

Indoor Air Sampling Results

In early 2015, the U.S. Environmental Protection Agency (EPA) began an indoor air vapor intrusion investigation in Torrance, California as part of site investigations for the Del Amo and Montrose Superfund Sites (Sites). In the past, the community raised concerns about the potential for vapor intrusion.

For this indoor air vapor intrusion investigation, EPA sampled for low levels of 13 volatile organic compounds (VOCs) related to the Sites. These 13 VOCs have been found in the shallow groundwater (around 50 feet below the ground) beneath the neighborhood south of former Del Amo facility or in soil vapor on the former Montrose plant, the former Del Amo facility, or the JCI Jones Chemicals, Inc. properties.

From March to May of 2015, EPA collected indoor air samples from 107 homes south of the Sites. Of these, 87 homes were in sampling area (see Figure 2: Indoor air sampling areas). In some cases, EPA collected samples from the air underneath homes, such as in the crawlspace or below foundation slabs. Altogether, EPA collected 209 indoor air samples, 52 outdoor air samples, 62 crawlspace samples (from 52 homes), and 17 foundation slab samples (from seven homes). Residents whose homes were sampled in 2015 have received letters from EPA providing them with the results of sampling on their property. If your home was sampled and you did not receive your results, please contact Yarissa Martinez (see contact information below).

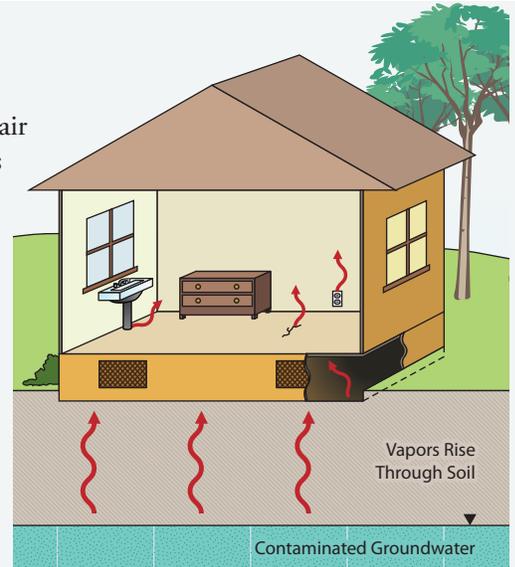


Figure 1: Vapor Intrusion - a process where volatilization (evaporation) of underground contaminants migrates into indoor air through cracks and other openings in the foundation slabs of a building.

What are the Results?

At this time, there is no urgent health risk associated with vapor intrusion in homes, and no urgent action is required.

In the indoor air of many homes, VOCs were detected; however, the source of the VOCs is uncertain. The levels and VOCs found may be caused by a number of sources, possibly including the outdoor air or common household products inside the home (or indoor sources). EPA will continue to investigate the potential for vapor intrusion by collecting soil gas samples, resampling the indoor air of select homes, and analyzing local outdoor air quality.

In the indoor air of many homes, EPA found seven VOCs that exceed long-term health protective levels. These VOCs may be coming from vapor intrusion, outdoor air pollution, or common household products inside the home (or indoor sources). See Table 1: Summary of Seven Volatile Organic Compounds (VOCs) Found in Many Homes.



Note: No one is presently drinking or using contaminated groundwater from these sites. Currently, the drinking water provided to residents in the area is serviced by the California Water Service Company and comes from sources outside the contaminated area. Drinking water is regularly tested to meet California and Federal drinking water standards.



Figure 2: Indoor air sampling areas - The green rectangles note the sampling area.

Table 1: Summary of Seven Volatile Organic Compounds (VOCs) Found in Many Homes

The table on the next page contains additional information of possible sources for some of the VOCs found in your neighborhood. As mentioned, EPA will continue to evaluate the potential for vapor intrusion in the area during our next phase of investigation in 2016. EPA collected indoor air samples from 107 homes and crawspace samples from 52 homes, as well as 52 outdoor air samples.

