



CENTER FOR
CREATIVE
LAND
RECYCLING

*Redeveloping Land for
Sustainable Communities*

August 15, 2005

Dan Gallagher
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826-3200

Re: Comments on Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air

Dear Dan,

Thank you for the opportunity to comment on DTSC's Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air ("Guidance"). The Center for Creative Land Recycling (CCLR or "see clear") is the state's only organization solely dedicated to brownfield and infill development and we play an integral role in the revitalization of many sites around the state. Our work is accomplished through training, technical assistance, and small grants and loans for communities and community developers who are attempting to turn around vacant or environmentally distressed properties.

In August we convened a Vapor Intrusion workshop attended by experienced practitioners in the field of environmental remediation from across the state. The comments expressed below reflect the general sense and consensus of the workshop group. We commend DTSC for the leadership you have shown on the very complicated and nuanced issue of vapor intrusion. The Guidance provides a level of certainty that can be very helpful in the redevelopment process. There are, however, a number of concerns with the Guidance that we feel may, if left unaddressed, present a significant challenge to redevelopment in urban areas with industrial and commercial land use histories. Our concerns are explained below for your consideration. We would like to additionally recommend that, prior to the publication of the final draft, DTSC initiate a dialogue with experienced practitioners and experts from the brownfield redevelopment community through a series of focused workshops so that DTSC may more effectively incorporate the feedback of those stakeholders who are most likely to be – and in many cases already are – using this important document.

A. Significant Typo #1: Page 18

RECOMMENDATION: The first paragraph of Step 6 should read:
"For a site that does not (emphasis added) pass a preliminary screening evaluation, a site-specific evaluation of vapor intrusion may be warranted."

If the omission of "not" is in fact intentional, an explanation of DTSC's reasoning is requested.

B. Significant Typo #2: Page 54

- The final question of the Utility Corridor Decision Tree (Figure 3) is, "Do vapors pose an acceptable risk to indoor occupants?" According to the current draft of the Guidance, if the answer to this question is "Yes," then the Guidance recommends remedial action, and if the answer is "No," then utility corridors are not of concern.

RECOMMENDATION: At the final decision of the Utility Corridor Decision Tree (Figure 3), following “Do vapors pose an acceptable risk to indoor occupants,” the “Yes” and “No” should be switched.

If Figure 3 is in fact completely accurate, an explanation of DTSC’s reasoning behind the final decision is requested.

C. Scope

- The intended use of the Guidance is unclear. Is the Guidance a streamlined “check list” for efficient and accurate evaluation of vapor intrusion risks? Or is it a full range of technically sound options from which the project manager may choose those recommendations that are most appropriate for the site at hand?
- There is concern that the regulatory community will be overly conservative in implementing the Guidance and not apply reasonable professional discretion.

RECOMMENDATION: The Guidance should clearly state at the beginning of the Guidance the intended use of the document, including a note that the regulatory community has the authority to use their professional discretion in applying the Guidance at whatever level they deem appropriate for the site in question.

D. Application

- The Guidance does not currently state for which regulatory agencies this Guidance is intended.
- Local agencies and CUPAs may not have the in-house expertise or staff capacity required to fully implement the Guidance.

RECOMMENDATION: Guidance should clarify exactly which agencies/authorities are expected to use this Guidance and what to do if the oversight agency does not have the staff capacity to properly implement the Guidance.

E. Characterization – Plume Delineation

- Current guidance to delineate to non-detect vertically and 100 ft beyond non-detect laterally is exceedingly conservative and prohibitively burdensome for many brownfield redevelopment projects.
- Many urban areas contain regional groundwater contaminant plumes that stretch for miles, making full delineation of a soil gas plume derived from a contaminated groundwater source often impractical.

