

Date: March 30, 2021 at 11:01 AM





Technical question for both of you....

So, my employer doesn't allow us to talk about the locations of our office buildings - but something has been eating at me. I've worked on an EPA Superfund site since January of 2017. I knew that vaguely it was a "bad one" but didn't start really looking into it until a couple weeks ago.

If I get in trouble for asking you about this... I'm going to argue I'm seeking the advice of the state's best medical and scientific experts related to chemical exposure at remediation sites — about concerns I have about my personal health and safety.... 'Cause I am.

I work on the TRW Microwave site, part of the "Tripe Site," in Sunnyvale. It was overseen by the Water Boards until the Superfund program took it over in 2014 after major vapor intrusion issues in the area, as well as on the site my office is on.

I found reports of historical vapor intrusion in my building, even my specific working area, in 2003, 2004, & 2013. I can't find any published indoor results after that. I saw a letter in 2015 saying there was testing in 2015 and it was "fine now," but no details of what testing they did or what the results were. Previously, they found levels of TCE, VC, & Chloroform in my office above EPA and/or WB thresholds for an industrial workplace. Even in 2013, about 10 feet from my desk, they found 7.3ug/m3 of TCE & 0.52 of VC in the indoor air - and after opening an slub-slat vent right next to it, found 1,900 ug/m3 of TCE and <18 VC. All of this while the building was currently unoccupied.

Also, the EPA site Performance Measure for "Human Exposure Under Control" current says "No." And GeoTracker shows a land use covenant prohibiting just about everything.

Trust me, I'm having some strong discussions with the folks at work in charge of this... but I'm wondering now that this might mean for what happened to me last year. Especially if I ended up having a stronger reaction to the SCSA site than others.

If I was exposed to even lower levels of TCE, VC, and/or Chloroform in the air (like not above max for industrial sites, but maybe still elevated) for three years — before I got furnigated with whatever was going in my SCSA apartment — do you think that could have caused me to have a great response than some of my neighbors? Or any other concerns or things I should be thinking about?

Sites:

- EPA: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0901181
- Waterboards: https://geotracker.waterboards.ca.gov/profile_report?global_id=SL721251223
- Triple Site coverage by KQED: https://www.kqed.org/futureofyou/388730/silicon-valleys-toxic-past-haunts-sunnyvaleneighborhood
- Triple Site coverage by The Atlantic: https://www.theatlantic.com/technology/archive/2013/07/not-even-silicon-valleyescapes-history/277824/

Thanks!

FYI, some of the reports I found — all of these are public on EPA or Water Boards sites:

Table 15, TRW 2013 Maximum A Zone Groundwater Concentrations

coc	2013 A-Zone Maximum Groundwater Concentrati	Commercial/Industrial VISL-calculated on (μg/L) Groundwater Concentration (μg/L)	Risk basis
1,1-DCA	0.78	33	Cancer
1,2-DCB	1800	11,000	Noncancer
1,1-DCE	0.70	820	Noncancer
cDCE	160,000	No value	
tDCE	86	1600	Noncancer
Freon 113	1.4	6100	Noncancer
PCE	2.3	65	Cancer
TCE	8800	7.4	Cancer
1,1,1-TCA	0.5	31,000	Noncancer
Vinyl chloride	1800	2.5	Cancer

Site Milestones

Milestone	⊕ Date(s)
Initial Assessment Completed	07/01/1984
Proposed to the National Priorities List	06/24/1988
Finalized on the National Priorities List	02/21/1990
Remedial Investigation Started	04/19/1989
Final Remedy Selected	09/11/1991
Remedial Action Started	09/11/1991
Construction Completed	09/17/1993
Deleted from National Priorities List	Not Yet Achieved
Most Recent Five-Year Review	09/18/2019
Site Ready for Reuse and Redevelopment	Not Yet Achieved

Compound	Maximum Detected Indoor Air Concentration (μg/L)	Indoor Air EPA RSL (industrial) (µg/m³)	DTSC -modified Indoor Air industrial screening levels (μg/m³)	Risk Basis ¹		
1,1-DCA	ND	7.7	-	Cancer		
1,2-DCB	ND	880	-	Noncancer		
1,1-DCE	ND	880	310	Noncancer		
cDCE	2.0	-	31	Noncancer		
tDCE	ND	260	-	Noncancer		
Freon 113	0.98	130,000	-	Noncancer		
PCE	0.56	47	2.08	cancer		
1.1.TCA	0.15	22,000	4,400	Noncancer		
TCE	7.7	3.0	-	Cancer		
Vinyl chloride	0.52	2.8	0.16	Cancer		
1,4-DCB	ND	1.1	-	Cancer		
Chlorobenzene	ND	220	-	Noncancer		

