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DEP Policy Office

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Sept. 23, 2015

**Re: Proposed Technical Guidance --
Land Recycling Program Technical Guidance Manual for Vapor Intrusion into Buildings
from Groundwater and Soil under Act 2
Document Number 261-0300-101
Comments on behalf of the Pennsylvania Chamber of Business and Industry**

3Dear Technical Guidance Coordinator:

On July 25, 2015, the Pennsylvania Department of Environmental Protection ("PADEP") published in the Pennsylvania Bulletin a notice announcing the availability for public comment of a draft technical guidance document entitled *Land Recycling Program Technical Guidance Manual for Vapor Intrusion into Buildings from Groundwater and Soil under Act 2* (Document Number 261-0300-101). See 45 Pa. Bull. 4059 (July 25, 2015). This draft technical guidance document is referred to hereinafter as the "Proposed Vapor Intrusion Guidance" and, upon finalization, is intended to replace in its entirety an existing technical guidance document entitled *Land Recycling Program Technical Guidance Manual – Section IV.A.4. Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard* dated January 24, 2004 (the "2004 Vapor Intrusion Policy"). The notice in the Pennsylvania Bulletin invited the public and the regulated community to provide comments to PADEP regarding the Proposed Vapor Intrusion Guidance. PADEP has established a deadline of September 23, 2015, for submission of such comments.

The Pennsylvania Chamber of Business and Industry ("PA Chamber"), the largest, broad-based business advocacy group in the Commonwealth, appreciates the opportunity to comment on the Proposed Vapor Intrusion Guidance. In drafting these comments, the PA Chamber has drawn from a variety of views and resources from its diverse membership, which consists of a broad spectrum of Pennsylvania industrial entities, businesses, and commercial enterprises, many of which may be potentially affected by the requirements of the Proposed Vapor Intrusion Guidance. Historically, the PA Chamber has worked with PADEP in an effort to craft policies that allow for economic development and environmental protection to occur together. It is vital that PADEP's approach to addressing vapor intrusion achieve such a balanced outcome. The PA Chamber appreciates the time and effort of PADEP staff in reviewing these comments and considering our suggestions and recommendations.

The Proposed Vapor Intrusion Guidance contains technical guidance that will have significant ramifications for the manner in which the Pennsylvania Land Recycling and Environmental Remediation Standards Act (“Act 2”), 35 P.S. §§ 6026.101 – 6026.909, is implemented in Pennsylvania. The Proposed Vapor Intrusion Guidance will affect the characterization and remediation of sites where volatile regulated substances are present. Volatile regulated substances include many regulated substances that are commonly addressed through the Act 2 program. Accordingly, the reach of the Proposed Vapor Intrusion Guidance is quite broad.

The PA Chamber recognizes that since Act 2 was adopted in 1995, significant advancements have occurred in connection with understanding the dynamics of vapor intrusion, the risks that can be posed to indoor air quality in occupied buildings due to vapor intrusion and the mechanisms that can be used to mitigate such risks. At the same time, the core objectives that led to passage of Act 2 remain just as important today as they did twenty years ago. In that context, the PA Chamber supports PADEP’s efforts to ensure that the Proposed Vapor Intrusion Guidance offers an array of options to address vapor intrusion. Many of these options build on approaches adopted by the United States Environmental Protection Agency (“EPA”) and other state regulatory agencies to address vapor intrusion. As discussed below, however, certain key elements of the Proposed Vapor Intrusion Guidance as currently drafted will unnecessarily thwart PADEP’s efforts in this regard and eliminate many of the tools that should be available to address potential vapor intrusion issues.

The Proposed Vapor Intrusion Guidance departs significantly from the provisions in the 2004 Vapor Intrusion Policy. The learning curve for both PADEP’s staff and the regulated community will be significant in understanding how in practical terms the Proposed Vapor Intrusion Guidance is to be implemented. The PA Chamber believes that there are a number of changes that can be made to the Proposed Vapor Intrusion Guidance that will allow the transition process to proceed more smoothly. Moreover, such changes are vital in order to avoid the potential for the Proposed Vapor Intrusion Guidance to upset the balanced framework that has made Act 2 such an effective program.

The comments provided below are organized around various topics and objectives rather than necessarily tracking the order in which the text of the Proposed Vapor Intrusion Guidance is presented. To assist in the review of the comments, we have included numerous headings and subheadings.

