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STATE OF ILLINOIS  
Pollution Control Board

ILLINOIS POLLUTION CONTROL BOARD

August 28, 2012

IN THE MATTER OF: )  
)  
TIERED APPROACH TO CORRECTIVE ) R11-9  
ACTION OBJECTIVES (TACO) (INDOOR ) (Rulemaking - Land)  
INHALATION): AMENDMENTS TO 35 )  
ILL. ADM. CODE 742 )

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**HEARING OFFICER ORDER**

On April 19, 2012, the Board issued an opinion and order that proposed first-notice amendments to the Tiered Approach to Corrective Action Objectives (TACO) rules (35 Ill. Adm. Code 742). *See Tiered Approach to Corrective Action Objectives (TACO) (Indoor Inhalation): Amendments to 35 Ill. Adm. Code 742, R11-9 (Apr. 19, 2012) (R11-9 First Notice)*. The amendments include the addition of the indoor inhalation exposure route. The route was added to protect building occupants from the potential for vapors migrating into buildings from volatile chemicals present in underlying soil or groundwater. This migration is commonly known as “vapor intrusion” or “VI.” First notice of the proposed amendments appeared in the *Illinois Register* on May 18, 2012 (36 Ill. Reg. 7340 (May 18, 2012)), beginning a 45-day public comment period.

The Board’s first-notice opinion sought public comment from the rulemaking proponent, the Illinois Environmental Protection Agency (IEPA), on a number of issues. IEPA filed a public comment on May 25, 2012 (PC7). Today’s hearing officer order directs IEPA to file, by September 17, 2012, further comment on two matters: concrete foundations; and building control technologies at school sites. Other participants may file public comments by October 1, 2012, in response to IEPA’s supplemental comment.

**Concrete Foundations**

**Background**

**IEPA Public Comment 7 from May 2012.** In the Board’s first-notice opinion, the Board asked whether the Tier 1 indoor inhalation remediation objectives, which IEPA developed based upon the “slab-on-grade” scenario, would be protective of basement occupants of a building. *See R11-9 First Notice*, slip op. at 22-23. In its most recent public comment, IEPA responded that it conducted a sensitivity analysis, comparing Tier 1 residential remediation objectives for benzene and tetrachloroethylene (PCE) in a basement scenario versus a slab-on-grade scenario: “The results (presented in Exhibit A to these comments) support our conclusion that slab-on-grade is the appropriate scenario to use for Tier 1 remediation objective tables for the indoor inhalation exposure pathway.” PC7 at 2. Referring to the “Vapor Intrusion Screening Level Calculator (VISL) User’s Guide” (Mar. 2012) of the United States Environmental Protection Agency (USEPA) (USEPA VISL Mar. 2012), IEPA added:

It would appear that the distinction between slab-on-grade and basement construction no longer matters; instead, the concern is for buildings with significant openings to the subsurface. Under [IEPA's] proposal, all buildings are assumed to have concrete foundations as required by Section 742.717(d)(2). PC7 at 2-3.

IEPA's public comment concluded that IEPA is "confident that the proposed Tier 1 indoor inhalation remediation objectives for soil gas and groundwater are sufficiently protective of basement occupants." PC7 at 3.

**IEPA Prefiled Testimony from January 2011.** In prefiled testimony filed on January 31, 2011, IEPA stated the following regarding the Tier 1 evaluation:

Sites achieving residential Tier 1 remediation objectives are intended to clearly indicate that the property meets an unrestricted land use category for that category of use. \*\*\* Risk-based indoor inhalation remediation objectives were derived from equations combining exposure assumptions with toxicity data. \*\*\* This calculation was made using an attenuation factor derived from a mathematical model developed by Johnson and Ettinger (J&E). \*\*\* Tier I remediation objectives have been developed for a slab-on-grade building. A slab-on-grade building is a more conservative scenario because there is less air available in the building to mix with the contamination. A building with a basement assumes there is mixing of the air between the basement and the first floor. Tier 1 remediation objectives are applicable to both slab-on-grade buildings and buildings with basements.