RECOMMENDATION: Guidance should remove the reference (page 5) that “characterization should continue until non-detectable concentrations of VOCs are encountered in the subsurface laterally and vertically” and replace it with “characterization should continue until VOC concentrations encountered in the subsurface laterally and vertically no longer exceed appropriate risk-based screening levels.” Guidance should also recommend that in situations where full lateral characterization to screening level is not possible (i.e. regional groundwater plume, lack of access to neighboring property), characterization to 100 feet from the perimeter of the (future) building is adequate.

F. Characterization – Sampling Depth

- The Guidance recommendation to always test at both 5 feet and 15 feet is exceedingly conservative and prohibitively burdensome for many brownfield redevelopment projects.
- Shallow sampling (i.e. 5 feet) is the most accurate and should always be done, with deeper samples collected on a less frequent basis.

RECOMMENDATION: Guidance should recommend that deeper 15-20 feet samples be taken at some reasonable subset of sampling locations, or when indicated by results of shallow sampling.

G. Characterization – Regulator Discretion

- The Guidance does not currently give any consideration to either remedial action plans or to product type when determining type and amount of characterization.
- In situations where the remediation plan is very aggressive (e.g. source removal) or the product type incorporates mitigation measures (e.g. podium construction), a less aggressive characterization regime than what is currently recommended in the Guidance may be adequate for protection of human health.
- The Guidance does not allow for involved parties (including the regulator) to decide on their own when they are comfortable with the amount of characterization.

RECOMMENDATION: Guidance should include language reminding regulators that they have discretion to settle on a level of characterization appropriate for the mitigation and/or reuse plan.

H. Indoor Air Sampling – Relevance to Redevelopment

- The Guidance does not currently make clear whether or not indoor air sampling is recommended for redevelopment projects.
- Indoor air sampling may not be an appropriate indicator for the health of future building occupants in cases where the existing structure is to be either dramatically altered or demolished as part of a redevelopment plan.

RECOMMENDATION: Guidance should state that indoor air sampling is not necessary if the structure in question is to be demolished as part of a redevelopment plan. In cases involving dramatic alteration of existing buildings, the Guidance should give discretion to the regulator to determine how much indoor air sampling is appropriate.

I. Indoor Air Sampling – Scope

- On page 34 of the Guidance, DTSC recognizes that indoor air sampling should only focus on the chemicals found in the soil gas or groundwater.
- As it is currently written, this may include chemicals that passed the preliminary screening evaluation.
- Chemicals that passed the preliminary screening evaluation should not be considered a threat to human health through intrusion to indoor air.

RECOMMENDATION: Guidance should limit indoor air sampling to only those chemicals found in either the groundwater or the soil at levels exceeding screening level concentrations.

J. Evaluation – Maximum Concentrations

- The use of maximum concentration in calculating exposure risk may lead to errors and an unrealistically conservative estimation of risk.
- The use of 95% UCL or other well-established averaging techniques would provide against the effect of random outliers while remaining protective of human health.
- Defaulting to maximum also doesn't take into account parcelization and the phased nature of redevelopment projects.

RECOMMENDATION: Guidance should explicitly allow for the use of 95% UCL or other proven averaging techniques when there are sufficient data to characterize site conditions to determine the reasonable maximum exposure (RME) concentration with which to calculate exposure risk. Guidance should also explicitly allow for the area-specific determination of maximum concentration to reflect the phased, parcel-based nature of many redevelopment projects.

K. Evaluation – Ambient Background

- On page 34 of the Guidance, DTSC states that ambient air in California contains numerous VOCs which should be found in both outdoor and indoor air, regardless of the occurrence of vapor intrusion.
- The guidance does not adequately allow for the inclusion of site-specific background data into the risk evaluation.
- Established methodology exists for the quantification of site-specific background (ambient) chemical concentrations.

RECOMMENDATION: Page 34 of the Guidance should be amended to state that if the level of a chemical of concern in indoor air samples is equal to or less than that found in site-specific ambient background, then the chemical of concern does not need to be mitigated for. The guidance should also state that a chemical of concern found in indoor air samples at concentrations greater than in site-specific ambient background need only be mitigated for until it reaches site-specific ambient background.

