UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

November 23, 2021

Mr. Esteban Ybarra
Principal
San Miguel Elementary School
777 San Miguel Avenue
Sunnyvale, California 94085

Re: Building-Specific Evaluation of Indoor Air and Mitigation Measures Report
Vapor Intrusion Investigation Findings – Effective VI Mitigation Systems
San Miguel Elementary School, 777 San Miguel Avenue, Sunnyvale, CA 94085
Triple Site Superfund Site (CERCLIS ID CAD070466479)

Dear Mr. Ybarra:

Thank you for your cooperation and participation in the U.S. Environmental Protection Agency's (EPA) trichloroethene (TCE) vapor intrusion investigations in Sunnyvale. The investigations are part of the EPA Superfund Triple Site environmental study being conducted in the San Miguel neighborhood (https://epa.gov/superfund/triplesite). The purpose of the vapor intrusion investigations is to determine if TCE vapors from nearby contaminated groundwater is migrating into the indoor air of residences and schools in the area.

The enclosed Final Building-Specific Evaluation of Indoor Air Report has been prepared by Locus Technologies on behalf of Philips Semiconductors, which EPA approved. The enclosed Final Report provides the current status of activities and data evaluation of the vapor intrusion investigation at your school campus. Section 6 of the enclosed Final Report summarizes your school's indoor air test results and recommendations. **Currently, the TCE indoor air levels at the San Miguel Elementary School meet EPA's requirements.**

EPA Vapor Intrusion Health Protection Goals

The goal is to keep human exposures below EPA's indoor air TCE *Action Levels* of 6 $\mu g/m^3$ (micrograms per cubic meter) (an Urgent Response) and 2 $\mu g/m^3$ (an Accelerated Response). Exceeding a TCE Action Level indicates that steps should be taken to quickly reduce TCE exposure because of the possible short-term health effects.

Another goal is to keep indoor air TCE levels below EPA's initial TCE *Screening Level* of 0.48 $\mu g/m^3$. This level is low, and not expected to pose an unacceptable health risk from long-term exposure (26-years) incorporating a margin of safety. Indoor air TCE levels between the initial Screening Level of 0.48 $\mu g/m^3$ and the Action Level of 2 $\mu g/m^3$ are still within the acceptable health risk management range.

The enclosed TCE in Indoor Air fact sheet from California's Office of Environmental Health Hazard Assessment provides more information on TCE action levels and screening levels.

Findings and Next Steps

Buildings MC, MD, MF, MH, MI, MJ, MK, and ML: These buildings correspond to San Miguel Elementary School Buildings A, C, and D, the K Wings, as well as the library, Admin office, and Cafeteria/Multi-use building (refer to Figure 1 of the enclosed Final Report for building naming convention). Indoor air test results from these buildings meet EPA's requirements and unacceptable vapor intrusion is unlikely. Additional indoor air testing is not recommended for these buildings.

Building MG (SMES Building B): Indoor air test results at Building MG in 2018 did not initially meet EPA's TCE Action Level of 2 $\mu g/m^3$. Therefore, in October 2018 a vapor intrusion mitigation system was installed at this building. Follow-up indoor air testing at Building B indicates that **the mitigation system is effective in controlling TCE vapor intrusion** and post-mitigation effectiveness monitoring meets EPA's requirements.

An Operations and Maintenance Plan for routine inspections has been prepared for the vapor intrusion mitigation system (refer to Section 9 of the enclosed Final Report).

Buildings ML1, ML2, and MK1 (SMES Buildings E and PS): The three newest buildings on campus were mitigated preemptively during their construction in 2016. Locus Technologies and EPA provided technical direction to the Sunnyvale School District's installation of the vapor intrusion mitigation systems.

Next Steps

For the four mitigated buildings MG, ML1, ML2, and MK1 (SMES Buildings B, E, and PS), Locus Technologies will conduct routine long-term indoor air testing beginning this 2021/2022 winter season and then every five years beginning in Winter 2023/2024. This is described in more detail in Section 10 of the enclosed Final Report. During this time, the vapor intrusion mitigation systems will be continuously operated. The five-year period corresponds with EPA's in-depth protectiveness review of the Superfund Triple Site.

Locus Technologies will contact the school to schedule upcoming indoor air testing this 2021/2022 winter season and continue to verify the performance of the vapor intrusion mitigation systems installed on the school campus.

Please contact EPA if any significant changes are made to buildings in the future. Certain types of renovations can increase a building's likelihood for vapor intrusion. EPA or Locus Technologies can schedule a quick visit with you to go over any renovation plans and discuss if another round of testing or other response actions would be appropriate. The following are examples of building renovations that should be reported to EPA:

- Drilling holes through the floor for a new toilet or telephone/internet cable, which can create a new pathway for vapors to enter the building.

