

## **Ohio EPA RCRA AND VAP MOA Track: Phase II Sampling Plan Guidance**

The following is an outline of important provisions required as part of the Phase II Property Assessment (OAC 3745-300-07). This guidance is intended to define the process for development of a sampling strategy and identify what issues should be considered in the development of this strategy. The sampling strategy should describe the sampling requirements and describe how the sampling will meet the project goals. The participant should outline the Data Quality Objectives and Quality Assurance/ Quality Control measures needed to provide usable data for the project. The information gathered during the Phase I Assessment is the starting point and ensures a sound basis for development of the Phase II Sampling Plan. All identified areas will need to be assessed during this stage of the process as well as any new areas identified during sampling. Finally, in some cases, it may be necessary to explain within the sampling plan the rationale for the collection of data sufficient to address all rule requirements taking into account the remedial activities that are being contemplated for the property.

Once the data are collected and found to be of an acceptable quality, the entire data packet must be reviewed to determine if any data gaps are evident and what additional data collection activities are necessary for the project. This re-evaluation of the data needs to be done throughout the property assessment, risk assessment, and remedial activities phases of the project. Where possible the sampling plan should contemplate any potential supplemental data collection activities, and these activities should be described within the sampling plan.

The Phase II Sampling Plan for completing a “Phase II Property Assessment” must include, at a minimum, the following (as appropriate):

1. A summary of the findings of the “Phase I Property Assessment” conducted at the property including:
  - a. Property description and history
  - b. Surrounding land uses including potential off-property impacts to VAP property and potential for sensitive receptors off-property
  - c. Description of any eligibility issues
  - d. Description of identified areas (IAs), anticipated chemicals of concern (COCs), and suspected impacted media.
    - i. Details of the history of releases at the property including (1) contaminant type, (2) quantity, (3) date of release, (4) impacted media and areas on the property, and (5) any measures to address the releases including the results.
    - ii. Identify all COCs (include breakdown products) per IA.

- iii. Identify potentially impacted media including, if applicable, surface water and sediments present on the property.
  - iv. An Identified Areas Map must be included as part of this summary. The map should include a description of sources and releases, potentially impacted media and a listing of the COCs expected.
  - e. Presence of any known or suspected *de minimis* areas.
2. A summary of any existing “Phase II Property Assessment” information from previous investigations.
3. A description of the data collection activities planned to be conducted pursuant to paragraph (C) and paragraphs (E)(1) through (E)(7) of rule 3745-300-07.
- a. Describe the objectives of planned data collection activities including the Data Quality Objectives of the assessment activities.
  - b. In addition, the following is a list of specific issues that should be evaluated as part of the property assessment, at a minimum:
    - i. Describe a plan for determining the occurrence of saturated zones that may need protection in accordance with the provisions for protection of ground water meeting potable use standards (POGWMUPUS) according to paragraph (F)(2).
    - ii. Describe a plan for determining the classification of saturated zones according to paragraph (F)(2)(a) where the concentration of COCs in ground water exceed unrestricted potable use standards (UPUS). If the determination of yield by field methods is necessary, describe a plan for determination of the yield of the saturated zones in accordance with paragraph (F)(6).
    - iii. Describe a plan for evaluation of the effects that heterogeneous geologic conditions (both horizontally and vertically), and temporal variations may have on data collection activities, fate and transport analyses, and pathway completeness determinations in accordance with paragraph (F)(2)(b).
    - iv. Describe a plan for the appropriate collection of data to evaluate leaching/volatilization pathways and input parameters for modeling evaluations in accordance with paragraph (F)(3).
  - c. Land Use / Receptor Population - Describe the current and anticipated land uses of the property and receptor populations (human or ecological) anticipated to be exposed to COCs on or off the property in accordance with paragraph (E)(6).
  - d. Identified Area Assessment - Describe how the assessment of all identified areas including suspected sources, source areas, and environmental media potentially containing COCs will be evaluated.