L. Evaluation – Biodegradation

- On page 41 the Guidance states that petroleum hydrocarbons are not subject to biodegradation at some sites in California, and therefore biodegradation cannot be considered when evaluating petroleum hydrocarbons for possible vapor intrusion.
- New Jersey assumes a reasonably conservative additional attenuation factor of 10 for most hydrocarbons sampled in soil gas deeper than 5 feet:

Until additional data is generated, the Department has selected an additional attenuation factor for benzene, toluene, ethylbenzene, and xylenes of 10 times the ground water to indoor air value calculated using the J&E model. Use of the additional attenuation factor assumes a minimum of 4% oxygen exists in the soil column beneath the structure. (Draft Vapor Intrusion Guidance, NJDEP, 2005, p. 130)

RECOMMENDATION: The guidance should explicitly allow for the assumption of an additional attenuation factor of 10 for petroleum hydrocarbons when based on a soil gas sample of at least 5 feet in depth.

M. Evaluation – Screening Numbers

- On page 16 the Guidance states that the SB 32 soil gas screening numbers (CHHSLs) may be used to evaluate the vapor intrusion pathway for sites contaminated with VOCs.
- There currently exist published CHHSLs for evaluation of soil and soil gas. There are no currently published CHHSLs for groundwater evaluation.
- The guidance does not give regulators the explicit discretion to consider the use of alternative published screening numbers in a preliminary screening evaluation and subsequent mitigation efforts.

RECOMMENDATION: Guidance should explicitly allow for the use of regionally-specific screening numbers as an alternative to CHHSLs for the purpose of a preliminary screening evaluation and subsequent mitigation efforts. The guidance should highlight the San Francisco Bay Regional Water Quality Control Board’s Environmental Screening Levels (“ESLs”) as one such alternative.

N. Mitigation – Building Design

- The mitigation section of the Guidance does not include a remedy that incorporates building design.
- Podium construction is a well-established method for preventing the completion of the intrusion-to-indoor-air pathway in new development projects.

RECOMMENDATION: Guidance should include a mitigation scenario (i.e. “remedy”) based on building design (e.g. podium construction)

O. Mitigation – Marginal Risk

- The two mitigation remedies based on future building construction currently in the Guidance both require the installation of a membrane system and a VOC collection system.
- In future building construction scenarios where the calculated risk to human health posed by VOCs is at the margin of acceptability, the installation of a gas barrier/membrane system without a VOC collection system may be adequate for the protection of human health.
- The installation, operation and maintenance of a passive or active venting system may be resource-prohibitive for many brownfield redevelopment projects operating at the margins of economic feasibility.

RECOMMENDATION: Guidance should include a mitigation remedy for future building construction scenarios where the calculated risk to human health posed by VOCs is at the margin of acceptability that recommends the installation of a gas barrier/membrane system without a VOC collection system.

P. Public Participation

- In 2001 DTSC published a Public Participation Policy and Procedures Manual that clearly outlines a rigorous public notification, outreach and education process applicable to all actions overseen by the department.

- The guidance does not clearly state what types of projects (existing occupied structures vs. future building) the public outreach component applies to. Outreach to building occupants should not be necessary if the building in question is to be demolished or completely vacated as part of a redevelopment plan.

RECOMMENDATION: Remove the public outreach component of the Guidance and defer to their Public Participation Manual (DTSC, 2001) for guidance.

Thank you again for providing this forum for discussion of the Guidance. We appreciate your effort and the efforts of the participating agencies to further the redevelopment of environmentally distressed properties in California.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Shakofsky". The signature is fluid and cursive, with a large loop at the end.

Stephanie Shakofsky
Executive Director

cc: Secretary Lloyd, Cal/EPA
Rick Brausch, Cal/EPA
Timothy J. Swickard, DTSC
Celeste Cantu, State Water Resources Control Board
Art Baggett, State Water Resources Control Board