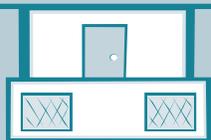
Total Sampling Locations		
Indoor Air  107	Crawspace  52	Outdoor Air  52

Table Notes

To better understand what measures EPA used to interpret the results, the columns in the following table include the following notes:

What are "long term health protective levels?" ¹

Long-term health protective levels reflect a daily amount that sensitive populations can safely be continuously exposed to for their lifetime. For this investigation, EPA choose the most updated and protective levels between:

- EPA, November 2015, Regional Screening Levels for Chemical Contaminants at Superfund Sites, (see: <http://www.epa.gov/region9/superfund/prg/>)
- California Department of Toxic Substances Control, Human and Ecological Risk Office, October 2015, Human Health Risk Assessment Note Number 3, Modified Screening Levels (see: <http://www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3-2015-10.pdf>)

Where did you get the information to compare outdoor air samples? ²

Outdoor air levels in the community were measured by EPA and South Coast Air Quality Management District (SCAQMD) in 2015 and historically by SCAQMD in North Long Beach.

Where did you find information on the other sources of the contaminants? ³

Known sources are from the references listed below.

References

U.S. Agency for Toxic Substances Disease Registry (ATSDR) Centers for Disease Control and Prevention (CDC) Website "ToxFAQs: Information about contaminants found at hazardous waste sites" accessed November 2015 online at: <http://www.atsdr.cdc.gov/toxfaqs/index.asp>

U.S. National Institutes of Health (NIH) Household Products Database accessed November 2015 online at: <http://householdproducts.nlm.nih.gov/>

For more information about steps you can take to improve your indoor air quality (IAQ) inside your home, visit EPA's Indoor Air Quality (IAQ) Website:

- EPA's The Inside Story: A Guide to Indoor Air Quality: <http://www.epa.gov/indoor-air-quality-iaq/inside-story-guide-indoor-air-quality>
- EPA's website listing many publications about indoor air quality: <http://www.epa.gov/indoor-air-quality-iaq/publications-about-indoor-air-quality>
- EPA's Guide to Air Cleaners in the Home: <http://www.epa.gov/indoor-air-quality-iaq/guide-air-cleaners-home>

Contaminant	Was the contaminant found above the long-term health protective levels? ¹		How do the levels compare with the outdoor air in the community? ²	What are other known sources of the contaminant? ³
	In indoor air	In crawlspace		
Benzene	In all but one home (106)	In many homes (52)	In most cases, the indoor air levels are similar to the outdoor air levels.	<ul style="list-style-type: none"> • Exhaust from motor vehicles, tobacco smoke, and gas stations; • Emissions from industrial production (to make rubbers, lubricants, dyes, detergents, drugs, pesticides, plastics, resins, synthetic fibers, etc.) and the petroleum industry and automotive service stations; and • Found in glues, adhesives, paints, furniture wax, and detergents for home maintenance and arts & crafts and found in motor oil.
Carbon Tetrachloride	In some homes (21)	In two homes (2)	All indoor air levels are similar to the outdoor air levels.	<ul style="list-style-type: none"> • Not common in new products • Used in a variety of older products, such as: aerosol cans, refrigerant fluids, cleaning fluids, degreasing agents, spot removers, fire extinguishers, and pesticides (fumigants); and • Found in adhesives or bonders in home maintenance or arts and crafts products; and • Found in background outdoor air, due to historical sources and past use.
Chloroform	In all homes (107)	In many homes (49)	The indoor air levels are typically a little higher than what is found in the outdoor air. However, we consistently find chloroform in outdoor air.	<ul style="list-style-type: none"> • Found in water delivered to homes by municipal drinking water systems, which use chlorine as a disinfecting agent; • By-product of chlorine-based cleaning products; and • By-product of chlorine used to disinfect swimming pools.
1,2-Dichloroethane (1,2-DCA)	In most homes (95)	In some homes (16)	The indoor air levels do not reflect outdoor air levels. 1,2-DCA found inside the home is likely from indoor sources.	Found in a variety of plastic and vinyl chloride products, including polyvinyl chloride (PVC) pipes, furniture, and automobile upholstery, wall coverings, housewares, and automobile parts, especially more common in products imported from other countries.
1,4-Dichlorobenzene (1,4-DCB)	In some homes (20)	In a few homes (4)	The indoor air levels do not reflect outdoor air levels. 1,4-DCB found inside the home is likely from indoor sources.	Found in moth balls, in-toilet cleaners, and air fresheners, among other household products
Tetrachloroethene or Tetrachloroethylene (PCE or PERC)	In some homes (14)	In no homes (0)	The indoor air levels do not reflect outdoor air levels. PCE found inside the home is likely from indoor sources.	<ul style="list-style-type: none"> • Commonly used as a dry cleaning agent but is in the process of being restricted in California. • Not common in new products; • Used in older metal degreasing solvents (kitchen cleaning products, gun cleaning products, brake cleaners, etc.); and • Found in glues and adhesives made for arts & crafts and auto part lubricants, as well as spot removers.
Trichloroethene or Trichloroethylene (TCE)	In a few homes (5)	In one home (1)	The indoor air levels do not reflect outdoor air levels. TCE found inside the home is likely from indoor sources.	<ul style="list-style-type: none"> • Not common in new products; • Used in older metal degreasing solvents (kitchen cleaning products, gun cleaning products, brake cleaners, etc.); and • Used to make other chemicals, especially refrigerants; and • Found in glues and adhesives made for arts & crafts, as well as spot removers.

