# PCE Contamination on Irving Street, San Francisco: What Is Acceptable?

by Lenny Siegel September, 2021

On the surface, the plan to construct about 100 affordable apartments on the site of the San Francisco Police Credit Union (PCU) building on Irving Street is a solid step forward to address the Bay Area's growing housing crisis. However, beneath the surface of the Mid-Sunset property lies a toxic plume of tetrachlorethylene (PCE) vapors that poses a health threat both to current neighbors and future residents. Still, despite pleas from the neighborhood, California's Department of Toxic Substances Control (DTSC) has chosen not to require remediation of the PCE property, relying on passive mitigation to prevent exposure.<sup>1</sup> DTSC's position is based upon two faulty decisions: First, it divided the plume, likely left behind by two former dry cleaning businesses, into three distinct projects. Second, it considers *acceptable* an excess lifetime cancer risk of up to one in ten thousand (10<sup>-4</sup>).



2500 Block of Irving Street, San Francisco

The Tenderloin Neighborhood Development Corporation (TNDC) proposes to build a seven-story apartment building all along the north side of the 2500 block of Irving Street, property currently occupied by the two-story Police Credit Union building and one of its surface parking lots. Former uses include a dry cleaner, two gas stations, a mortuary, and a drug store. Under California's Senate Bill 35, the development is exempt from environmental review. As affordable housing, it is also exempt from local parking requirements.

Most of the residences in the area, including those directly next door, are two- and threestory single-family homes. The neighborhood is middle- to upper-middle class and educated.

<sup>&</sup>lt;sup>1</sup> DTSC, *Responsiveness Summary: 2550 Irving Street, San Francisco, CA 94122*, September 2021. https://www.envirostor.dtsc.ca.gov/public/community\_involvement\_documents?global\_id=60003063&document\_folder=+7519391715

Asian-American and European-American households predominate. The Mid-Sunset Neighborhood Association (MSNA) supports affordable housing in concept, but residents are concerned about the height of the proposed building and the planned shortfall in parking for residents.<sup>2</sup> Undoubtedly, some neighbors oppose the project outright.

Beginning early 2019, a series of environmental investigations associated with the potential sale and redevelopment of the PCU parcel disclosed the presence of elevated levels of PCE, a cancer-causing solvent, in soil gas on and around the property. Very little PCE has been found in groundwater, which lies about 80 feet beneath the surface, or in the soil. AllWest Environmental, the PCU's consultant, suggested that the release came from main and lateral sewer lines, and it blamed Albrite Cleaners, which formerly operated directly across the street from the Credit Union, for the contamination.<sup>3</sup>



Across Irving Street: Former Albrite Cleaners and PCU Parking Lot

DTSC has negotiated three separate agreements to address the PCE soil gas plume. In July 2020 it signed a Voluntary Cleanup Agreement with the Credit Union. It signed a California Land Reuse and Revitalization Agreement (CLRRA) with the Tenderloin Corporation in February 2021. Finally, it reportedly signed a similar agreement with the former owners of Albrite this summer. Under the CLRRA agreement, TNDC is not responsible for addressing any off-site contamination.

<sup>&</sup>lt;sup>2</sup> See <u>https://msnasf.wixsite.com/main</u>.

<sup>&</sup>lt;sup>3</sup> AllWest Environmental, *Soil Vapor Investigation Report: 1271-1281 26th Avenue, 1276-1284 27th Avenue, & 2525 Irving Street, San Francisco, California*, prepared for The Police Credit Union, November 17, 2020. p. 2. https://www.envirostor.dtsc.ca.gov/public/deliverable\_documents/1954679191/202099.23\_PCUOffsiteSoilVaporInv.pdf

## The Vapor Intrusion Risk

Indoor air sampling at the PCU, conducted by AllWest in late December, 2019, found PCE as high as 4.3 micrograms per cubic meter ( $\mu g/m^3$ ).<sup>4</sup> Soil gas sampling, conducted in September 2020 and March 2021, found PCE levels in soil gas as high as 2,500  $\mu g/m^3$  directly in front of the PCU building and 2,700  $\mu g/m^3$  in its parking lot across the street.<sup>5</sup> Soil gas sampling in front of adjacent homes found PCE as high as 270  $\mu g/m^3$ . These soil gas levels predict indoor air contamination at concentrations of 75  $\mu g/m^3$ , 81  $\mu g/m^3$ , and 8.1  $\mu g/m^3$ , respectively.<sup>6</sup> DTSC's own *Vapor Intrusion Mitigation Advisory* has determined acceptable risk "to be at or less than a 1 x 10<sup>-6</sup> risk level or a hazard index (HI) of 1."<sup>7</sup> Accordingly, California's screening levels for PCE exposure are 0.46  $\mu g/m^3$  for residences and 2.0  $\mu g/m^3$  for commercial buildings, based upon an excess lifetime cancer risk of up to one in a million (10<sup>-6</sup>).