A slab-on-grade building is one with a concrete floor at about the same level as the grade of the surrounding area; a basement would typically be below the grade of the surrounding area. Tier 1 indoor inhalation remediation objectives calculated for a slab-on-grade building are not much lower than what would be developed for a similar building with a basement. PFT1 King at 8-11.

**USEPA Guidance.** Regarding the generic conceptual model for vapor intrusion described in USEPA's "Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils," OSWER Draft Guidance (EPA Publication No. EPA/530D-02/004 (Nov. 2002)), the USEPA VISL Mar. 2012 states:

The receptors are assumed to be occupants in buildings with poured concrete foundations (for example, basement or slab on grade foundations or crawlspaces with a liner or other vapor barrier). USEPA VISL Mar. 2012 at 2.

Specific factors that may result in unattenuated or enhanced transport of vapors towards a receptor, and consequently are likely to render the VISL [Vapor Intrusion Screen Level] screening target subsurface concentrations inappropriate, include:

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- Buildings with significant openings to the subsurface (for example, sumps, unlined crawlspaces, earthen floors) or significant preferential pathways, either naturally-occurring or anthropogenic (not including typical utility perforations present in most buildings). USEPA VISL Mar. 2012 at 3.

USEPA's "User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings," EPA/68/W-02/33 (Feb. 2004) (USEPA User's Guide Feb. 2004), states:

*Enclosed Space Floor Thickness (Advanced Models Only) ( $L_{\text{crack}}$ )*

Enter the thickness of the floor slab. All models operate under the assumption that the floor in contact with the underlying soil is composed of impermeable concrete whether constructed as a basement floor or slab-on-grade. The default value is 10 cm, which is consistent with J&E (1991). USEPA User's Guide Feb. 2004 at 53-54.

The assumptions described above and in Table 12 suggest a number of conditions that preclude the use of the Non-NAPL [Non-Aqueous Phase Liquids] Models as implemented by [US]EPA. These conditions include:

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- Buildings with crawlspace structures or other significant openings to the subsurface (e.g., earthen floors, stone buildings, etc.). The [US]EPA spreadsheet only allows for either slab on grade or basement construction. USEPA User's Guide Feb. 2004 at 67, 70.

### Questions for IEPA

1. Please comment on whether the applicability of the Tier 1 indoor inhalation remediation objectives should be limited to buildings with concrete slab-on-grade floors (or concrete basement floors and walls) that lack any significant openings to the subsurface.
  - a. If the applicability of the Tier 1 indoor inhalation remediation objectives should *not* be so limited, please address how the Tier 1 objectives are protective under the following circumstances:
    - i. Where a building does not have a concrete slab-on-grade floor (or concrete basement floor and walls), such as a building with a crawl space that has a soil surface.
    - ii. Where a building has a concrete slab-on-grade floor (or concrete basement floor and walls) but with one or more significant openings to the subsurface, such as a sump.
  - b. If the applicability of the Tier 1 indoor inhalation remediation objectives should be so limited, please address the following:

- i. Whether the limitations should be made explicit in the rules.
  - ii. Whether using the Tier 1 objectives should necessitate the placement of an institutional control on the property so as to require the existence and maintenance of the concrete slab-on-grade floor (or concrete basement floor and walls) free of any significant opening to the subsurface.
  - iii. How the indoor inhalation pathway can be evaluated where a building does not have a concrete slab-on-grade floor (or concrete basement floor and walls), such as a building with a crawl space that has a soil surface.
  - iv. How the indoor inhalation pathway can be evaluated where a building has a concrete slab-on-grade floor (or concrete basement floor and walls) but with one or more significant openings to the subsurface, such as a sump.
2. Please address No. 1 above but with respect to Tier 2 instead of Tier 1.
  3. Please comment on whether the word “concrete” should be added before the following terms:
    - a. In proposed Section 742.717(d)(2), “slab-on-grade” and “basement floor and walls.”
    - b. In proposed Appendix C, Table L, “slab-on-grade” and “basement.”

