TITLE: **Difference Between Identified Areas and Exposure Units in the VAP**

DATE EFFECTIVE: March 2009

HISTORY: New addition to the Technical Guidance Compendium

KEYWORDS: Phase II property assessment, identified area, exposure unit

RULE/ AUTHORITY: OAC 3745-300-07, -08, -09

QUESTION: What is the difference between an exposure unit (EU) and an identified area (IA)?

BACKGROUND: The VAP is a risk-based program. This means that the program requires the assessment of risk associated with a receptor (e.g., person) coming in contact with contaminated environmental media (e.g., soil). Generic numerical standards and property specific applicable standards are used to estimate the likelihood of adverse health effects to receptors resulting from exposures to chemicals of concern in environmental media.

The Volunteer must determine the level of contamination on the property in order to assess the risk. This includes determining which chemicals are present, where they are present, and at what concentrations. Once the environmental media is properly assessed in accordance with OAC 3745-300-07, the Volunteer must assess the current and reasonably anticipated use of the property. It is the fundamental change from COC assessment to current and future receptor assumptions that the difference between IAs and EUs is determined.

ANSWER: An IA is defined under the VAP as a location where a release of hazardous substances or petroleum has occurred. This IA identification is the end result of the VAP Phase I property assessment and the basis of investigation in a VAP Phase II property assessment.

An EU is defined as a geographic area within which an exposed receptor may reasonably be assumed to move at random and where contact with environmental media is equally likely at all sub-areas. The EU concept is one of the underlying pillars of a VAP property-specific risk assessment.

IAs and EUs both have a geographic, spatial component to them. That is, they can be physically designated within a property boundary. The Volunteer must interpret a how a receptor will come in contact with chemicals of concern in the environmental media. Both human and ecological receptors need to be considered.

Depending on the property-specific conditions, current and reasonably anticipated land use, and locations of the receptors; three common exposure scenarios exist for the application of IAs and EUs in accordance with OAC 3745-300-07, 08, and 09. These three common IA and EU scenarios are summarized as follows:

1) In its simplest and most common application, an IA is the same as the EU (Exhibit 1). In this case, the receptors are assumed to spend the majority of their time while at the property in a specific IA (i.e., Receptors 1 spend majority of time in IA-1, Receptors 2 spend majority of time in IA-2). Since each IA is then demonstrated to meet applicable standards for the receptors that spend the majority of their time while on the property in each IA, it is not necessary to add the risks from multiple IAs on the property together. Applicable standards are met in each IA.

2) An IA may need to be subdivided into more than one EU (Exhibit 2). Examples of this include redevelopment of a larger IA into multiple commercial establishments and residential developments. The EU would be smaller than the IA in this case. Applicable standards are met in each EU.

3) Multiple IAs may be combined to form a single EU (Exhibit 3). Generally in this case, the IAs being combined should be in close proximity to each other, have the same types of COCs, and contain similar ranges of concentrations of COCs. For example, it may be appropriate to combine several adjacent petroleum UST IAs into a single EU. When combining multiple IAs, the receptor is assumed to come in contact with the exposure medium equally at all locations. Applicable standards are met in each EU.

Appropriately determining how a volunteer chooses to address the property through IAs, EUs, or a combination of both relies upon significant thought before any property assessment begins. The most important way a property is both investigated and remediated in the VAP depends on the data quality objectives (DQOs). The DQOs, as provided in OAC 3745-300-07(C), are the six step process that instructs a Volunteer how to plan an implement a Phase II property assessment. Appropriately designing the DQOs before the

assessment begins will help lead the volunteer in the appropriate direction as to how to treat IAs and EUs. Exhibit 4 provides an abbreviated flowchart of the steps a Volunteer might follow to designate the use of identified areas, exposure units, or both.

SUMMARY: Identified areas and exposure units are concepts that occur throughout the VAP rules. IAs and EUs both can be physically designated within a property boundary, and need to consider receptor locations and types and concentrations of COCs. EUs must contemplate both current and future use of the property. Demonstration that applicable standards are met for the property is tied to how the volunteer designates IAs and EUs. Appropriate contemplation of DQOs before a project starts is important to determining when and how IAs and EUs are implemented.

OHIO EPA CONTACT: For any questions concerning this issue, please contact the VAP central office at (614) 644-2924.

Exhibit 1. An IA is equal to the EU.