Vapor Sampling Point at Residence Directly Behind PCU Building

This is where the risk analysis gets tricky. DTSC insists that the risk of vapor intrusion at the Irving Street PCE plume is acceptable, based upon exposure standards two orders of magnitude higher—that is, with a cancer risk of  $10^{-4}$ . It appears to be relying on the Risk Management Decision Framework, establishing a Risk Range, found in its documents.<sup>8</sup> Using 46  $\mu$ g/m<sup>3</sup> and

<sup>7</sup> DTSC, *Vapor Intrusion Mitigation Advisory*, February 2011, p. 6. https://dtsc.ca.gov/wp-content/uploads/sites/31/2016/01/VIMA Final Oct 20111.pdf

<sup>&</sup>lt;sup>4</sup> AllWest Environmental, Second 2019 Semiannual Indoor Air Quality Monitoring Report: Police Credit Union, 550 Irving Street, San Francisco, prepared for Police Credit Union, January 21, 2020, Table 1. https://www.envirostor.dtsc.ca.gov/public/deliverable\_documents/9260298788/19086.28.2\_Irving-SF\_IAQ%20Sampling-2.pdf

<sup>&</sup>lt;sup>5</sup> PCE vapor levels at a depth of five feet under the parking lot are substantially higher than those at fifteen feet, suggesting that PCE solvents may have been poured directly onto the ground surface in the past, not just released through sewer leaks. *Soil Vapor Investigation Report*, Figure 2.

<sup>&</sup>lt;sup>6</sup> I calculated likely indoor air concentrations using the default attenuation factor (ratio of indoor air levels to soil gas levels) of 0.03, U.S. EPA's empirical value. From reported measurements in the western portion of the building, I actually determined a site-specific attenuation factor of 0.013. The 0.03 ratio is also contained in California's draft *Supplemental Guidance: Screening and Evaluating Vapor Intrusion*, February 2020. <u>https://dtsc.ca.gov/wp-content/uploads/sites/31/2020/02/Public-Draft-Supplemental-VI-Guidance\_2020-02-14.pdf</u>.

<sup>&</sup>lt;sup>8</sup> See Supplemental Guidance, p. 28.

 $200 \ \mu g/m^3$  as exposure standards, it's hard to imagine unacceptable PCE vapor intrusion risk—thus mandated action—anywhere. These action levels are clearly unacceptable to the local community, just as they are unacceptable to impacted community members with whom I have worked throughout the United States.

| Current VI<br>Risk and<br>Hazard<br>Estimate<br>primarily using<br>indoor air data | Future VI<br>Risk and<br>Hazard<br>Estimate primarily<br>using subslab /<br>soil gas data | Risk<br>Management<br>Decision  | Potential<br>Response Actions  |
|--|---|---------------------------------|--|
| Risk < 1x10 <sup>-6</sup><br><u>and</u> HI < 1                                     | Risk < 1x10 <sup>-6</sup><br><u>and</u> HI < 1  | Low Priority                    | • None   |
| Risk from<br>1x10 <sup>-6</sup> to 1x10 <sup>-4</sup><br><u>and</u> HI ≤ 1         | Risk from<br>1x10 <sup>-6</sup> to 1x10 <sup>-4</sup><br><u>and</u> HI ≤ 1                | Determine<br>Appropriate Action | <ul> <li>None</li> <li>Institutional Controls</li> <li>Additional<br/>Investigation/Sampling</li> <li>Monitoring</li> <li>Refine Risk<br/>Assessment</li> <li>Mitigation</li> <li>Remediation</li> </ul> |
| Risk > 1x10 <sup>-4</sup><br><u>or</u> HI > 1                                      | Risk > 1x10 <sup>-4</sup><br><u>or</u> HI > 1   | Response Action<br>Needed       | <ul><li>Mitigation</li><li>Remediation</li></ul>   |

Risk Management Decision Framework for Vapor Intrusion

## **Incomplete Investigation**

The planned housing development is responsible for waking up the neighborhood, as well as government officials, to the Irving Street contamination, so it's ironic that the urgency of development appears to be limiting the environmental response. TNDC's agreement with DTSC limits its responsibility to addressing on-site contamination, and like most affordable-housing projects, this development would face additional financing challenges if approval were delayed. So there is pressure to approve the project quickly. In its response to public comments, DTSC asserted, "We assure the community that DTSC is not bowing to development pressures." But DTSC also explained, "We work closely with Responsible Parties to discuss, recommend and review potential cleanup options for sites where we provide oversight."<sup>9</sup>

No matter its motive, DTSC's approval of TNDC's proposed Response Plan is premature, because neither the sources nor the extent of the PCE contamination have been established.