What are Indoor Sources of VOCs?

Building materials and common household products (such as furniture, paints and coatings, or cleaning supplies and spot removers) can contain VOCs. Often, these household products will “off-gas” or release contaminants into the air inside the home. Sometimes you can smell these chemicals (like mothballs, air fresheners, glues, or heavy cleaning products), but other times you cannot. Information on common household products that cause measurable levels of VOCs in indoor air can be found in the National Institutes of Health Household Products Database: <http://householdproducts.nlm.nih.gov/>.

What are Outdoor Sources of VOCs?

Indoor air quality can be impacted by outdoor air. When outdoor air enters a house through open windows or air conditioning/heating systems, it will carry with it any air pollutants present outdoors. In urban areas, air pollutants typically come from cars, trucks, and industrial facilities. Some of the VOCs found in indoor air samples may be coming from these outdoor air sources.

To understand the outdoor air, EPA collected 52 outdoor air samples from the neighborhood south of the former Del Amo facility property. EPA also coordinated with the South Coast Air Quality Management District (SCAQMD), the local air district. In June and July of 2015, SCAQMD set up a temporary air monitoring station in the neighborhood. Results from this air monitoring showed outdoor air quality in the neighborhood is similar to air quality in other parts of the Los Angeles Basin.

Three VOCs are typically seen at high levels in outdoor air in the Los Angeles Basin: benzene, chloroform, and carbon tetrachloride. There are a number of possible sources for benzene found in your neighborhood, such as exhaust from motor vehicles or emissions from industrial production, the petroleum industry, and automotive service stations. However, as part of the comprehensive vapor intrusion investigation, EPA will analyze information from the Del Amo Superfund site cleanup remedies to determine if they are contributing to the benzene levels in the neighborhood.

How Does EPA Determine if Vapor Intrusion is Occurring in Homes?

To know whether contaminants detected in an indoor air sample come from indoor or outdoor sources, we look for various pieces of evidence. For this indoor air investigation, we are looking at two main pieces of evidence in and around the home:

- First, we look for contaminants in the home crawlspace or foundation slab samples. If we find contaminants in the crawlspace or foundation slab at levels comparable to that in the indoor air, we may suspect vapor intrusion.
- Second, we look at outdoor air sampling results. If we find levels in the indoor air that are much higher than levels detected in the outdoor air, we may suspect vapor intrusion.

During our indoor air investigation, we did not consistently find these two pieces of evidence. However, this information only provides a snapshot in time of VOC levels in homes around the neighborhood, and EPA will continue to investigate the future potential for vapor intrusion.

PLEASE JOIN US!

Community Open House on Site Updates

EPA will hold a community “open house” event from **6–9 p.m. on Thursday, May 26, 2016** at the:

Torrance Cultural Arts Center, Gardenia Rooms
3330 Civic Center Drive
Torrance, CA 90503

EPA will have updates for the Del Amo & Montrose Superfund Sites on the following topics:

- Five Year Review
- Vapor Intrusion
- Soil Removal on the ECI property
- Anti-Degradation Policy Analysis
- Groundwater Treatment System
- General Community Involvement



What Happens Next?