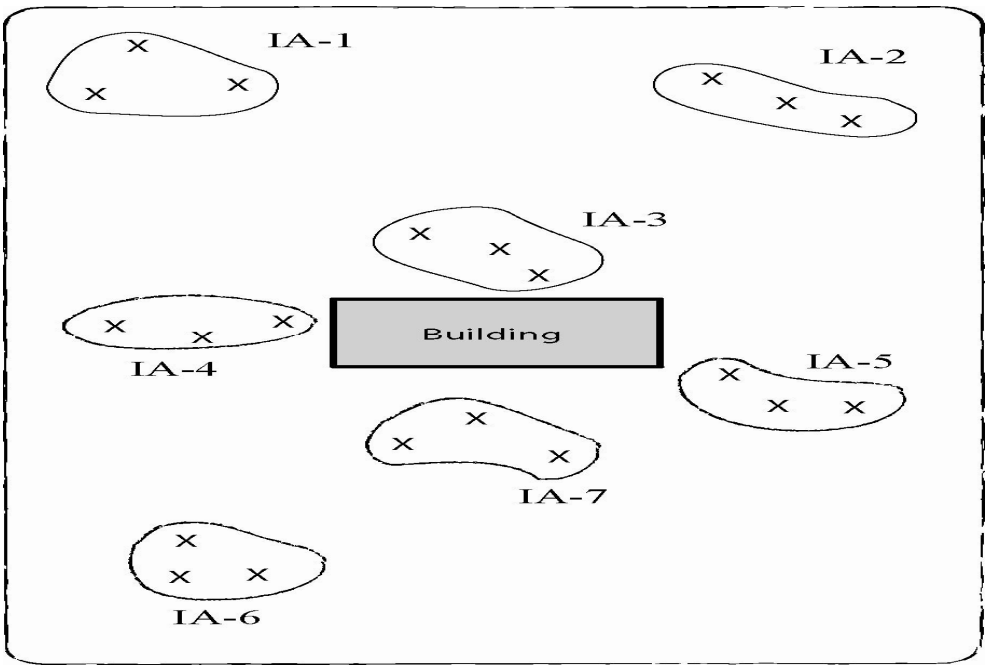


Exhibit 2. An IA is subdivided into more than one EU.

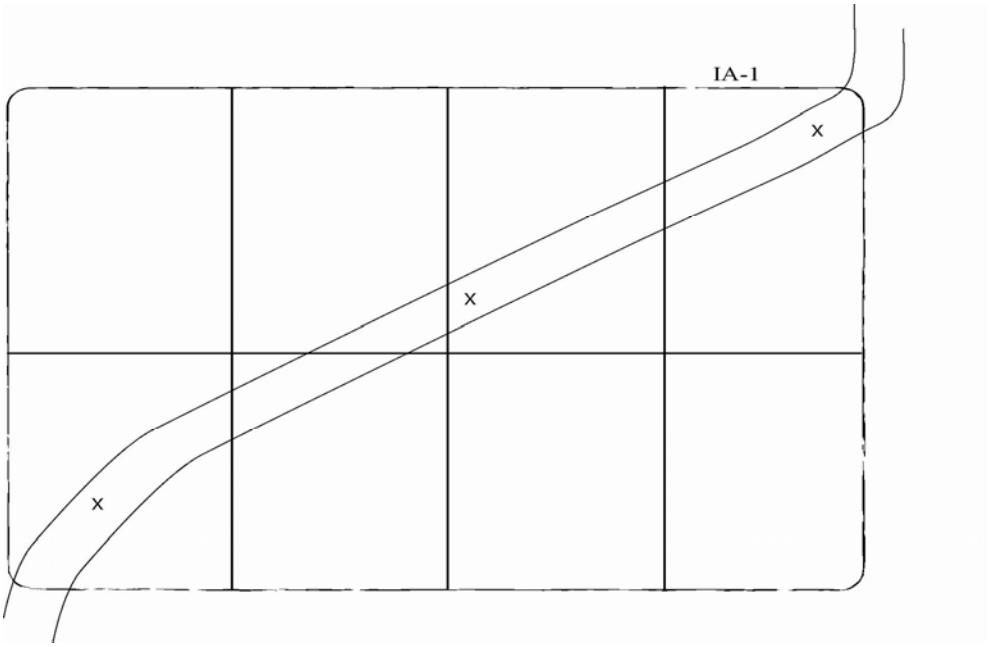


Exhibit 3. Multiple IAs are combined to form a single EU.

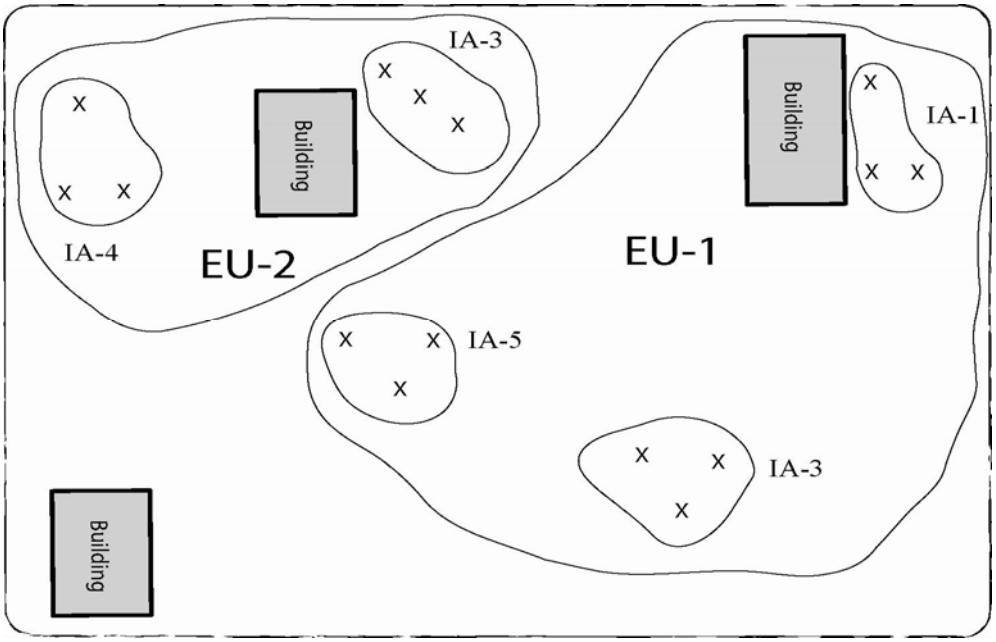
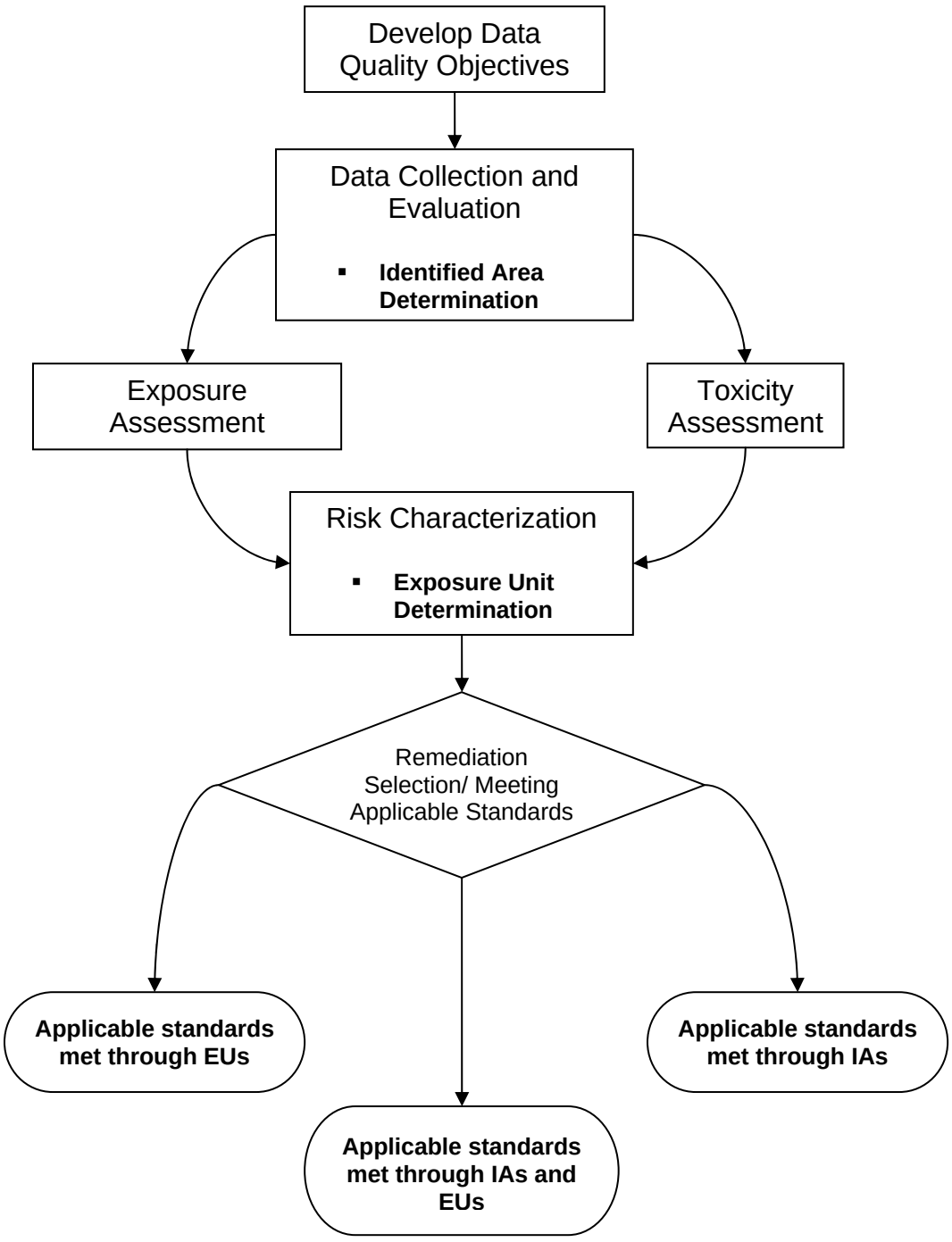


Exhibit 4. Generalized Flowchart



Modified from: Risk Assessment Guidance fior Superfund, USEPA, OSWER Guidance, 12/89