Motorola 52nd St. Superfund Site

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • April 2012

Update on Vapor Intrusion to Indoor Air Investigation at the Motorola 52nd Street Superfund Site

This Fact Sheet provides an update of the U.S. Environmental Protection Agency's (EPA's) vapor intrusion investigation in Operable Unit 1 of the Motorola 52nd St. Superfund Site. The purpose of this investigation is to determine the extent of vapor intrusion into buildings overlying contaminated groundwater and/or soil gas, and whether any residences require mitigation of the vapor intrusion pathway.

Samples were collected of indoor air and soil gas beneath building slabs (sub-slab) in the primarily residential area west and northwest of the former Motorola 52nd Street facility. These samples were taken to evaluate whether Site-related contamination, primarily the solvent trichloroethylene (TCE), may be entering buildings in the form of a gas (or vapor) from contamination below ground (also referred to as **vapor intrusion to indoor air** (see Figure 1)). Sampling was conducted in the area bounded by Coronado Street to the north, Culver St. to the south, 50th Street to the east, and State Route 143 (the Old Cross Cut Canal) to the west (see Fig. 2). This investigation is being conducted by Freescale Semiconductor Inc. under EPA oversight.

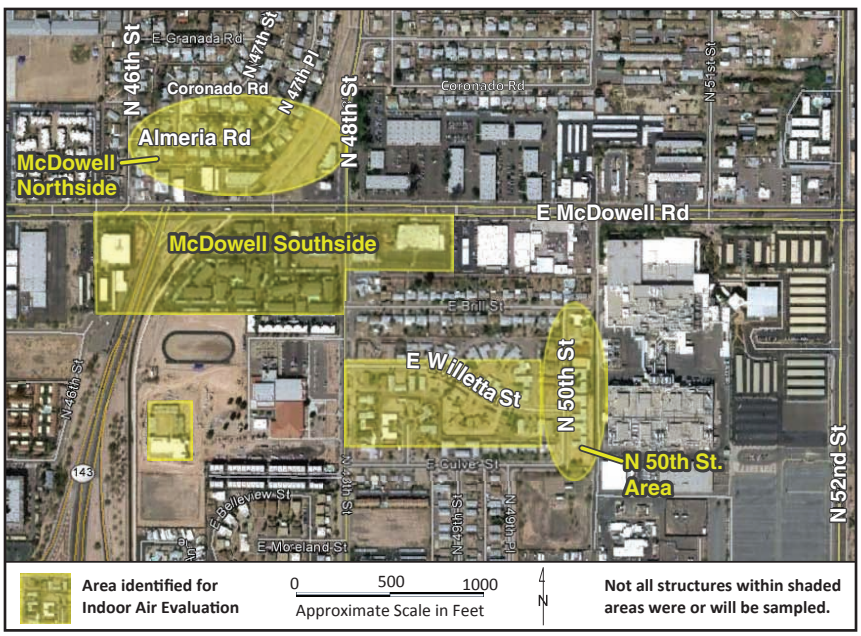


Figure 2: Map of study areas

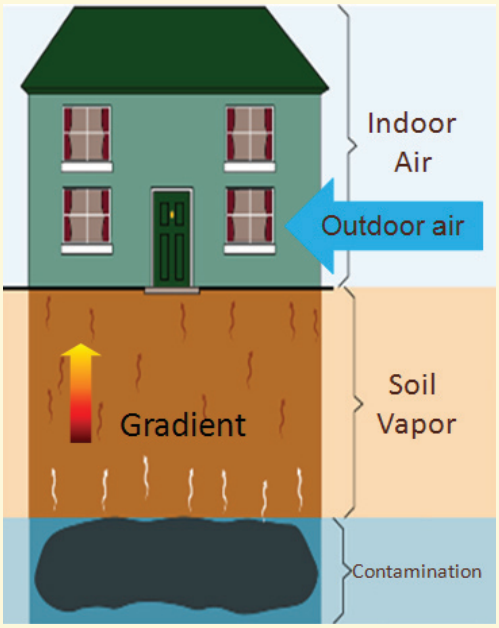
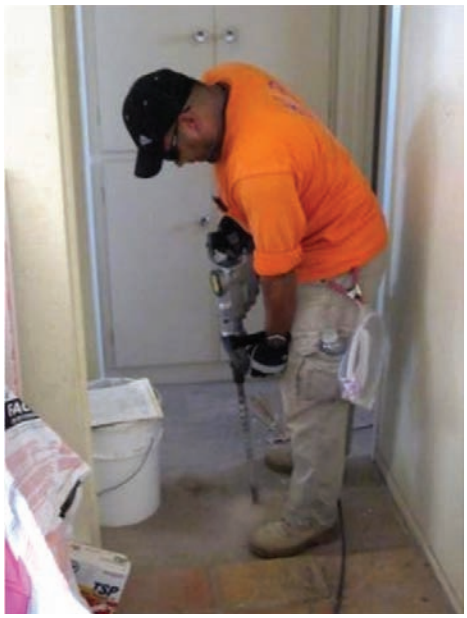


Figure 1: "Vapor intrusion" is the migration of chemicals in the subsurface that volatilize (become a gas) easily and can migrate into the indoor air of overlying buildings. These chemicals include those called volatile organic compounds (VOCs), such as trichloroethene (TCE) and perchloroethylene (PCE) which are contaminants at the Motorola 52nd Street Site.

