

## **U.S. EPA's Proposed Rule for Adding Subsurface (Including Vapor) Intrusion to the Superfund National Priorities List**

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On February 29, 2016 the U.S. Environmental Protection Agency (EPA) published a proposed rule, "Addition of a Subsurface Intrusion Component to the Hazard Ranking System" in the *Federal Register*. See <https://www.federalregister.gov/articles/2016/02/29/2016-02749/addition-of-a-subsurface-intrusion-component-to-the-hazard-ranking-system>). It is taking formal comments on the proposed rule through April 29, 2016. Instructions for submitting comments may be found at [www.regulations.gov](http://www.regulations.gov).

This long-awaited rule provides an option for adding sites with subsurface intrusion of hazardous substances to the "Superfund" National Priorities List (NPL), even where other pathways are insufficient for listing. It refers to "subsurface intrusion" because, in addition to vapor intrusion, it covers an emerging issue "intrusion of contaminated ground water into regularly occupied structures"—what I think of as wet basements.

Qualitatively, the proposed rule is relatively easy to understand. The factors necessary to list a subsurface intrusion site make sense. But it is difficult, if not impossible for people unfamiliar with the EPA scoring system to know whether the quantitative criteria will properly separate high threat sites from routine one. EPA reports, however, that it "tested the scoring algorithm using existing subsurface intrusion data from actual sites."

In preparing the rule, EPA has identified 1,073 non-NPL sites that are suspected of having vapor intrusion issues, and which may or may not qualify for the NPL.

- 11 sites are likely to qualify for the NPL because there is evidence that sufficient numbers of people have been exposed to unacceptable vapor intrusion.
- 202 sites have subsurface intrusion based on subslab, crawlspace, or indoor air samples, but at this point they do not appear to qualify for the NPL.
- 532 other sites have potential subsurface intrusion, based upon the levels of volatile hazardous substance in groundwater
- 328 sites have suspected subsurface intrusion threats with no sampling data.

EPA also suggests that few federal facilities, such as Defense installations, will be affected by the proposed rule: "Because federal agencies currently address subsurface intrusion issues as part of their environmental programs, it is unlikely that a significant number of sites will be added to the NPL. However, it could lead to an increase in site assessment activities and related costs."

In justifying the listing of sites where vapor intrusion is the only pathway, EPA argues that vapor mitigation systems, while necessary to protect building occupants, are often insufficient:

In the case of vapor intrusion resulting from a subsurface contaminant plume, failing to address the source of contamination and the resulting plume may result in an increased exposure to individuals due to migration and expansion of the plume over time. In this instance, individuals in regularly occupied structures that were previously unaffected by the plume may become negatively impacted by subsurface intrusion. Additionally, a subsurface contaminant plume in a lesser-developed area has the potential to impact future development if left untreated.

There are several other concerns related to only addressing subsurface intrusion problems with a vapor mitigation system. The first concern is that vapor mitigation systems require ongoing monitoring and maintenance throughout the life of the system. Periodic inspections of the vapor mitigation system are necessary to make sure it is operating as designed. Over time the system can degrade, and maintenance will also be necessary, such as replacing the fan in an active sub-slab depressurization system. Non-mechanical failures of the system can occur as well, such as, electric power failure, turning off the fan or ignoring a damaged system.

EPA also points out that state regulatory oversight of vapor intrusion threats is uneven. In 2009:

Nine states had regulations that address vapor intrusion specifically; three states had regulations under development. Thirty-four states either have guidance for addressing vapor intrusion or are in the process of developing guidance.

And it reinforces the need for federal jurisdiction by citing the Government Accountability Office's 2010 finding:

EPA may not be listing some sites that pose health risks that are serious enough that the sites should be considered for inclusion on the NPL. While EPA is assessing vapor intrusion contamination at listed NPL sites, EPA does not assess the relative risks posed by vapor intrusion when deciding which sites to include on the NPL. By not including these risks, states may be left to remediate those sites without federal assistance, and given states' constrained budgets, some states may not have the ability to clean up these sites on their own... However, if these sites are not assessed and, if needed, listed on the NPL, some seriously contaminated hazardous waste sites with unacceptable human exposure may not otherwise be cleaned up.

EPA proposes to incorporate the subsurface intrusion pathway into the soil pathway, one of four Hazard Ranking System categories, "because both consider the relative risk posed by direct contact with existing contamination areas." However, in the absence of evidence of subsurface intrusion, the soil pathway score component would remain unchanged. The final score would still be based on a combination of the four component scores.

EPA proposes to evaluate potential exposures at 1) as regularly occupied buildings with evidence of actual exposure and 2) where "sampling of indoor air has not documented that

subsurface contamination has entered a regularly occupied structure or no sampling of indoor air has been undertaken.” In scoring, documented exposure is weighted more heavily than uncertain or potential exposure. Furthermore, EPA has chosen not to include potential future exposures, due to contaminant migration, in the subsurface intrusion score.

As it did in its June, 2015 Vapor Intrusion *Technical Guides*, EPA includes in its evaluation people who are working—not just living or studying—in buildings with known or possible vapor intrusion. In counting the affected population, EPA uses a blanket approach. Within “Areas of Observed Exposures,” it states:

EPA is proposing to consider as actually contaminated those populations in regularly occupied structures for which observed exposures have not been established but the structures are surrounded by regularly occupied structures in which observed exposures have been identified, unless evidence indicates otherwise.

To illustrate how the scoring system should work, EPA identifies three hypothetical scenarios: At the first, indoor air concentrations of intruding hazardous substances are below applicable benchmarks. This site would not be listed. At the third, sampling at homes and a daycare center have documented many exposures above the health-based benchmark. The Hazard Ranking score would qualify this site for the NPL. The known exposures at the second scenario are in between the other two. Based on quantitative scoring, it would barely qualify for the NPL.

I find the second, in-between scenario puzzling. Without a background in hazard ranking, I don’t know if too many or too few sites would qualify for the Superfund list. But it is heartening that sites where people are subject to vapor intrusion might get EPA’s help, even if they are not in contact with contaminated soil and their drinking water is safe.

Around the country, there are people living, working, and studying in buildings that not only need investigation and mitigation of vapor intrusion, but require soil or groundwater remediation to reduce or eliminate the long term threat of intrusion. Many of these sites—often categorized as brownfields—are overseen through weak regulatory programs, or they have no regulatory oversight at all. This rule, if promulgated, will help those people get the protection they deserve.