Regulatory Context

For 20 years, the provisions of Act 2 and the regulations thereunder codified at 25 Pa. Code Chapter 250 have been a cornerstone of Pennsylvania’s environmental programs. Act 2 was adopted to address an important void that previously existed under Pennsylvania law – namely, lack of uniform requirements relating to the investigation and remediation of releases of regulated substances to the environment. Prior to Act 2, cleanup standards typically were fashioned on a case-by-case basis or by application of informal guidance documents.

Act 2 represented a progressive and ground-breaking departure from past approaches. The PA Chamber has been a staunch supporter of Pennsylvania’s land recycling program and believes that Act 2 has created an innovative and enlightened way to promote land recycling and address environmental remediation within the Commonwealth that stands head and shoulders above many similar programs in other states. Act 2 was designed to foster consistency, predictability and uniformity in the arena of responding to releases of regulated substances. Act 2 harnesses scientific, risk-based approaches to

determining protective remediation outcomes and affords remediators the ability to use one or a combination of three cleanup standards under Act 2, each of which is protective of human health and the environment.

In this regard, the General Assembly in adopting Act 2 declared as policy of the Commonwealth the need for “clear, predictable environmental remediation standards and a process for developing those standards.” 35 P.S. § 6026.102(3). The General Assembly recognized that it was necessary to “adopt a statute which sets environmental remediation standards to provide a uniform framework for cleanup decisions because few environmental statutes set cleanup standards and to avoid potentially conflicting and confusing environmental standards.” 35 P.S. § 6026.102(4). The General Assembly also determined that “[c]leanup plans should be based on the actual risk that contamination ... may pose to public health and the environment, ... not on cleanup policies requiring every site in this Commonwealth to be returned to a pristine condition.” 35 P.S. § 6026.102(6).

Of critical importance, Act 2 makes clear that it is to occupy the field in terms of governing the manner in which releases of regulated substances are to be addressed. Specifically, Act 2 provides that “[t]he environmental remediation standards established under this act shall be used whenever site remediation is voluntarily conducted or is required” pursuant to a list of six statutes, including the Clean Streams Law (“CSL”), the Air Pollution Control Act (“APCA”), the Solid Waste Management Act (“SWMA”), the Infectious and Chemotherapeutic Waste Law, the Hazardous Sites Cleanup Act (“HSCA”) and the Storage Tank and Spill Prevention Act (“STSPA”). 35 P.S. § 6026.106(a). *See also* 25 Pa. Code § 250.2(a) (“This chapter provides remediation standards that *shall be used* whenever site remediation is voluntarily conducted or is required under environmental statutes in Section 106 of the act (35 P.S. § 6026.106).”) (Emphasis added.) These six statutes have provided the source of authority that PADEP has almost uniformly invoked to mandate response actions in connection with releases of regulated substances, with the SWMA and CSL being among the statutes most frequently utilized by PADEP.

Act 2 focuses primarily on remediation of soil and groundwater. It also addresses potential impacts to surface water bodies and air quality from the presence of regulated substances in soils and groundwater. By contrast, Act 2 is virtually silent with respect to vapor intrusion issues. PADEP acknowledges in the Proposed Vapor Intrusion Guidance that Act 2 does not define indoor air or soil gas as environmental media. Instead, vapor intrusion is treated as a pathway by which regulated substances can move from soils and groundwater (the environmental media being remediated) to human receptors inside occupied buildings. In considering the approaches presented in the Proposed Vapor Intrusion Guidance, it is important that the emphasis remain on the remediation of soil and groundwater rather than having vapor intrusion issues eclipse the heart of the Act 2 program due to the complexity in the approaches set forth in the Proposed Vapor Intrusion Guidance. The Proposed Vapor Intrusion Guidance provides updated approaches based on the continued evolution of the science related to vapor intrusion but, due to internal inconsistencies and unnecessary complexity, erodes much of the simplicity associated with the 2004 Vapor Intrusion Policy. As requirements relating to vapor intrusion become more onerous, PADEP risks damaging the overall vitality of Pennsylvania’s land recycling program.

Discussion

1. The Proposed Vapor Intrusion Guidance Should Include More Figures and Diagrams

The Proposed Vapor Intrusion Guidance is an extremely complex and technically challenging document. The figures and diagrams that are included in the document are very helpful in illustrating key concepts

that run through the document. Additional figures and diagrams to illustrate particular examples of how the technical guidance is intended to apply would be of utility to both PADEP staff and the regulated community. Moreover, given the fact that there are a number of places where more precision in the text of the Proposed Vapor Intrusion Guidance would be of significant benefit, additional figures and diagrams might lend clarity to the document.