The indoor air investigation is one part of a comprehensive vapor intrusion investigation. The next step is soil gas sampling. Soil gas is a mixture of gasses, water vapor, and potentially contaminated vapors in the air spaces between soil particles. One way vapor intrusion occurs is when ground-water contaminants volatilize (evaporate) into the soil gas before they are able to migrate into indoor air. Soil vapor sampling allows EPA to directly measure the VOCs in soil gas.

The soil gas investigation will focus on the neighborhood south of the former Del Amo facility between Normandie Ave and New Hampshire Ave (see Figure 3: Map of possible soil gas sampling locations). EPA and EPA contractors will use a small rig (see Figure 4: Typical truck-mounted drill rig) to drill small holes or soil gas “sampling locations.” EPA will drill about 60 small holes (the width of a soda can) up to 20 feet deep for temporary sampling locations (see green dots on Figure 3) and about 10 slightly larger holes (the width of a soccer ball) up to 60 feet deep for longer-term sampling locations (see red dots on Figure 3). The final spacing between the sampling locations will depend on past data, access, current site conditions (utilities, pipes, and buildings), and access permits. We may decide to add sampling locations (closer in distance) as we collect information in the field. The field work is expected to last four to five weeks. During that time, EPA will drill holes, collect the soil gas samples, and refill the holes for the temporary sampling locations. EPA will close locations with a cap (see Figure 5: Typical well cap) the longer-term sampling locations to allow for collecting additional samples, as needed.

EPA will also resample the indoor air of approximately 20 homes which were sampled in the initial indoor air investigation in 2015. These homes were selected because at least one VOC was found at levels which are significantly above long-term health protective levels and higher than the average for homes in the community.

After this soil gas investigation, EPA will communicate with residents and property owners the results and any additional steps.



Figure 3: Map of possible soil gas sampling locations - The green rectangle notes the area in the neighborhood where EPA will drill small holes or soil gas “sampling locations” (noted in the green and red dots).

How Will the Soil Gas Investigation Impact Me?

In May-June 2016, you can expect to see EPA and EPA contractors around the neighborhood.

Figure 3 shows proposed sampling locations to drill the small holes.



Figure 4: Typical truck-mounted drill rig

Working Hours

Will be between 9:00 a.m. – 4:30 p.m.
Monday – Friday

Traffic, Parking, and Driveway Access

Public streets or private driveways should not be affected; however, street parking may be slightly reduced for a couple of hours at work locations.

Noise

Although work may be noisy at times, it will only be localized and steps will be taken to keep noise levels down.

If you have any questions or concerns regarding ongoing drilling work, please contact Yarrisa Martinez at (213) 244 – 1806.



Figure 5: Typical well cap

United States Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-6-3)
San Francisco, CA 94105
Attn: Yolanda Sanchez (Montrose/Del Amo 4/16)

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inside
Indoor air tests confirm no
urgent health risk associated
with vapor intrusion in homes.
More testing this spring.

Montrose Superfund Site: <http://www.epa.gov/superfund/montrose>
Del Amo Superfund Site: <http://www.epa.gov/superfund/delamo>

Websites

Carson Public Library
151 East Carson Street
Carson, CA 90745
(310) 830-0901

Torrance Civic Center Library
3301 Torrance Boulevard
Torrance, CA 90503
(310) 618-5959

Superfund Records Center
U.S. Environmental Protection Agency
Regional Records Center, Room 3110
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-8717

An information repository is placed near a Superfund site that contains documents, reports, and letters about site cleanup activities.

Information Repositories

Yolanda Sanchez
Community Involvement Coordinator
(415) 972-3880
sanchez.yolanda@epa.gov

Varissa Martinez
Remedial Project Manager
for Vapor Intrusion
(213) 244-1806
martinez.varissa@epa.gov

Dante Rodriguez
Remedial Project Manager
for Del Amo Waste Pits
(415) 972-3166
rodriguez.dante@epa.gov

AnhTu (Tu) Nguyen
Remedial Project Manager
for Del Amo Waste Pits
(415) 972-3443
nguyen.ambtu@epa.gov

EPA Contacts

If you have any questions about the investigation in your neighborhood or if you would like to be added to the site mailing list, please don't hesitate to contact us.

For More Information

Montrose & Del Amo Superfund Site