- i. If applicable, describe a plan for the use of previously collected non-CL data in accordance with paragraph (E)(1).
  - ii. Describe a plan for identifying specific COCs and their breakdown products present in environmental media (including sediment and surface water) within each IA as directed by paragraph (E)(3).
  - iii. Describe a plan for the re-delineation or creation of new IA's based on information collected as part of the planned Phase II Property Assessment activities as directed by paragraph (E)(4)(b).
  - iv. In accordance with paragraph (F)(2), describe a plan for determining whether provisions for POGWMUPUS apply to the different saturated zones. If provisions for POGWMUPUS apply, describe a plan for demonstrating that the ground water will not exceed unrestricted potable use standards (UPUS) in the future.
  - v. Describe a plan for the assessment of appropriate environmental media and the determination of COCs to evaluate different points of compliance for various receptor populations in accordance with paragraph (E)(5).
- e. Pathway Analysis - Describe a plan for determining which pathways to receptor populations (human or ecological) are considered complete or potentially complete in accordance with paragraph (F)(1). All potential migration routes on or off the property must be considered including leaching to ground water, volatilization to indoor air, direct contact with soil and ground water via construction or excavation activities, etc. This plan must, at a minimum, include the following:
- i. An explanation of how assessment activities (including sampling) will be used to evaluate the potential effects of COCs on receptors for all reasonably anticipated exposure pathways while considering anticipated points of compliance.
  - ii. The determination of applicable standards for all COCs with respect to pathways determined to be complete including consideration of Surface Water Standards and Sediment Assessment Criteria [ex. OAC 3745-300-09 (F); OAC chapter 3745-1]
  - iii. An explanation of how the data and information collected during assessment activities will be applied to any modeling to assist in a fate and transport analysis of COCs or the effectiveness of a remedy.
- f. COC Concentration Assessment - Anticipated plan for collection of appropriate samples needed for determining representative concentrations of COCs in impacted environmental media. The plan must include at a minimum a description of how planned assessment activities will

- i. Meet the minimum sampling requirements;
  - ii. Be sufficient to fulfill anticipated data requirements for addressing a Property-specific risk assessment; ground water response requirements; and determination of compliance with anticipated points of compliance;
  - iii. Consider temporal and seasonal variations when planning ground water sampling events;
  - iv. Consider the effects that heterogeneity may have on sample results and data analysis.
- g. Sampling Procedures - Describe how sampling procedures will meet Data Quality Objectives for the project and will be consistent with requirements contained in paragraph (C) of rule 3745-300-07. Describe sampling procedures, decontamination procedures, and quality assurance/ quality control (QA/QC) measures that will be used.
- i. Drinking Water samples have protocols - (sample with no treatment of water)
  - ii. Ground Water concerns for turbidity (filter/non-filter) - low flow pumps.
  - iii. Appropriate QA/QC to ensure that your laboratory data will be useable data for your project. Will the certified laboratory (CL) be able to detect low levels of one compound if another is high?
  - iv. Identify the CLs planned to be used for sample analysis and evaluate whether CL criteria has been met and the CLs are certified for parameters identified for analysis.
- h. Describe other sampling considerations, as needed.
- i. Describe a plan for determination of whether ground water contamination is attributable to sources on or off the property or a combination, in accordance with paragraph (F)(9).
  - ii. If desired, describe a plan for the determination of background concentrations that may be used in place of applicable standards derived from generic numerical standards or a property specific risk assessment in accordance with paragraph (H).
  - i. Acknowledge the Phase II sampling plan activities will be conducted in compliance with all other applicable laws, rules and ordinances, including OSHA.
4. Plan for addressing any necessary supplemental investigations that may be required to meet the obligations of the VAP Rules.

**Note: Ohio EPA may conduct property visits during assessment activities, as needed. That is, if the project coordinator has concerns with planned assessment activities, Ohio EPA may need to be present during those activities.**