2. The Proposed Vapor Intrusion Guidance should Clearly Identify those Regulated Substances to which it Applies

Section A of the Proposed Vapor Intrusion Guidance indicates that it applies to potential vapor intrusion of volatile organic compounds (“VOCs”) and certain semi-volatile organic compounds (“SVOCs”). It would be helpful to better define the scope of the Proposed Vapor Intrusion Guidance. The tables that are included in the Proposed Vapor Intrusion Guidance presumably represent the universe of organic regulated substances that are of primary concern. Providing PADEP staff and the regulated community with clear-cut guidance on whether the Proposed Vapor Intrusion Guidance is germane to the characterization and remediation of a particular site by identifying the universe of regulated substances to which it applies will help eliminate disputes later in the process.

3. Greater Clarity is Needed Regarding the Implementation Schedule for the Proposed Vapor Intrusion Guidance

In Section A of the Proposed Vapor Intrusion Guidance, PADEP states that once the guidance document is finalized, it should be used to evaluate vapor intrusion at sites where the remedial investigation or site characterization report is expected to be submitted following the effective date of the guidance document. PADEP then states that in circumstances where a site characterization report has been submitted and approved prior to the effective date of the guidance document, “the remediator should update the [vapor intrusion] evaluation of the report only.” These two statements are at odds with each other. The clear implication from the first statement is that in circumstances where a remedial investigation report or site characterization report has already been submitted, the new guidance document should not apply. The second statement undercuts this approach by indicating that even where a site characterization report has already been approved, it must be updated to reflect the requirements of the new guidance document.

There is little doubt that the Proposed Vapor Intrusion Guidance represents a dramatic change in the manner in which vapor intrusion will need to be addressed under Act 2. PADEP should therefore be much clearer as to how the new requirements, once in effect, will apply to work that has already been initiated under Act 2. Moreover, the approach that PADEP follows may very well have relevancy to sites that have already passed through the Act 2 program.

The PA Chamber suggests that PADEP clearly articulate its position on what ramifications the new guidance document will have for sites where a final report under Act 2 (including a remedial action completion report under the storage tank program) has already been approved by PADEP. In our view, the status of such sites should not be disturbed. The PA Chamber also suggests that PADEP amplify on the transition provisions of the Proposed Vapor Intrusion Guidance to make clear that the new guidance document does not apply to final reports that have been submitted and are under review at the time that the new guidance document goes into effect. Because the Proposed Vapor Intrusion Guidance is designed primarily to apply to sites being addressed under the statewide health standard of Act 2 and a final report is the only report specifically required pursuant to the statewide health standard, it is important that the

remediation process not be needlessly extended or complicated by application of the final version of the Proposed Vapor Intrusion Guidance once a final report has been prepared and submitted to PADEP.

Moreover, given the extensive sampling requirements that may be triggered by the Proposed Vapor Intrusion Guidance, remediators may experience significant hardship if such new requirements are imposed after the site characterization process has been completed or is nearing completion. The PA Chamber therefore believes that site characterization reports and remedial investigation reports that have been submitted prior to the effective date of the new guidance should be grandfathered. We note that a remedial investigation report or site characterization report is only a required component of the process under the site-specific standard of Act 2 in which case, vapor intrusion considerations are likely to be addressed in any event through a site-specific risk assessment or via pathway elimination utilizing mitigation measures.

4. The Role of Environmental Covenants in Supporting Mitigation Measures Should be Clarified

The PA Chamber endorses the elements of the Proposed Vapor Intrusion Guidance that allow mitigation measures to be used to address potential vapor intrusion concerns at any time without having to undertake the extensive sampling and analysis that is contemplated in the Proposed Vapor Intrusion Guidance. Mitigation may provide a cost-effective and readily implementable approach for dealing with vapor intrusion. Moreover, in the case where occupied buildings are not currently present at a particular location but could be built in the future, the option to construct such buildings with vapor barriers or other engineering controls as necessary or to perform an evaluation of potential vapor intrusion at the time that construction is anticipated is extremely helpful. The Proposed Vapor Intrusion Guidance makes clear that an environmental covenant under the Pennsylvania Uniform Environmental Covenants Act (“UECA”) must be recorded in such circumstances. The PA Chamber recommends that the text of Proposed Vapor Intrusion Guidance be revised to clarify that the environmental covenant serves simply to describe the general mitigation approach that is being used (such as use of appropriate engineering controls). Stated differently, the environmental covenant supports the mitigation measure and serves as the mechanism for providing notice to current and future property owners that a mitigation measure is (or may be) necessary.

