



New Jersey Department of Environmental Protection  
Site Remediation Program

**INTERIM VAPOR CONCERN TECHNICAL GUIDANCE**

When the results from an indoor air sample exceed the applicable NJDEP Indoor Air Screening Level (but is at or less than the Rapid Action Levels) AND the indoor contaminant is resulting from the vapor intrusion pathway, a “Vapor Concern” or VC is triggered.

Unlike Immediate Environmental Concerns (IECs) cases, VCs do not automatically require the implementation of Interim Response Actions or installation of a vapor mitigation system as part of an Engineered System Response Action. In addition, the timeframes for implementing the various requirements differ from an IEC case.

The VC timeframes are as follows:

Notify DEP of VC condition	14 Days *
Submit plan to mitigate the exposure	60 Days *
Implement the plan	120 Days *
Submit a <i>VC Mitigation Response Action Report</i>	180 Days *

\* from receipt of data package showing exceedance of the Indoor Air Screening Levels

Appropriate Initial Options (within 60 Days)

With VC conditions, professional judgment plays a significant role in determining the appropriate action. It is vitally important that the consultant/LSRP have regular communication with the assigned NJDEP case manager to ensure that the VC mitigation plan and all actions taken up to the submission of the plan are mutually acceptable. In cases with an LSRP, the NJDEP case manager’s role is NOT to dictate and approve a specific action, but rather to ensure that the receptor exposure is eliminated in a timely manner. Thus, cooperation is the best tact.

Once a VC condition is identified, there are a series of actions (options) that may be appropriate based on the conceptual site model. This list is not exhaustive, but is only designed to provide general guidance. The consultant/LSRP is encouraged to use professional judgment in developing a mitigative approach that addresses the primary goal – eliminating the receptor exposure in a timely manner.

- 1) If the compound(s) triggering the VC designation are NOT contaminants of concern related to the site, the consultant/LSRP must still notify the DEP of the VC condition. At that point, it is the responsibility of the DEP to address potential mitigation.
- 2) With sensitive populations (i.e., residences, day care, schools), the most likely option will be the development of a vapor mitigation work plan that incorporates subsurface depressurization/ventilation systems. Extensions on the 60 Day timeframe for submission of the mitigation plan should not be granted except in extraordinary circumstances for sensitive populations. Any supplemental investigation should be conducted concurrently with the preparation of the VC mitigation plan.
- 3) Retail, commercial and industrial buildings are more likely to employ alternative approaches that may or may not ultimately involve subsurface depressurization/ventilation systems. Additional investigation may be

warranted. Extensions on the 60 Day timeframe for submission of the EC mitigation plan will be more common for retail, commercial and industrial buildings when proper technical justification is provided.

- 4) If there are reasonable questions about the interpretation of the data, a supplemental investigation may be warranted. In most cases, the combination of sub-slab soil gas, indoor air and ambient air sampling is recommended. However, the consultant/LSRP must realize that the timeframe for submission of the VC mitigation plan remains at 60 days after receipt of the data showing exceedances of the NJDEP Indoor Air Screening Levels (IASLs). It is left to the technical judgment of the NJDEP case manager to extend that timeframe based on the supplemental information obtained by the consultant/LSRP. Avoidable delays in implementing a supplemental investigation are justification to deny any extension of the timeframe.
- 5) Distinct from option #2 (above), there are specific circumstances where supplemental investigation is warranted and extensions on the timeframe for submission of the VC mitigation plan are appropriate. Most notable are situations where the exceedance of the IASL and thus the VC designation are marginal (professional judgment on defining marginal). Since many of the IASLs are at the lower end of analytical detection (and in the range of typical background levels), additional sampling is reasonable and appropriate. Depending on the time of year and other site-specific factors, an extension on the timeframe of the mitigation plan submission can be included in the overall investigative approach. Again, the consultant/LSRP should work directly with the NJDEP case manager to concur on an agreeable approach.
- 6) The consultant/LSRP may want to promptly implement an Immediate Response Action (similar to IEC requirements) in situations where the sub-slab soil gas AND indoor air results are NOT significantly elevated above their respective screening levels (this data must already be known). It is reasonable to assume that minor mitigative actions (i.e., sealing an open sump pit) may adequately address the vapor intrusion (VI) pathway. Post-mitigation indoor air samples 30 days after the IRA can be utilized to assess the success of the action. In these situations, a delay in the submission of the VC mitigation plan can be considered by the NJDEP case manager pending the outcome of the post-mitigation samples. Unless already known, sub-slab soil gas data should be obtained to assess whether additional mitigative actions are necessary.