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Performance Measure	Status at this Superfund Site	What does this mean?					
		Yes means assessments indicate that across the entire site: 1. There are currently no unacceptable human exposure pathways; and 2. EPA has determined the site is under control for human exposure.					
Human Exposure Under Control	<u>No</u>	No means an unsafe level of contamination has been detected at the site an a reasonable expectation exists that people could be exposed. Insufficient data means that, due to uncertainty regarding exposures, one cannot draw conclusions as to whether human exposures are controlled, typically because: 1. Response to the contamination has not besun: or					

chloroform	0.25	0.53	-	-
Freon 11	1.6	3100	-	-
Freon 12	2.7	440	-	-

Notes: Chemicals in italics are not COCs for the TRW OU.

The response has begun, but it has not yet generated information sufficiently reliable to evaluate whether there are currently any unacceptable human exposure pathways at the site.

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TABLE 2. PREVIOUS INDOOR AIR SAMPLING RESULTS FORMER TRW MICROWAVE FACILITY (Page 1 of 2)

Sample Location			Initial Pressure	Final Pressure	Reporting Limit	Freon 11	n 11 Freon 12 Fr		PCE	TCE	vc	1,1,1-TCA	Chloroform		
ID	Purpose	Date	(inches Hg)	(inches Hg)	Multiplier										
					October 30, 2	2003 samplin	g event								
AI-01	Indoor Random	10/30/2003	-29.0	-8.0	1.83	5.4	3.3	1.3	0.60	4.6	0.097	0.25	0.59		
AI-02	Indoor Random	10/30/2003	-29.0	-8.5	1.87	4.4	3.3	1.2	0.59	3.9	0.10	0.24	0.54		
AI-03	Indoor Random	10/30/2003	-29.0	-8.0	1.83	3.6	3.2	1.0	0.41	2.9	0.11	0.22	0.36		
AI-04	Indoor Random	10/30/2003	-29.0	-8.0	1.83	4.9	3.2	1.3	0.67	5.2	0.13	0.24	0.54		
AI-05	Indoor Random	10/30/2003	-29.0	-7.5	1.79	3.4	3.1	1.0	0.40	2.8	0.15	0.22	0.36		
AI-06	Over Eductor Vault	10/30/2003	-29.0	-7.5	1.79	4.3	3.1	1.1	0.45	3.5	0.13	0.22	0.42		
AI-06	Over Eductor - Duplicate	10/30/2003	-29.0	-9.0	1.91	4.1	3.3	1.2	0.46	3.4	0.16	0.23	0.43		
AA-01	Outdoor Location	10/30/2003	-29.0	-8.5	1.87	1.5	2.9	0.65	ND < 0.26	ND <0.20	ND <0.048	ND <0.21	ND <0.18		
	Trip Blank		-29.0	-29.0	1.00	ND <0.11	ND < 0.10	ND < 0.16	ND < 0.14	ND <0.11	ND < 0.026	ND < 0.11	ND <0.099		