The discussion of environmental covenants in the Proposed Vapor Intrusion Guidance also raises a number of questions. For example, where development of all or a portion of site is precluded by zoning requirements, physical constraints or other environmental limitations, is an environmental covenant necessary to address potential vapor intrusion issues in such areas? In addition, the Proposed Vapor Intrusion Guidance states that “[i]n most cases the environmental covenant does not need to include language requiring periodic monitoring or reporting to DEP.” While this language is helpful, it begs the question of the type of circumstances that would trigger the need for periodic monitoring or reporting.

5. Where Inhalation Toxicity Values do not Exist for Volatile Regulated Substances, Potential Vapor Intrusion from Such Substances Should not be Required

Section C.2 of the Proposed Vapor Intrusion Guidance indicates that where inhalation toxicity values do not exist for particular volatile regulated substances, screening values cannot be calculated and “[t]herefore, Statewide health standard VI evaluations are not required for substances without screening values.” PADEP then states, as follows:

However, the VI pathway would be satisfactorily addressed if the concentrations for such

substances were below practical quantitation limits or if a mitigation system was installed. The remediator may also choose to evaluate VI using the site-specific standard for chemicals without Chapter 250 inhalation toxicity parameters.

It is unclear what PADEP is intending to convey in these two sentences. To the extent that PADEP is suggesting that in circumstances where volatile regulated substances without inhalation toxicity values may be present, it is necessary to use either mitigation measures or show that such substances are not present at concentrations above practical quantitation limits, the PA Chamber strongly objects to such an approach. Consideration of vapor intrusion should focus on those circumstances where there is a scientific basis by which to evaluate potential risks (i.e., inhalation toxicity values exist). Moreover, the reference to using the site-specific standard for regulated substances without inhalation toxicity values appears to be misplaced because risk evaluations cannot be performed in the absence of such values. The PA Chamber recommends that the Proposed Vapor Intrusion Guidance be revised to clarify that consideration of volatile regulated substances is only necessary to the extent that inhalation toxicity values exist for those substances. This comment meshes with the earlier comment requesting PADEP to clarify the universe of regulated substances to which the Proposed Vapor Intrusion Guidance applies.

6. The Wide-Spread Use of the Term “Contamination” is Confusing and Unclear

PADEP has used the term “contamination” approximately 60 times in the Proposed Vapor Intrusion Guidance. This term is undefined and can be very subjective. For example, the presence of naturally occurring substances in soil can be viewed by some as “contamination” and cause for alarm while others may view such conditions as typical of ordinary background conditions. The Proposed Vapor Intrusion Guidance would benefit significantly from use of more precise language. Many portions of the Proposed Vapor Intrusion Guidance focus on the presence of volatile organic regulated substances. It would be very helpful to clarify that “contamination” as that term is frequently used in the Proposed Vapor Intrusion Guidance refers to the presence of elevated concentrations of such substances and to specifically tie the universe of volatile organic regulated substances addressed in the Proposed Vapor Intrusion Guidance to those regulated substances included in the tables of screening values.

This issue also manifests itself in the definition of acceptable soil or soil-like material in Section B of the Proposed Vapor Intrusion Guidance. In that section of the document, PADEP states that “acceptable soil or soil-like material should NOT exhibit . . . [o]bvious contamination (e.g., staining or odors).” Soils can exhibit color changes or odors that have nothing to do with the presence of volatile regulated substances. This provision should be eliminated as it is overbroad and unnecessary in light of the other criteria that PADEP has included for acceptable soil or soil-like material.

7. The Proposed Vapor Intrusion Guidance Places Undue Emphasis on Preferential Pathways

The Proposed Vapor Intrusion Guidance mentions “preferential pathways” almost 90 times. In the vast majority of cases, PADEP identifies the presence of preferential pathways as a factor that eliminates or significantly restricts the use of tools otherwise available to address vapor intrusion. The PA Chamber does not suggest that preferential pathways are never a concern with respect to vapor intrusion. The PA Chamber agrees that in certain instances, natural or man-made features can serve as a conduit for vapor transport. Recognizing that this can be the case, however, does not require the highly conservative approach that PADEP has adopted in addressing preferential pathways. Moreover, the emphasis that PADEP has placed on preferential pathways coupled with the lack of precision in terminology threatens to cripple many elements of the Proposed Vapor Intrusion Guidance.

The Proposed Vapor Intrusion Guidance describes preferential pathways generally in terms of utility lines, sumps, vaults, French drains and other features that can serve as conduits. While alluding to the issue, the Proposed Vapor Intrusion Guidance needs to clearly and distinctly make the point that in the context of utilities and similar features, it is the quality and type of the backfill material in the trench rather than the utility itself that potentially creates a preferential pathway. PADEP's loose use of terminology will inevitably lead to confusion and potential disputes in the implementation of the land recycling program.

The Proposed Vapor Intrusion Guidance then divides potential preferential pathways into three categories – (1) preferential pathways that run in proximity to an occupied building but remain outside the footprint of the building, (2) preferential pathways that “penetrate the building foundation,” and (3) preferential pathways that are completely internal to a building's structure. The second category of potential preferential pathways – those that penetrate the building foundation – is extremely problematic because the presence of such pathways appears to eliminate the ability to use any sampling methods other than collecting indoor air samples to address potential vapor intrusion.

In this era, it is hard to imagine an occupied building that does not have at least one type of utility line that penetrates the foundations of the building. Water lines, sewer lines, electric lines, natural gas lines, telephone lines, and cable television lines all may (or likely) connect through underground pipes or conduits that penetrate through building foundations. Where pipes or conduits pass through foundations, they are typically sealed to keep moisture out of the building. In such cases, the utility lines that penetrate building foundations should not be considered to be potential preferential pathways. The Proposed Vapor Intrusion Guidance is wholly missing necessary clarifying text explaining the limited circumstances in which a preferential pathway should be treated as penetrating the building foundation in a manner that negates the ability to utilize various types of sampling (such as sub-slab soil gas sampling) to address vapor intrusion short of defaulting to indoor air sampling. Moreover, in circumstances where a true preferential pathway penetrates the foundation of a building (such as where a trench backfilled with coarse gravel goes through a foundation with no seals or other physical limitations that would minimize the potential for soil vapor to migrate along the trench through the foundation wall), it may be possible to seal the pathway and then proceed with the full range of sampling options to evaluate potential vapor intrusion into the building. The Proposed Vapor Intrusion Guidance appears to briefly mention such an approach but provides little direction on how the approach can be put into practice. The Proposed Vapor Intrusion Guidance should be revised to endorse and amplify on such an approach.

In addition, the Proposed Soil Vapor Guidance states in two places that “[u]tility lines and their foundation penetrations in buildings the size of a typical single-family home are usually not considered to be preferential pathways.” The Proposed Soil Vapor Guidance indicates that because most excavations at structures the size of a single-family home are backfilled with native soil, such features do not act as preferential pathways. The PA Chamber agrees with this general observation and believes that it is appropriate to modify the Proposed Soil Vapor Guidance to establish a rebuttable presumption that such utilities are not preferential pathways to avoid the potential need to conduct field activities to confirm that which is expected. The PA Chamber also submits that PADEP's corollary assumption that “[u]nderground features associated with larger buildings are typically backfilled with non-native soil (e.g., gravel or stone), which can act as a conduit for vapors and should therefore be considered potential preferential pathways” is not necessarily the case. The focus of the inquiry should be on the size and type of the subsurface feature rather than whether the building is large. A large building can still have

relatively small conduits that are placed in trenches backfilled with native soils rather than specialized bedding materials.

Given the foregoing, the PA Chamber requests that the word “usually” be removed from the sentence that states “[u]tility lines and their foundation penetrations in buildings the size of a typical single-family home are usually not considered to be preferential pathways.” If PADEP is concerned that there may be particular and unusual circumstances where a utility line does, in fact, serve as a preferential pathway, it should clearly and objectively articulate those concerns. Otherwise, vapor intrusion evaluations may become needlessly tangled in wrangling over what may constitute a preferential pathway.

Likewise, for utilities associated with large buildings, a rebuttable presumption may not be appropriate to employ but PADEP nevertheless should be much clearer as to the type of conditions that pose real concerns regarding the potential for vapors to migrate along preferential pathways. In addition, as indicted above, PADEP should clarify that sealed utility penetrations do not pose a concern in terms of preferential pathways that pass through foundations.

With respect to the type of investigation activities that are necessary to assess the presence of potential preferential exposure pathways, the Proposed Vapor Intrusion Guidance is decidedly opaque. While the Proposed Vapor Intrusion Guidance includes the statement that “[t]he Department does not require remediators to prove the absence of preferential pathways,” the Proposed Vapor Intrusion Guidance also includes an extensive list of steps that remediators “should” take to identify and assess potential preferential pathways. Moreover, the Proposed Vapor Intrusion Guidance includes directives that may be difficult or impossible to satisfy such as the requirement that “[s]umps and French drains should be evaluated for both wet and dry conditions.” The language of the Proposed Vapor Intrusion Guidance sets the stage for extensive disagreements between remediators and PADEP staff over what level of effort is sufficient to identify potential preferential pathways. Indeed, this process may become a key element of site characterization activities and force remediators to conduct intrusive investigations in and around utility lines. This is antithetical to the utility clearance process which is typically designed to ensure for safety reasons that drilling and other intrusive techniques do not take place in close proximity to utilities.

8. The Proposed Vapor Intrusion Guidance Should Clarify What Constitutes the Presence of Separate Phase Liquid

In much the same fashion that the presence of preferential pathways severely constricts the options available under the Proposed Vapor Intrusion Guidance, PADEP has likewise stated in multiple places in the Proposed Vapor Intrusion Guidance that the presence of separate phase liquid (“SPL”) eliminates the ability to use various options to evaluate potential vapor intrusion. PADEP attempts to define SPL as “[t]hat component of a regulated substance present in some portion of the void space in a contaminated environmental medium (i.e., soil or bedrock) that is comprised of non-aqueous phase liquid (NAPL).” For purposes of the Proposed Vapor Intrusion Guidance, the definition of SPL should be revised to make clear that the non-aqueous phase liquid must contain a VOC or SVOC that is of concern with respect to vapor intrusion. As previously noted, the final version of the Proposed Vapor Intrusion Guidance should also include a list or table of those VOCs and SVOCs to which the guidance applies. In addition, the definition of SPL does not include any quantification of the amount of non-aqueous phase liquid that must be present to qualify as SPL. Advances in investigation approaches and techniques such as the use of laser-induced fluorescence are increasing our ability to detect smaller and smaller amounts of hydrocarbons in a non-dissolved phase. Small quantities of non-aqueous phase liquids may technically meet the definition of SPL proposed by PADEP but not serve as a potential source of vapor in nearly the

same manner as a large reservoir of SPL. It would be a perverse outcome if remediators were discouraged from using advanced techniques to assess soil conditions because even de minimus amounts of non-aqueous phase liquids might qualify as SPL and thereby substantially alter the options available to address potential vapor intrusion issues. The PA Chamber recommends that PADEP include some type of readily applicable metrics to distinguish between SPL that can serve as a significant source of vapor and de minimus quantities of non-aqueous phase liquids.

9. The Proposed Vapor Intrusion Guidance Should Include a Vertical Separation Distance for Non-Petroleum Volatile Regulated Substances

Section B of the Proposed Vapor Intrusion Guidance defines various terms including “proximity distance.” As part of this definition, PADEP indicates that there “is no vertical proximity distance for non-petroleum contamination.” Even EPA utilizes a vertical proximity distance for non-petroleum regulated substances. It is unclear why PADEP has chosen not to follow suit, particularly when it would enable sites where releases of volatile regulated substances have migrated to significant depths to quickly and easily eliminate vapor intrusion as a pathway of concern. As an example, the Proposed Vapor Intrusion Guidance should be revised to specify that vapor intrusion is not a concern if a clean water lens can be demonstrated to exist at the top of the water table, as discussed in EPA’s technical guidance issued in June 2015 entitled *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*.

10. The Proposed Vapor Intrusion Guidance Should Clarify Points of Application in Connection with Certain Screening Values

Section C.2 of the Proposed Vapor Intrusion Guidance discusses points of application (“POAs”) for various screening values. For example, the Proposed Vapor Intrusion Guidance states as follows:

Groundwater screening values (SVGW) apply within the zone of groundwater saturation that will exhibit concentrations of regulated substances representative of concentrations at the water table. This is an interval within 10 feet or less of the water table.

