



Delaware Department of Natural Resources & Environmental Control
Site Investigation and Restoration Branch
Policy and Procedures

Subject: Policy concerning the investigation, risk determination and remediation for the Vapor Intrusion pathway

Issued: March 2007

The Department of Natural Resources and Environmental Control Division – Site Investigation and Restoration Branch (DNREC-SIRB) adopts this policy to provide guidance and consistency in the evaluation of vapor intrusion risk from investigation to remediation.

Definition of Vapor Intrusion

Acute Exposure – Exposure to a chemical or situation for a short period of time. (EPA 2007).

Vapor Intrusion (VI)- is the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals may include volatile organic compounds, select semi-volatile organic compounds and some inorganic analytes such as mercury and hydrogen sulfide. Methane should be considered where it is appropriate (ITRC 2007).

Preferential Pathway- An increased component of soil gas flow into a building due to natural conditions (gravel, etc.) or manmade conditions (utility corridors, sumps, drains, pits or elevator shafts, etc.) The presence of any of these does not necessarily indicate that a preferential pathway exists. (ITRC 2007)-

Chemicals of Potential Concern (COPC) - Chemicals that are potentially site-related and whose data are of sufficient quality for use in the quantitative risk assessment (EPA Risk Assessment Guidance for Superfund, Vol. I Part A, 1989).

Contaminants of Concern (COC) - chemicals or contaminants determined to be present at the site in sufficient concentrations to present a health risk (HSCA Guidance 1994).

Remedial Action – the containment, contaminant mass or toxicity reduction, isolation, treatment, removal, cleanup, or monitoring of hazardous substances released into the environment, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate harm, or risk of harm to the public health, welfare, or the

environment which may result from a release or an imminent threat of a release of hazardous substances (HSCA Regulations).

Purpose

The General Assembly of the State of Delaware enacted the Hazardous Substance Cleanup Act (HSCA), (7 Del. C. Ch.91) in 1990 to eliminate or minimize the risk to public health, welfare and the environment from the release of hazardous substances.

The Act provided authority to the Department of Natural Resources and Environmental Control (DNREC) to enforce the provisions of the Act. The Secretary of DNREC was tasked to establish regulations by which to implement the provisions of the Act, which were generated and adopted in 1994 (Secretary's Order 94-SF-0013). Media-specific descriptions for the general risk levels used to determine the need for cleanup were specified in the regulations promulgated in 1996 as a cancer risk of 1×10^{-5} or a Hazard Index value of 1.0 for non-cancer risk (Section 9.0 – Cleanup Levels).

Vapor intrusion has only recently been recognized as a risk to human health. As a result, no media-specific description has been drafted for the previously -unrecognized VI Pathway, although all media at all sites are subject to the general provisions of Subsection 9.1.

This policy will:

- Identify VI as a pathway by which humans can be exposed to dangerous levels of invisible and otherwise unnoticeable toxic vapors
- To provide a temporary supplement to Section 9 of the HSCA Regulations – Cleanup Levels (other media-specific procedures are presented for groundwater, surface water, and soil).
- Determine when a vapor intrusion investigation should be conducted.
- To provide the procedures which serve to evaluate the Vapor Intrusion risk?

Policy

The following steps need to be performed for the evaluation of vapor intrusion risk from investigation to remediation stage. A flowchart depicting these steps is included in Attachment I.

After initial investigation and any step after, at the discretion of DNREC, the PRP may propose remediation.

A. Initial Evaluation – How Do I Determine Whether I Need to Evaluate VI on my Property?

- Step 1 Evaluate if hazardous vapor intrusion condition exists at the Site which require emergency response.** Emergency conditions exist if any one of the following is present:

