

# Phase II Property Assessment

OAC 3745-300-07

Certified Professional  
8-Hour Training

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# Phase II Property Assessment

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



# Ten Pillars of the VAP Phase II

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



# Ten Pillars (cont.)

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



# Pillar 1: Applicability

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



# Other Phase II Types

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



# Goals when developing the Phase I and Phase II

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



# 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.'



## Pillar 2: Purpose

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



## Purpose (cont.)

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



# Pillar 3: Data Quality Objectives

- A road map to complete the Phase II
- DQOs help clarify expectations for data collection



# Conceptual Site Model

- New rule requirement
- Illustrates relationships between contaminants, transport media, and receptors and land use
- Provide final version for NFA Letter



# 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



# Pillar 4: Sampling and Analysis

- Communication!
- Know what data needs collected
- Consult with field sampling team and the lab



# 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



# 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



# Pillar 5: Data Collection Activities

- Collect sufficient data to assess all identified areas (IAs)
- Phase II rule outlines seven data collection activities



# First: Old data

- Prior Phase I findings
- CL or other data collected during prior investigations



# Phase I update

- Review of chain of title
- Property's regulatory information
- Land use information
- Certified Professional inspection
- See VAP guidance



# 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



## 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



# Third: Identifying COCs in IAs

- Release identified in Phase I or
- COC commonly used in activities conducted on property



## Fourth: Evaluating IAs

- IA dimensions can be adjusted during Phase II
- VAP guidance



# 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



## 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



# Pathway completeness determination

- Source area and affected media
- Receptors and applicable points of compliance
- Transport mechanism
- Illustrate in conceptual site model



# Seven: Collect data for background demonstration

- VAP site may be influenced by high naturally occurring metal concentrations
- Additional samples needed unless background study available



# 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



# COCs

- Surface Water
- Sediment
- Soil
- Ground Water



# 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



# 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



# Determining the Ground Water Exposure Point Concentration

- Sampling methodology of appropriate quality
- Numbers and timing of sampling to address seasonal variations and geologic heterogeneity



# Determining sampling locations

- Location location location
- Direction of flow
- Plume size
- Release date
- Screening information



# 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



# 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



# Temporal and spatial considerations

- Location of highest ground water yield in the wells
- Hydraulic conductivity testing throughout site
- Testing throughout the year



# 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



# Pillar 7: Models

- Ground water plume travel
- Indoor air concentration predictions
- Leach-based modeling
- Ground water to surface water modeling



# Model requirements

- Generally accepted and peer reviewed or code verified and scientifically valid
- Used in an appropriate and reasonable manner
- VAP guidance



# Site-specific applicability

- Input parameters
- Effect these inputs have on results
- Demonstration for which model being used



# 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



# Pillar 9: Compliance with Applicable Standards

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



# 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



# 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



# 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



# Phase II report template

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



# Phase II report (cont.)

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



# Phase II report (cont.)

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