It's normal, in an environmental cleanup, to identify the source or sources of contamination before finalizing the cleanup strategy. It is likely that dry cleaners on both sides of this block of Irving released PCE, and there may have been "midnight dumping" in one of the parking lots. Demolition of the PCU building might uncover hot spots that require focused remediation, and the Albrite Cleaners investigation is likely to shed light on its contribution to the plume. However,

<sup>&</sup>lt;sup>9</sup> Responsiveness Summary, pp. 36, 78.

DTSC has approved the on-site response, asserting, "No PCE source area has been identified on Site." In fact, no PCE source has been identified anywhere. No one has even looked!

It's a mystery to me how DTSC could approve TNDC's response plan when the PCE soilgas plume has not been delineated. When DTSC asked the PCU to sample soil gas in front of homes just north of the project, it found substantial concentrations there. However, it has not "stepped out" to see where the soil gas plume ends. Furthermore, even though soil gas typically migrates in all directions, no off-site sampling has been conducted in any other direction other than Irving Street directly in front of the PCE building and in the PCU parking lot across Irving.

Instead, DTSC claims that the plume is not migrating northward. Given the age of the contamination, that's plausible, but comparing the off-site sampling results from September 2020 and March 2021, one finds that concentrations have risen at four of the six residential soil-vapor sampling locations.<sup>10</sup>



## Mitigation vs. Remediation

DTSC is accepting TNDC's proposal to build vapor intrusion mitigation into the housing development without any subsurface remediation. Vapor mitigation is a good thing, but it's not enough. DTSC's decision that site remediation is not legally required appears to rest on two pillars: its unsupported finding that there is no on-site source and its conclusion that future PCE exposures on site will be acceptable using the one in ten thousand cancer risk goal. It wrote:

In summary, no on-Site source area of PCE has been identified. On-Site soil gas concentrations of PCE are low, but warrant mitigation to protect future on-site residents, and on-Site soil and groundwater concentrations of PCE do not pose unacceptable risk.<sup>11</sup>

<sup>&</sup>lt;sup>10</sup> AllWest Environmental, *First 2021 Semi-Annual Soil Vapor Monitoring Report: 1271-1281 26th Ave. & 1276-1284 27th Ave., San Francisco,* prepared for The Police Credit Union, April 2, 2021 (Revised June 10, 2021), Figure 3. https://www.envirostor.dtsc.ca.gov/public/deliverable\_documents/3384509027/202132.28\_IrvingSidewalk1Q21\_SVM%20%28008%29.pdf

<sup>&</sup>lt;sup>11</sup> Responsiveness Summary, p. 11.

DTSC's own draft *Supplemental Guidance for Screening and Evaluating Vapor Intrusion* (with a reference to its *Vapor Intrusion Mitigation Advisory*), clearly states, "Remediation should be the preferred response action to reduce [vapor intrusion] risk by permanent reduction of contaminants. Mitigation is considered an interim response action until [vapor-forming chemicals] in soil, soil gas, or groundwater are confirmed to be at acceptable levels."<sup>12</sup> As someone who provided input during the development of these documents, I believe that makes a lot of sense. The removal or reduction of contaminants is a permanent solution. In this instance, remediation up front may turn out to be less expensive than the indefinite operation, maintenance, and monitoring of the proposed mitigation system. Furthermore, while vapor mitigation is generally effective when first installed, it is at risk of failure over time.

On Irving Street, that risk is a form of environmental injustice, because future residents will be low-income people with few, if any alternative housing options. That is, they may at some point be exposed to vapors at levels above one-in-a-million excess cancer risk, with no reasonable options to shelter elsewhere. Furthermore, I can find no promise—in the Operations and Maintenance Plan, for example—that the low-income tenants will even be notified about the contamination.

DTSC's failure to require remediation is particularly problematic because the agency has for more than a decade identified two presumptive remedial technologies for addressing chlorinated volatile organic compounds such as PCE: soil vapor extraction and excavation.<sup>13</sup>

*Soil vapor extraction* essentially vacuums the soil to remove vapors. It can be conducted before or after demolition. DTSC states that SVE might be used south of Irving Street, but it warns: "Such a [soil vapor extraction] system has the potential to exacerbate soil vapor concentrations beneath the Site, by drawing PCE from off-Site source areas."<sup>14</sup> There are two problems with this assertion. First, sampling thus far has not ruled out the presence of a north-of-Irving source, and soil gas readings directly in front of the PCU building are nearly as high as those across the street. Thus, there is no reason to believe that concentrations beneath the site would increase. Second, SVE would help remediate soil gas on adjacent residential properties. That would be a good thing! In fact, by allowing construction without remediation, DTSC may make it more difficult to reduce off-site contamination.