April 5, 2004 sampling event															
AI-07	Indoor Random	4/5/2004	-29.0	-7.0	1.75	6.6	3.2	1.2	0.49	2.2	ND <0.045	0.21	ND <0.17		
AI-08	Indoor Random	4/5/2004	-29.0	-6.0	1.68	6.3	3.1	1.1	0.42	2.3	ND <0.044	0.22	ND <0.17		
AI-08	Indoor Random - Duplicate	4/5/2004	-29.0	-6.0	1.68	6.2 3.0		1.1	0.38	2.2	ND <0.044	0.21	ND <0.17		
AI-09	Indoor Random	4/5/2004	-29.0	-7.0	1.75	4.6	3.4	1.2	0.42	2.5	0.067	0.23	ND <0.17		
AI-10	Over Eductor Vault	4/5/2004	-29.0	-6.0	1.68	4.9	3.4	1.2	0.41	2.6	0.067	0.23	0.22		
AI-10	Over Eductor - Duplicate	4/5/2004	-29.0	-6.0	1.68	5.0	3.3	1.3	0.52	2.7	0.055	0.25	0.30		
AA-02	Outdoor Location	4/5/2004	-29.0	-6.0	1.68	1.8	3.2	0.88	ND < 0.23	ND <0.18	ND < 0.044	ND <0.19	ND <0.17		
	Trip Blank		-29.0	-29.0	1.00	ND <0.11	ND < 0.10	ND < 0.16	ND < 0.14	ND <0.11	ND < 0.026	ND < 0.11	ND <0.099		
				April 8, 200	04 sampling evo	ent - under to	emporary ven	tilation							
AI-07	Indoor Random	4/8/2004	-29.0	-6.0	1.68	1.3	3.0	0.44	0.36	ND <0.18	ND <0.044	ND <0.19	ND <0.17		
AI-08	Indoor Random	4/8/2004	-29.0	-6.0	1.68	1.3	3.0	0.44	0.23	ND <0.18	ND <0.044	ND < 0.19	ND <0.17		
AI-08	Indoor Random - Duplicate	4/8/2004	-29.0	-6.0	1.68	1.2	2.8	0.40	ND < 0.23	ND <0.18	ND <0.044	ND <0.19	ND <0.17		
AI-09	Indoor Random (see Note 1)	4/8/2004	-29.0	-5.0	1.61	-	-	-	-	-	-		-		
AI-10	Over Eductor Vault	4/8/2004	-29.0	-6.5	1.71	1.3	2.8	0.42	0.24	ND < 0.19	ND <0.044	ND <0.19	ND <0.17		
AI-10	Over Eductor - Duplicate	4/8/2004	-29.0	-7.0	1.75	1.3	2.8	0.42	0.24	ND <0.19	ND <0.045	ND <0.19	ND <0.17		
AA-03	Outdoor Location	4/8/2004	-29.0	-7.5	1.79	1.2	2.8	0.47	0.30	ND <0.20	ND <0.046	ND <0.20	ND <0.18		
	Trip Blank		-29.0	-29.0	1.00	ND <0.11	ND < 0.10	ND < 0.16	ND < 0.14	ND <0.11	ND <0.026	ND <0.11	ND <0.099		
					October 4, 2	004 sampling	g event								
AI-11	Indoor Random	10/4/2004	-29.0	-6.5	1.71	3.8	2.4	0.96	0.66	4.3	ND <0.044	0.18J	0.17		
AI-12	Indoor Random	10/4/2004	-29.0	-6.5	1.71	5.4	2.5	1.0	0.73	5.1	ND <0.044	0.19	0.17		
AI-13	Indoor Random	10/4/2004	-29.0	-5.5	1.64	7.0	2.5	1.0	0.65	4.5	ND <0.042	0.19	0.18		
AA-04	Outdoor Location	10/4/2004	-29.0	-6.5	1.71	1.1	2.4	0.60	ND<0.23	ND<0.18	ND <0.044	ND<0.19	ND <0.17		
	Trip Blank		-29.0	-29.0	1.00	ND < 0.11	ND < 0.099	ND < 0.15	ND < 0.14	ND < 0.11	ND <0.026	ND < 0.11	ND <0.098		