### **Building Control Technologies (BCTs) at School Sites**

#### **Notice Language in BCT Maintenance Conditions**

In the first-notice opinion, the Board set forth IEPA’s language for building control technology (BCT) maintenance conditions (Nifong PFT2 Exh. 5) that would appear in No Further Remediation (NFR) letters. See R11-9 First Notice, slip op at 44-45 (maintenance conditions for four BCTs). After discussing the Board’s newly-proposed notice requirement for school BCT inoperability (Section 742.1200(e)(3)), the Board asked that IEPA’s public comment “include revised BCT maintenance conditions for such school-site NFR letters, *reflecting the additional notice requirement.*” R11-9 First Notice, slip op at 48 (emphasis added). In its most recent public comment, IEPA responded that IEPA “does not recommend specific BCT maintenance conditions for schools” and that the “scheduling of building maintenance . . . should be left up to the individual schools.” PC7 at 8.

1. For purposes of NFR letters issued to school sites, the Board’s first-notice opinion requested that IEPA provide the language for the BCT maintenance conditions *as*

*modified* to reflect the Board’s new notice requirement for school BCT inoperability. Recognizing that IEPA has since recommended a different notice requirement in Section 742.1200(e)(3) (PC7 at 7), please include the BCT maintenance conditions (that would appear in school-site NFR letters), revised to reflect IEPA’s newly-recommended notice requirement.

### **BCT Inoperability Triggering Notice**

In its most recent public comment, IEPA proposed the following alternative to the Board’s first sentence of Section 742.1200(e)(3): “For a school, the site owner/operator shall notify the Agency, the school board, and every parent or legal guardian for all enrolled students when a building control technology is rendered inoperable for a period of five days over any six month period.” PC7 at 7.<sup>1</sup>

1. Please comment on IEPA’s basis for selecting “a period of five days.”
2. Please address whether IEPA intends “a period of five days” to include:
  - a. Not only five *consecutive* days of inoperability in any six-month period, but also five days of inoperability *cumulatively* in any six-month period.
  - b. Not only inoperability on school days, but on *any* calendar days (*e.g.*, including weekends and summer break).
3. Please comment on what constitutes a “day” of inoperability. In doing so, please consider the following:
  - a. Whether a “day” of inoperability requires inoperability for the entire 24-hour period of a given day or only inoperability for the duration of a single school day.
  - b. If a “day” of inoperability requires inoperability for the duration of a single school day, whether the duration of a single school day, for purposes of the notice requirement, should be designated as a uniform length (*e.g.*, six hours) or vary depending upon the actual length of the school day for the school at issue.
  - c. If a “day” of inoperability is designated to equal six hours, for example, whether those hours are to be measured:
    - i. Only during school hours.

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<sup>1</sup> In response to the Board’s inquiry, IEPA suggested that “rendered inoperable” be defined as “having become unable to operate effectively, including, but not limited to, being shut down as part of routine maintenance or due to a malfunction, power failure, or vandalism.” PC7 at 6.

- ii. Cumulatively or only consecutively. For example, if a BCT is rendered inoperable for four hours of a school day on Monday, and two hours of a school day on the Wednesday of the following week, whether those two time periods of inoperability add up to one “day” of inoperability or zero “days” of inoperability.
  - d. Whether any occurrence of inoperability, regardless of its duration, should result in the date of the occurrence being deemed a “day” of inoperability. If so, then a BCT rendered inoperable twice for one hour each time on Monday and once for 1/2 hour on the following Friday, for example, would have had two “days” of inoperability.
4. Please address whether the duration or frequency of inoperability triggering the notice requirement should vary depending upon the type of BCT.

### CONCLUSION

IEPA is directed to address the above questions through a supplemental public comment, which must be filed by September 17, 2012. In response to IEPA’s supplemental comment, other participants may file public comments by October 1, 2012. The “mailbox rule” (35 Ill. Adm. Code 101.300(b)(2)) does not apply to any of these filings—therefore, the Clerk must receive the public comments by 4:30 p.m. on the respective deadline dates. Public comments may be filed through the Clerk’s Office On-Line (COOL) on the Board’s Web site at [www.ipcb.state.il.us](http://www.ipcb.state.il.us). Any questions about electronic filing through COOL should be directed to the Clerk’s Office at (312) 814-3629. Public comments must also be served upon those persons appearing on the R11-9 Service List, which is available on the Board’s Web site.

IT IS SO ORDERED.



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