TNDC's consultant, Path Forward, actually evaluated and rejected *excavation*, and DTSC concurred. They concluded that soil removal would be too expensive, but they postulated importing clean fill to fill the hole, rather than creating below-grade parking, a strategy that would avoid the cost of importing backfill. Underground parking would be a two-birds-with-one-stone approach, because it would address one of the other problems with the project: too little parking for residents. Path Forward also suggested that excavation and backfill could lead to soil recontamination due to off-site soil vapor.<sup>15</sup> However, with permanent excavation, there would be

<sup>&</sup>lt;sup>12</sup> Supplemental Guidance, p. 28.

<sup>&</sup>lt;sup>13</sup> DTSC, Proven Technologies and Remedies Guidance: Remediation of Chlorinated Volatile Organic Compounds in Vadose Zone Soil, April, 2010. https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/11/cVOC 040110.pdf

*in Vadose Zone Soil*, April, 2010. <u>https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/11/cVOC\_040110.pc</u> <sup>14</sup> Responsiveness Summary, p. 30.

<sup>&</sup>lt;sup>15</sup> Path Forward, *Final Response Plan: 2550 Irving Street Affordable Housing Project San Francisco, California,* September 2, 2021, prepared for Tenderloin Neighborhood Development Corporation, p. 16.

https://www.envirostor.dtsc.ca.gov/public/deliverable\_documents/8461709141/Final%20Response%20Plan.pdf

no soil to re-contaminate. With the ventilation normally required for underground parking—to address fuel and exhaust fumes—there would be a system in place to remove any contamination that might breach the walls or floor, as well as to prevent migration into living and working spaces. In other words, the ventilation of underground parking would serve as vapor mitigation for the overlying floors.

#### The Neighborhood

DTSC's approval of the TNDC environmental response virtually eliminates the chance that remediation will be conducted to protect the homes to the north of the PCU site. Still, DTSC has asked the PCU to investigate voluntarily PCE vapors adjacent to the site. Soil gas sampling at the sidewalks—further from the former dry cleaner than the six homes themselves—has found soil gas well above what should be a 15  $\mu$ g/m<sup>3</sup> screening level.<sup>16</sup> The most recent shallow (five feet below ground surface) soil gas samples have ranged from 59  $\mu$ g/m<sup>3</sup> to 270  $\mu$ g/m<sup>3</sup>.<sup>17</sup> Nothing is being done to investigate the residential properties slightly further away, to determine if they also might be impacted by PCE from the site.



Irving Street in the Mid-Sunset Neighborhood, San Francisco

On the positive side, as a result of community pressure on DTSC, "The Police Credit Union has agreed to voluntarily and prudentially sample indoor air [at the six homes] given the level of community interest and concern."<sup>18</sup> However, I have seen no promise to test the homes at the time of year when vapor intrusion is likely to be greatest. Nor have I seen any promise to use the community's threshold of acceptable risk. It's unlikely that any of the homes have PCE above

 $<sup>^{16}</sup>$  This is derived by dividing the residential-scenario cancer health goal of 0.46  $\mu g/m^3$  by the default attenuation factor of 0.03.

<sup>&</sup>lt;sup>17</sup> First 2021 Semi-Annual Soil Vapor Monitoring Report, Figure 3.

<sup>&</sup>lt;sup>18</sup> *Responsiveness Summary*, p. 8.

 $46 \ \mu g/m^3$ , the level of exposure associated with the one-in-ten-thousand cancer yardstick that DTSC has been using at the site. This is worrisome, because long-time residents may have been already exposed for a "lifetime." Informal neighborhood surveys have disclosed a concerning number of cancers and other diseases, such as Parkinsons, for which PCE exposure might be a risk factor.

To its credit, DTSC has held virtual public meetings with site neighbors, placed site documents on its Envirostor web site, and communicated regularly with community leaders. To their credit, numerous neighbors, as well the Neighborhood Association, have provided thoughtful input, including numerous comments on the draft TNDC Response Plan. However, most of that public input came after DTSC had privately negotiated with TNDC about the Plan. The seemingly open process was infected with what we used to call Decide-Announce-Defend. That is, DTSC resolved key issues—such as the decision not to remediate—with TNDC before TNDC submitted a public draft. Then, in response to community criticisms, DTSC defended the results of those negotiations.

DTSC's September 2, 2021 approval of the response plan with minor changes may be all that the City and County of San Francisco needs to approve and even fund the TNDC apartments. DTSC has promised an investigation south of Irving, at the Albrite site, and work continues at the six homes—and only those six homes—north of the PCU building, but the prospect for an area-wide subsurface cleanup have been demolished by DTSC's greenlighting of the TNDC plan.