### VC Mitigation Plan

The VC mitigation plan should be a brief overview of the actions proposed to mitigate the vapor intrusion pathway and eliminate the receptor exposure. The plan should include:

- identification of the property/building with municipal lot and block numbers
- description and technical justification for the mitigation proposed
- submission of all relevant data (to date) and appropriate spreadsheets/forms
- post-mitigation sampling plan to confirm the success of the mitigation
- operation, maintenance and monitoring plan

### Appropriate Mitigation Options

As with the initial options, the appropriate mitigation should be based on professional judgment and the conceptual site model. The consultant/LSRP is not limited to the mitigation options listed below. They are provided as a guideline for reasonable actions in general situations. As always, good communication between the consultant/LSRP and the assigned NJDEP case manager is highly recommended. Please refer to the Remediation Decision Matrix in Appendix A of the NJDEP Vapor Intrusion Guidance (October 2005) for additional assistance.

- 1) As noted above, buildings with sensitive populations, even if only a portion of a building (i.e., day care within an office building), necessitate conservative mitigation measures to eliminate receptor exposure. In nearly all cases, this will mean the installation of a subsurface depressurization/ventilation system. Any deviation from this approach must be technically justified in the mitigation plan. In addition, the consultant/LSRP

should not delay obtaining access/agreement from the property owner for the installation of the mitigation system. In particular, this step can be time-consuming for residential properties.

- 2) The applicable mitigative actions for retail, commercial and industrial buildings are much broader than buildings with sensitive populations. Please refer to the Interstate Technology & Regulatory Council (ITRC) Vapor Intrusion Pathway: A Practical Guideline (2007) for additional information on various options for VC mitigation.
- 3) If the sub-slab soil gas results are significantly elevated (greater than 10X the Soil Gas Screening Level), some form of active mitigation is likely warranted (irrespective of the marginal nature of the indoor air exceedance). In these cases, the potential for vapor intrusion is high now and in the future. Any action other than active mitigation (i.e., subsurface depressurization, subsurface ventilation, building positive pressure) should be discussed fully with the assigned NJDEP case manager.
- 4) Due to a marginal or intermittent exceedance of the IASL, the consultant/LSRP may elect to conduct ongoing monitoring instead of active mitigation. As a short-term approach, the collection of indoor air and/or sub-slab soil gas samples is generally acceptable. However, the economic reality of long-term monitoring would suggest that mitigation is a more advantageous approach. Monitoring can NOT be utilized to avoid the necessity for mitigation to eliminate the receptor exposure.
- 5) Under limited circumstances, restricted access to a building with vapor concerns might be a mitigation option. This approach would necessitate the development of a site-specific IASL by the NJDEP based on access limitations. The consultant/LSRP would need to specify what measures would be in place to ensure and demonstrate limited access (i.e., the use of electronic access cards) currently and in the future. Employee education, signage and periodic indoor air monitoring would be essential.
- 6) It is recommended that the consultant/LSRP incorporate a confirmation test as part of any subsurface depressurization/ventilation system installation. Confirmation indoor air sample(s) should be collected 30 days after system commissioning to verify the effectiveness of the system. The results from the system commissioning, particularly static pressure on suction points and fan inlets, establish an operational baseline that can be used as a primary line of evidence to monitor the system over time (as an alternative to additional periodic indoor air samples). Typically, monitoring is conducted quarterly for the first year and then annually thereafter.
- 7) The utilization of caulking to seal cracks in slabs and foundation walls as the exclusive mitigation measure is rarely successful at preventing receptor exposure over an extended period of time, especially with high contaminant concentrations in the subsurface soil gas. The consultant/LSRP is discouraged from using this approach. Periodic, long-term indoor air sampling would be necessary to monitor the effectiveness of this action.

#### Mitigation Response Action Report

The provisions of the Mitigation Response Action Report should summarize the actions taken to eliminate the receptor exposure to vapor intrusion. This should include:

- A description of all sampling events, immediate response actions and mitigation taken related to the VC with dates of each action conducted
- A summary of all analytical data related to the VC and the mitigation (with the appropriate spreadsheets/forms)
- All maps and figures related to the VC
- As-built drawings of the building showing all mitigation system components and electrical connections, as well as IA and SSSG sampling locations, extraction and observation holes, and mechanical combustion devices (hot water heater, clothes dryer, etc.)
- All communication testing results, with static pressure readings and flow measurements.

---

Any questions on this interim guidance should be directed to:

John Boyer (609) 984-9751  
Diane Groth (609) 984-9782