The PA Chamber agrees that the focal point of potential vapor intrusion from groundwater containing volatile regulated substances is the presence of such substances at the water table. It would be helpful to clarify that vapor intrusion from groundwater is not a concern if a lens of clean water is present at the water table, even if groundwater at deeper intervals contains elevated concentrations of volatile regulated substances. As EPA has indicated in federal vapor intrusion guidance that was issued in June 2015 entitled *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*, a clean water lens as thin as a foot can be sufficient to prevent volatilization of regulated substances from groundwater to soil gas.

In addition, the Proposed Vapor Intrusion Guidance states that “indoor air screening values (SVIA) apply in the lowest occupied space of a potentially impacted building” while at the same time requiring that residential screening values apply to buildings that have both residential and nonresidential uses (e.g., apartments over a retail store). The combination of these two provisions means that residential screening values may apply in non-residential spaces – an outcome that does not make sense.

11. The Proposed Vapor Intrusion Guidance Contains Characterization Requirements that may be Difficult to Satisfy

Section G.3 of the Proposed Vapor Intrusion Guidance sets forth various sampling requirements relating to vapor intrusion. With respect to indoor air sampling, the Proposed Vapor Intrusion Guidance states as follows:

The indoor air data collected for screening purposes should be collected when the daily average outdoor temperature is at least 15°F below the minimum indoor temperature in the occupied space and the heating system is operating normally. Indoor air sampling can be performed during warmer seasons, but that data should be used for informational purposes only and should not be used to screen out the VI pathway.

Restricting indoor air sampling to cold weather periods may be significantly problematic in terms of meeting timing requirements associated with property transfers. Act 2 is frequently utilized in the context of facilitating the sale of properties where a spill or release of regulated substances has occurred. In addition, such sampling requirements are expected to be applicable to releases from regulated storage tanks that are being addressed under the STSPA. The storage tank program imposes mandatory time frames for conducting characterization and remediation activities. Requiring two rounds of indoor air sampling as indicated in the Proposed Vapor Intrusion Guidance during cold weather conditions may substantially delay completion of the characterization process. Moreover, given the severe restrictions that are imposed in the Proposed Vapor Intrusion Guidance on using other forms of sampling if preferential pathways or SPL is present, indoor air sampling may frequently be the only option available to satisfy PADEP. We also note that the specified temperature differential may not be readily met in connection with various types of non-residential buildings that are not consistently heated or are maintained at lower temperatures than typical residential buildings.

Section G.3 of the Proposed Vapor Intrusion Guidance also establishes minimum sampling requirements with respect to potential vapor intrusion – namely two rounds of sampling at least 45 days apart with at least two samples per building. At the same time, the Proposed Vapor Intrusion Guidance states that “[t]wo sample locations and two sampling rounds will not be sufficient at all sites and for all buildings” and that “[l]arger buildings will likely require more samples as source concentrations, vapor entry rates, and indoor ventilation rates will vary across the structure.” The effect of these statements is to introduce substantial uncertainty as to what may be necessary as part of the characterization process. Moreover, PADEP staff may have vastly differing views as to how to apply these guidelines leading to disagreements between PADEP and the regulated community over characterization issues. The PA Chamber suggests that PADEP better define its expectations, perhaps by linking the number of samples necessary at a building to size of the building footprint.

12. Section C.3 of the Proposed Vapor Intrusion Guidance is Very Difficult to Follow and Should be Clarified

Section C.3 of the Proposed Vapor Intrusion Guidance attempts to explain how the guidance is to be used when a remediator chooses to use a combination of the statewide health standard and site-specific standard. This section is generally difficult to follow. Of particular concern is the statement that under the statewide health standard, “a remediator cannot evaluate the [vapor intrusion] pathway without also evaluating soil and groundwater because Act 2 does not define indoor air or soil gas as environmental media.” The PA Chamber is concerned that this statement could be interpreted to eliminate the flexibility that is a key attribute of Act 2 by taking away the ability of a remediator to choose to address only soils or only groundwater under Act 2 using one or a combination of cleanup standards. As noted earlier in these

comments, Act 2 focuses predominantly on the characterization and remediation of soil and groundwater. Vapor intrusion is simply one element of that process. The Proposed Vapor Intrusion Guidance should be revised to make clear that a remediator retains the ability to select those regulated substances and media to be addressed and that potential vapor issues are tied solely to those selections.