TABLE 4. SUB-SLAB VAPOR RESULTS WITH COMPARISONS TO SOIL VAPOR SCREENING LEVELS (Page 2 of 2)

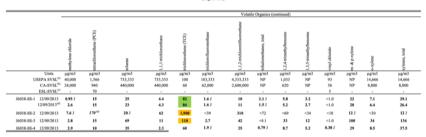
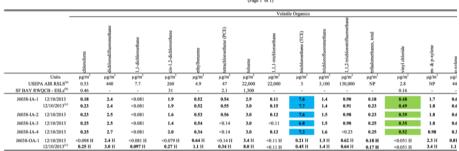


TABLE 5. INDOOR AND OUTDOOR AMBIENT AIR RESULTS WITH COMPARISON TO PROJECT ACTION LEVELS (Page 1 of 1)



Discords EFA Regional Screening Levels for Chemical Contaminants at Superfund Sites - Region 9 (11/2013) - Industrial RSLs

Exceeds EFA Regional Water Quality Control Board Screening Levels (12/2013) - Industrial ESLs

Notes:

(ii) UEPA Regional Screening Levels for Industrial Exposure (RSLs, USEPA 2013a).

(iii) SF Bay Environmental Screening Levels (ESLs, RWQCB 2013).

(iv) Duplicates sample.

micrograms per cubic meter

Data qualifier; sample was reanalyzed on 30 Decen

Not Promulgated

TABLE 7. SUMMARY OF CUMULATIVE CANCER RISK AND NON-CANCER HAZARD

		Risk-Based														
	Risk-Based	Screening -	Sample Location IA1 12/10/2013		Sample I	ocation IA2		San	nple Location IA3		Sample Location IA4					
Toxicity Criteria	Screening	Concentrations for -			12/10/2013 12/10/2013					12/10/2013		12/10/2013				
IUR ^(a) R _{fC^(b)}	Concentrations for		Concentration(c)	Cancer	Hazard	Concentration(c)	Cancer	Hazard	Concentration(c)	Cancer	Hazard	Concentration(c)	Cancer	Hazard		

Analyte		$(\mu g/m^3)^{-1}$	(mg/m ³)	Carcinogens (µg/m³)	(µg/m3)	$(\mu g/m^3)$	Risk ^(d)	Quotient(e)	$(\mu g/m^3)$	Risk ^(d)	Quotient ^(e)	$(\mu g/m^3)$	Risk ^(d)	Quotient(e)	$(\mu g/m^3)$	Risk ^(d)	Quotient(e)
chloroform	c	2.3E-05	9.8E-02	5.3E-01	4.3E+02	0.23	4.3E-07	< 0.1	0.23	4.3E-07	<0.1	0.25	4.7E-07	< 0.1	0.25	4.7E-07	< 0.1
dichlorodifluoromethane			1.0E-01		4.4E+02	2.4		< 0.1	2.5		<0.1	2.5		< 0.1	2.7		< 0.1
ethylbenzene	c	2.5E-06	1.0E+00	4.9E+00	4.4E+03	0.52	1.1E-07	< 0.1	0.53	1.1E-07	< 0.1	0.54	1.1E-07	< 0.1	0.34	6.9E-08	< 0.1
tetrachloroethene (PCE)	c	2.6E-07	4.0E-02	4.7E+01	1.8E+02	0.55	1.2E-08	< 0.1	0.56	1.2E-08	<0.1						
tetrachloroethene (PCE)	c	5.9E-06	3.5E-02	2.1E+00	1.5E+02	0.55	2.6E-07	< 0.1	0.56	2.7E-07	<0.1						
toluene			5.0E+00		2.2E+04	3		< 0.1	3		<0.1	3		< 0.1	3		< 0.1
toluene			3.0E-01		1.3E+03	3		< 0.1	3		<0.1	3		< 0.1	3		< 0.1
1,1,1-trichloroethane			5.0E+00		2.2E+04	0.15		< 0.1	0.12		<0.1				0.12		< 0.1
trichloroethene (TCE)	c	4.1E-06	2.0E-03	3.0E+00	8.8E+00	7.7	2.6E-06	0.9	7.6	2.5E-06	0.9	6.8	2.3E-06	0.8	7.3	2.4E-06	0.8
trichlorofluoromethane			7.0E-01		3.1E+03	1.4		< 0.1	1.5		<0.1	1.5		< 0.1	1.6		< 0.1
trichlorotrifluoroethane (Freor	n113)		3.0E+01		1.3E+05	0.91		< 0.1	0.98		<0.1	0.9		< 0.1			
vinyl chloride	c	4.4E-06	1.0E-01	2.8E+00	4.4E+02	0.49	1.8E-07	< 0.1	0.39	1.4E-07	<0.1	0.35	1.3E-07	< 0.1	0.52	1.9E-07	< 0.1
vinyl chloride	c	7.8E-05	1.0E-01	1.6E-01	4.4E+02	0.49	3.1E-06	< 0.1	0.39	2.5E-06	<0.1	0.35	2.2E-06	< 0.1	0.52	3.3E-06	< 0.1
cis-1,2-dichloroethene(f)			6.0E-02		2.6E+02	1.9		< 0.1	1.6		<0.1	1.4		< 0.1	2		<0.1
cis-1,2-dichloroethene			3.5E-02		3.1E+01	1.9		< 0.1	1.6		<0.1	1.4		< 0.1	2		< 0.1
m,p-xylenes			1.0E-01		4.4E+02	1.8		< 0.1	1.8		< 0.1	1.8		< 0.1	0.98		< 0.1
o-xylenes			1.0E-01		4.4E+02	0.64		< 0.1	0.65		<0.1	0.66		< 0.1	0.32		<0.1
Totals for all VOCs detected (USEP	A):					3.3E-06	0.9		3.2E-06	0.9		3.0E-06	0.8		3.2E-06	0.9
Totals for all VOCs detected (SF Ba	y RWQCB):					6.5E-06	1.0		5.8E-06	0.9		5.1E-06	0.8		6.3E-06	0.9

ris based on USEPA's recommended approach to selecting toxicity values for use in Superfund risk assessments; as presented in OSWER Directive 9285.7-53 (dated December 5, 2003), USEPA establishes the and HQ values shown in blue font are based on toxicity criteria recommended by SF Bay Regional Water Quality Control Board, using more health protective toxicity criterion between OEHHA and

