purpose**

'.. to conduct an investigation sufficient to determine whether applicable standards are met ....

10 **Purpose (cont.)**

- Or to determine that remedial activities meet or will achieve applicable standards
- Remedy can be conducted at anytime, without first deriving standards

- 11  **Pillar 3: Data Quality Objectives**
  - A road map to complete the Phase II
  - DQOs help clarify expectations for data collection
- 12  **Conceptual Site Model**
  - New rule requirement
  - Illustrates relationships between contaminants, transport media, and receptors and land use
  - Provide final version for NFA Letter
- 13  **Final Phase II changes**
  - Process is iterative and heuristic
  - Phase I is primarily based on a review of the historical literature for the Property
  - Understanding of the Property may change and Phase II must reflect this
- 14  **Pillar 4: Sampling and Analysis**
  - Communication!
  - Know what data needs collected
  - Consult with field sampling team and the lab
- 15  **Certified Laboratories for data analysis**
  - Certified Labs are required for most analytical requirements
  - These labs are certified for each particular method and not as a whole
- 16  **Certified Laboratories for data analysis (cont.)**
  - CP must ensure detection limits are low enough to meet applicable standards
  - What to do if there is no CL for the COC? – see guidance
- 17  **Pillar 5: Data Collection Activities**
  - Collect sufficient data to assess all identified areas (IAs)
  - Phase II rule outlines seven data collection activities
- 18  **First: Old data**
  - Prior Phase I findings
  - CL or other data collected during prior investigations
- 19  **Phase I update**
  - Review of chain of title
  - Property's regulatory information
  - Land use information
  - Certified Professional inspection
  - See VAP guidance
- 20  **Previously acquired data**
  - All previous data available for CP review within the Phase I
  - Confirmation samples must be taken to support determinations made through the use of 'old' data
  - CL data, and at least 10% of the sample number confirmed
- 21  **Second: Physical characteristics**
  - Stratigraphic units
  - Physical characteristics of soils
  - Regional aquifers and ground water zones

- Confining units
  - Recharge, discharge to surface water
  - Ground water gradients and flow direction
- 22  **Third: Identifying COCs in IAs**
- Release identified in Phase I or
  - COC commonly used in activities conducted on property
- 23  **Fourth: Evaluating IAs**
- IA dimensions can be adjusted during Phase II
  - VAP guidance
- 24  **Fifth: Sampling Environmental Media**
- The sampling must be reliable and representative for the media sampled
  - Media - soil, sediment, surface water, ground water, bedrock, soil gas and air
- 25  **Sixth: Current and reasonably anticipated land use & receptors**
- Residential vs. commercial/ industrial use
  - Populations on and off of the property
  - Populations can include residents, visitors, commercial and industrial workers, construction workers, and ecological resources
- 26  **Pathway completeness determination**
- Source area and affected media
  - Receptors and applicable points of compliance
  - Transport mechanism
  - Illustrate in conceptual site model
- 27  **Seven: Collect data for background demonstration**
- VAP site may be influenced by high naturally occurring metal concentrations
  - Additional samples needed unless background study available
- 28  **Pillar 6: Determinations**
- Pathway completeness
  - Ground water (water zones, confining units, UPUS, classification, yield)
  - Applicable standards for all COCs for each complete exposure pathway
  - Identification of all COCs in each IA
  - Source areas
  - Pass-through provision
- 29  **COCs**
- Surface Water
  - Sediment
  - Soil
  - Ground Water
- 30  **Exposure Point Concentration**
- Wholly within the IA
  - Sufficient numbers to develop a representative data set
  - Use of the 95% UCL
  - Minimum of three samples within the IA when a maximum bias is possible
  - Incremental Sampling Technique

- 31  **95% Upper Confidence Limit (UCL)**  
The limit within a data set that represents the value at which, if random samples are taken from the data set, only 5% of these random samples would exceed the 95% UCL
- 32  **Determining the Ground Water Exposure Point Concentration**
- Sampling methodology of appropriate quality
  - Numbers and timing of sampling to address seasonal variations and geologic heterogeneity
- 33  **Determining sampling locations**
- Location location location
  - Direction of flow
  - Plume size
  - Release date
  - Screening information
- 34  **Ground Water Sampling Techniques in the VAP**
- Properly designed and installed monitoring wells
  - TGC document VA30007.09.012 indicates that direct push CANNOT be used for yield testing for classification
  - But may be used for screening purposes and COC determinations
- 35  **Ground Water in the VAP**
- Ground water is defined in 3745-300-01(A)
  - One and one-half gallons within eight hours and a hydraulic conductivity greater than  $5.0 \times 10^{-6}$  centimeters per second
- 36  **Temporal and spatial considerations**
- Location of highest ground water yield in the wells
  - Hydraulic conductivity testing throughout site
  - Testing throughout the year
- 37  **Determination of source areas**
- Response requirements differ when a demonstration is made of off-property sources to on-property contamination of ground water
  - See ground water rule
- 38  **Pillar 7: Models**
- Ground water plume travel
  - Indoor air concentration predictions
  - Leach-based modeling
  - Ground water to surface water modeling
- 39  **Model requirements**
- Generally accepted and peer reviewed or code verified and scientifically valid
  - Used in an appropriate and reasonable manner
  - VAP guidance
- 40  **Site-specific applicability**
- Input parameters
  - Effect these inputs have on results
  - Demonstration for which model being used
- 41  **Pillar 8: Background determination**

- Demonstrating that COCs are found in concentrations at or below the native concentrations
- Background level becomes the applicable standard
- VAP background metals in soil studies

42  **Pillar 9: Compliance with Applicable Standards**

- Conceptual Site Model
- Data from assessment
- Applicable standards are met or remedy necessary

43  **Points of compliance**

- 10 feet for residential or unrestricted
- 2 feet for industrial/commercial
- construction activities variable – max depth of excavation activities
- Soil standards for leaching
- Other pathways like vapor intrusion

44  **CP must verify**

- Data meets DQOs
- Models used according to Phase II rule
- Statistical methods, multiple chemical adjustments appropriate
- Confirmatory sampling
- Implement remedy if needed

45  **Pillar 10: Phase II Report**

- Phase I with updates
- Phase II Investigation Work Plan
- Risk Assessment
- Remedial activities and confirmation sampling
- Determination that applicable standards are met

46  **Phase II report template**

- Legal description
- Phase I and II dates and persons conducting
- Amendments to Phase I
- Limitations of Phase II
- CSM

47  **Phase II report (cont.)**

- Sampling procedures
- Data collection activities
- Background determinations
- Models used
- USD if used

48  **Phase II report (cont.)**

- Risk assessment report if conducted
- Remedial activities
- How property complies with applicable standards
- Maps, cross-sections
- Bibliography and supporting documents