- Changes to the heating system, which could pull vapors into the building.

If you have any questions on the vapor intrusion mitigation systems, please reach out to Nancy-Jeanne LeFevre, Locus Technologies, at LeFevren@locustec.com.

If you have any questions regarding the findings of the enclosed Final Report or any concerns, please feel free to reach out to me at schulman.michael@epa.gov or at 415-972-3064.

Thank you again for your cooperation and participation in this vapor intrusion investigation.

Sincerely,

Michael Schulman
Remedial Project Manager

cc: J. Wesley (Wes) Hawthorne, Locus Technologies (via email)
Nancy-Jeanne LeFevre, Locus Technologies (via email)
Shau-Luen Barker, Philips North America LLC (via email)
Cynthia Woo, APTIM Federal Services, LLC (via email)

Enclosures:

California Office of Environmental Health Hazard Assessment for TCE

Final Building-Specific Indoor Air Sampling and Mitigation Measures Evaluation Report for San Miguel Elementary School, dated November 8, 2021

Trichloroethylene (TCE) in Indoor Air

What is Trichloroethylene (TCE)?

- Trichloroethylene (TCE or trichloroethene) is a toxic, clear, colorless liquid. Liquid TCE evaporates quickly into the air. It is not flammable.
- TCE is primarily used in industry to remove grease from metal parts and to make refrigerants.
- TCE can also be found in consumer products such as automotive degreasers, stain removers, paint removers, and adhesives.

How can I be exposed to TCE?

Common ways people may be exposed to TCE include:

- Living or working in a building that is above soil or groundwater contaminated with TCE;
- Working in industries that produce or use TCE;
- Using TCE-containing products at home.

How can TCE affect my health?

- Short-term exposure to TCE in the first trimester of pregnancy may increase the risk of heart defects in the baby.
- Long-term exposure to TCE can impact the immune system, kidney, male reproductive system, and liver. Long-term exposures also increase the risk of kidney cancer and possibly other types of cancer.
- The health effects of TCE depend on many factors, such as:
  - The amount of TCE in air,
  - How long people breathe it, and
  - Individual sensitivity to the chemical.

What can I do to reduce my exposure to TCE in my home?

- Avoid using products containing TCE, and follow directions when using them.
- Ventilate your home frequently by opening the windows and doors.
- For more information reducing your exposure to chlorinated chemicals, such as TCE, see the Air Resources Board factsheet on *Chlorinated Chemicals in Your Home* (https://www.arb.ca.gov/research/indoor/clguide.pdf).

Office of Environmental Health Hazard Assessment (OEHHA), California Environmental Protection Agency
Sacramento | California | November 2018

Trichloroethylene (TCE) in Indoor Air

What do the TCE screening levels mean?

The TCE screening levels are used to guide actions that may be needed to protect health. The screening levels are indoor air concentrations of TCE that should not pose harm even to sensitive people, including children, pregnant women, and those who have health issues. The non-cancer screening level is set below levels thought to cause adverse "non-cancer" effects, including those cited on the previous page. If someone is exposed to concentrations above, but near these values, health effects are not expected to occur, because of the protective factors included in the calculations. The cancer screening level is set at a concentration that is not expected to pose a significant cancer risk from long-term exposure.

Screening Levels for Trichloroethylene in Indoor Air[1]

Residential (µg/m³)	Commercial (µg/m³)	Description
0.48	3.0	Protects against cancer
2.1	8.8	Protects from health effects other than cancer

µg/m³ = micrograms per cubic meter

What do the TCE action levels mean?

The TCE action levels signal when steps should be taken to quickly reduce TCE exposure because of the possible short-term effects to unborn children. TCE levels at or above the "accelerated action levels" tell regulators that actions should be taken within a few weeks to reduce TCE levels. TCE levels at or above the "urgent action levels" tell regulators that actions should be taken within a few days to reduce TCE levels. Possible ways to quickly reduce TCE levels in indoor air include increasing the ventilation or using an air purifier with an activated charcoal filter.

Action Levels for Trichloroethylene in Indoor Air[2]

Residential (µg/m³)	Commercial (µg/m³) (8-hr work day)	Commercial (µg/m³) (10-hr work day)	Action if Exceeded
2	8	7	Accelerated: take action within a few weeks to reduce TCE levels in air
6	24	21	Urgent: take action within a few days to reduce TCE levels in air

µg/m³ = micrograms per cubic meter

[1] US Environmental Protection Agency. 2018. Regional Screening Levels for Chemical Contaminants at Superfund Sites. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls

[2] US Environmental Protection Agency. 2014. Memorandum: EPA Region 9 Interim Action Levels and Response Recommendations to Address Potential Developmental Hazards Arising from Inhalation Exposures to TCE in Indoor Air from Subsurface Vapor Intrusion. June 30.