13. The Proposed Vapor Intrusion Guidance is Internally Inconsistent and Appears to Improperly Preclude Use of Certain Screening Values

Section F.1 of the Proposed Vapor Intrusion Guidance describes two key elements of the framework under which soil and groundwater screening values have been developed. For groundwater, the medium specific concentrations (“MSCs”) developed by PADEP to implement the statewide health standard under Act 2 for groundwater “are considered suitable [vapor intrusion] screening values because groundwater with concentrations at or below the MSCs is acceptable for use inside buildings (e.g. cooking, showering, cleaning, etc.)” The Proposed Vapor Intrusion Guidance also contains a corollary provision for soils, stating that generic soil-to-groundwater numeric values developed by PADEP as part of implementing the statewide health standard under Act 2 “are considered appropriate for [vapor intrusion] screening because soil contamination that is unable to impact aquifers in excess of groundwater MSCs is also unlikely to pose an excess inhalation risk.” As such, the groundwater MSCs and the generic soil-to-groundwater numeric values provide a floor of screening values that negate any further need to assess vapor intrusion. Stated differently, where those values are met within separation distances from an occupied building, no further actions should be required.

Unfortunately, the Proposed Vapor Intrusion Guidance appears to frustrate the straightforward use of such screening values by needlessly interjecting considerations of preferential pathways. For example, Section D of the Proposed Vapor Intrusion Guidance states, as follows:

If preferential pathways are identified, the remediator should not use soil or groundwater screening values because they are based on the attenuation of vapors through acceptable soil-like material and an intact foundation slab which may not occur in the presence of a preferential pathway. Similarly, the default model for predicting indoor air concentrations (see Appendix Y) using soil or groundwater data should not be used when preferential pathways are present.

The rationale for using the groundwater MSCs and generic soil-to-groundwater numeric values as minimum screening values is not based on the presence or absence of preferential pathways. Instead, PADEP recognizes, as it should, that groundwater meeting the MSCs is deemed to be safe for use inside of occupied buildings, including bathing in the water, cooking with the water, and drinking the water. There is no basis for eliminating use of the groundwater MSCs and generic soil-to-groundwater numeric values as minimum screening values where preferential pathways may be present. The PA Chamber requests that the Proposed Vapor Intrusion Guidance be modified to eliminate such unnecessary limitations and clarify that the groundwater MSCs and generic soil-to-groundwater numeric values can be used as screening values even when preferential pathways are present, either internal or external to a building.

14. The Proposed Vapor Intrusion Guidance Improperly Restricts Use of Screening Values that are Based on Empirical Data

Section D of the Proposed Vapor Intrusion Guidance places limitations on the use of the various screening values, including restricting the use of sub-slab soil gas and groundwater screening values when a foundation penetration is present in the building being evaluated. However, the attenuation factors used by PADEP to develop these screening values were derived from EPA's empirical vapor intrusion database. In using that database for this purpose, EPA made no effort to screen out sampling locations at which preferential pathways that penetrate the foundation were present. As previously discussed, given the fact that virtually all occupied buildings have some utility penetrations of their foundations, it is apparent that the empirical relationships that EPA has developed between sub-slab and groundwater concentrations of volatile regulated substances and corresponding indoor air concentrations account for the effects of such penetrations. Therefore, the limitation that PADEP has placed on the use of sub-slab and groundwater screening values based on the attenuation factors from EPA's empirical database is scientifically unfounded as the resultant attenuation factors and associated screening values already incorporate the effects of foundation penetrations.

Maintaining the use of sub-slab and groundwater screening values without the foregoing limitation is essential to providing the basis for a straightforward and streamlined evaluation process for vapor intrusion. This is especially important given the proposed seasonal restriction on the use of indoor air screening values. Preserving the options of using sub-slab soil gas and groundwater screening values may at least partially relieve the timing issues associated with that limitation.

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The PA Chamber very much appreciates the opportunity to provide comments regarding the Proposed Vapor Intrusion Guidance. The PA Chamber recognizes the efforts that PADEP has made to develop a framework to address vapor intrusion in multiple ways. It is critical in terms of preserving the valuable attributes of the Act 2 program that a robust set of tools exists to handle vapor intrusion without needlessly complicating the characterization and remediation process, and without eclipsing the fundamental manner in which soils and groundwater are addressed. We would welcome the opportunity to meet with PADEP to discuss the issues and concerns presented in these comments.

Respectfully submitted,



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