- al non-cancer Hazard Quotene. nos, ND data were not used. on a 8 hoursday x 250 days/ugar y car x 10/R) / (24 hours/day x 365 days/year x 70 years). transiena x 8 hoursday x 250 days/ugar y car x 25 years / (RIC x 24 hours/day x 365 days/year x 25 years x 1,000 µg/mg).

6.4.6. TRW Indoor Air

Indoor air is not an original medium of concern for the TRW site. Since the 1991 ROD, EPA's understanding of vapor intrusion potential has increased; meanwhile, VOC concentrations in groundwater beneath the building have been significantly reduced through remedial activities, however continue to be present at the site above cleanup levels. Indoor air quality samples were collected at the site in 2003, 2004, and most recently in December 2013 to re-assess vapor intrusion potential.

COCs in the groundwater at TRW include multiple chlorinated compounds that are sufficiently toxic and volatile to cause a vapor intrusion concern. A comparison of 2013 A zone groundwater COC concentrations with groundwater screening levels protective for indoor air indicates that four groundwater COCs occur in sufficient concentration to cause a potential vapor intrusion concern. Table 15 lists the chemicals, maximum detected A zone groundwater concentrations, and respective applicable screening

Currently, a single two-story building overlies the VOC-impacted groundwater at the site. The buildin has been vacant since 2001 and is not equipped with mechanical ventilation, electricity, or plumbing. During remodeling activities conducted between 2001 and 2003 an extension to the building was completed overlying the former UST excavation. A 10 milliliter (mL) thick vapor barrier was installed beneath the portion of the building that was remodeled. The interior of the building remains unfinished Because the building is currently unoccupied, there is currently no exposure risk due to vapor intrusion

Results from the 2003 investigation prompted the installation of a temporary mechanical ventilation system. Follow-up indoor air sampling in 2004 confirmed that, in the absence of a ventilation system, concentrations of TCE detected in indoor air exceeded threshold limits for commercial/industria

In December 2013, a vapor intrusion evaluation was conducted at the current site building. Sample locations included four indoor air samples, four sub-slab air samples, and two outdoor (ambient) air samples. Selected sample locations were placed near the Eductor and the elevator shaft to evaluate preferential pathways. The evaluation noted several additional preferential pathways, including monitoring wells inside the building, open electrical conduits, restroom drains, and an elevator shaft. Table 16 presents the maximum indoor air concentrations detected during the 2013 VI evaluation.

Only two COCs (TCE and vinyl chloride) have indoor air concentrations that exceed one or both of the EPA and DTSC-modified industrial indoor air screening levels. Sub-slab TCE concentrations (data not shown) are substantially higher than indoor air concentrations, indicating that TCE in indoor air is likely VI related. In contrast, sub-slab concentrations for vinyl chloride are low or not detected, indicating that VC may not be VI related. However, given that the building is unoccupied, an above-ground source of VC is unlikely and may require further investigation to determine if a local background source has been

Maximum TCE indoor air concentrations also exceed the EPA Region 9 Interim TCE Accelerated Response Action Level of 7 µg/m³ for 10-hour workday exposure; however, no response is currently warranted as the building is unoccupied.

TCE is the only VI-related COC that presents a long-term risk above its cancer-based commercial/industrial screening level (3.0 µg/m³ for TCE). The maximum detected concentration (7.7 $\mu g/m^3$) is still within EPA's acceptable lifetime excess cancer risk range of 3 to 300 $\mu g/m^3$ (1x10⁻⁶ to 1×10^4 excess cancer risk, respectively). However, the Superfund protective risk range has been truncated by the noncancer-based screening level to $3-7\,\mu\text{g/m}^3$ (for 10-hour workday exposures), and maximum TCE indoor air concentrations exceed the upper boundary of this range. Currently the building is unoccupied and therefore no risk to occupants exists. In addition, a vapor intrusion mitigation system is currently being installed in the building (passive barrier and ventilation system with capability to be converted into an active system).

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