Indoor air and subslab samples were collected in July and October 2011 and February 2012. In order to account for seasonal variation, the February 2012 sampling event included re-sampling of homes, schools, and commercial locations sampled in July or October 2011. In addition, "step-out" sampling was conducted in residences that are adjacent to those that had elevated TCE concentrations during the 2011 sampling. The six buildings that had elevated indoor air TCE concentrations during the 2011 sampling rounds are receiving pre-emptive mitigation and therefore additional pre-mitigation sampling was not required at these locations.



Sub-slab sampling: A small hole is drilled through the slab of the home in order to obtain a sample of the soil gas beneath the building. The hole is then sealed.

The results of the July and October 2011 sampling are available on the Site website: **www.epa.gov/region09/motorola52ndst**. A fact sheet summarizing the results can be found under "**Fact Sheets**" dated 1/23/12; a table with the complete data is under "**Technical Documents**," dated 11/22/11 and 2/02/12; and posters summarizing the data can be found under "**Community Involvement**," dated 2/15/12. The February sampling results are currently undergoing a data validation process to ensure their accuracy and to ensure that they meet the quality assurance guidelines. This fact sheet summarizes the preliminary results of that sampling event, but note that those data are subject to change pending data validation. Final results will be shared at upcoming meetings and posted on EPA's Motorola 52nd Street web site.

Motorola 52nd St. Superfund Site Background

The Motorola 52nd Street Superfund Site is located in the City of Phoenix, Maricopa County, Arizona. The Site is divided into three adjoining Operable Units (OUs). OU1 is the easternmost area and includes the former Motorola 52nd Street Semiconductor facility. The OU1 boundaries are 52nd Street to the east, Palm Lane to the north, Roosevelt Street to the south, and 44th Street to the west.

Motorola Semiconductor Products Sector (Motorola) owned and operated the 52nd Street facility from 1956 to 1999. As part of its electronics manufacturing operation, Motorola used solvents, including VOCs such as TCE and PCE to clean and degrease parts and equipment. Investigations in the 1980s revealed groundwater contamination at the 52nd Street facility and to the west. Freescale (formerly a part of Motorola) has been operating a groundwater extraction and treatment system since 1992 to contain and treat the contaminated groundwater. Groundwater treatment is expected to continue for many years.

Findings

In February 2012, indoor air and subslab samples were collected from 58 residences, five commercial buildings, and two schools. Thirty-seven of the residences were sampled for the first time. The February 2012 preliminary data are generally consistent with the sampling of the residences, commercial buildings and schools sampled in July or October 2011. There were a few homes that had slightly higher results than in 2011, and where additional data will be collected in an upcoming summer sampling event to help evaluate the appropriate next steps. The data from these homes did not indicate the need for pre-emptive mitigation.

The most significant preliminary findings from the February 2012 event were from the McDowell Northside area where 22 residences were sampled for the first time as part of the step-out sampling effort. Based on elevated subslab TCE concentrations and/or indoor air TCE concentrations that exceeded the health-based protective risk range, some homes in this area were identified for installation of vapor intrusion mitigation systems (Figure 3 illustrates how these systems operate).

Mobile lab: Sub-slab samples are analyzed in the field at a mobile lab in order to quickly determine whether contaminants are present and whether step-outs are necessary. The samples are also sent to a stationary lab for analysis.

Other areas investigated during the February step-out sampling (McDowell Southside area and N. 50th Street Area) also showed slightly elevated TCE sub-slab concentrations and indoor air concentrations slightly above the screening level at a few residences. These residences will be sampled again in the summer before determining next steps.

As noted above, all of the February 2012 data are preliminary and undergoing a quality assurance data validation process. Once validated, all of the data will be available to the public and posted on the Site website under "Technical Documents," and labeled "Validated Indoor Air and Sub-Slab Data for February 2012 Sampling Event." To protect the privacy of the residents and homeowners, EPA will not identify the test results by address.

New Toxicity Assessments

Since the vapor intrusion investigation began last year, EPA published new toxicity evaluations for both TCE and perchloroethylene (PCE), another site-related contaminant. These evaluations found that TCE is more toxic than previously thought, and PCE is less toxic. The new health-based protective risk ranges for TCE and PCE are shown in Table 1. Notably, all of the indoor air PCE concentrations collected to date are below the new PCE indoor air screening level.

Table 1: Previous and new TCE and PCE health-based protective risk ranges.

Chemical	Previous protective cancer and non-cancer risk range	New, revised protective cancer and non-cancer risk range
TCE	1.2 - 10 ug/m3	.43 – 2.0 ug/m3
PCE	0.4 – 35 ug/m3	9.4 – 41.7 ug/m3

Actions to Date and Next Steps

At the residences where levels of indoor air contamination were above the TCE cancer and non-cancer risk range, as well as at some residences with particularly elevated sub-slab contamination, Freescale is installing mitigation systems. The mitigation systems, called sub-slab depressurization systems (SSDs), are very effective at preventing underground vapors from entering overlying homes. Based on the preliminary data, EPA has identified 9 additional buildings where mitigation systems are recommended, in addition to the 6 buildings already identified in previous rounds. To date, several homes have already had mitigation systems installed. EPA and Freescale have contacted or attempted to contact the property owners and tenants of the remaining buildings to obtain permission to install mitigation systems. The installation, periodic monitoring, and ongoing operation and maintenance of these systems are being paid for by Freescale.

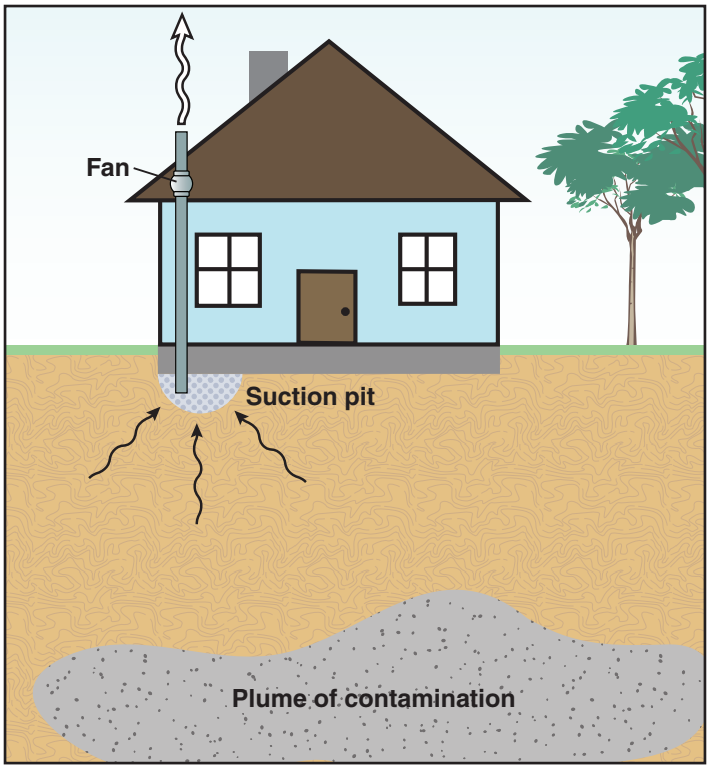


Figure 3: If a sub-slab depressurization system is installed in your home, it will create a pressure gradient that prevents subsurface vapors from entering the building.

Those residences that were sampled for the first time in February and were not identified for mitigation will be sampled again in the warmer months later this year, to determine whether there is seasonal variation in the TCE concentrations. Any new residences (step-out locations) sampled for the first time during the 2012 summer round will be sampled again in the winter.

EPA expects to complete the residential vapor intrusion investigation with a final round of indoor air sampling this winter. Following this investigation, EPA will focus on investigation of the vapor intrusion pathway at the former Motorola facility (now occupied by ON Semiconductor).

Once the residential vapor intrusion investigation is completed we will have a clearer understanding of the nature and extent of vapor intrusion in this area. At that time, EPA will determine the appropriate long-term monitoring strategy to ensure that we are aware of any potential movement of the soil gas plume to areas that are currently not impacted.

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The Lindon Park Neighborhood Association is the recipient of the Technical Assistance Grant for the Motorola 52nd St. Site, and holds periodic meetings where a technical advisor available to answer questions. For more information, contact:

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Information Repositories:

Community members can review site information at the following repositories or on the EPA and ADEQ websites at:

www.epa.gov/region09/motorola52ndst
www.azdeq.gov/environ/waste/sps/phxsites.html#mot52a

Burton Barr Public Library
1221 N. Central Avenue
(602) 262-4636

Phoenix Public Library, Saguaro Branch
(Information primarily stored on CD's)
2802 North 46th Street
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ADEQ Records Management Center
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