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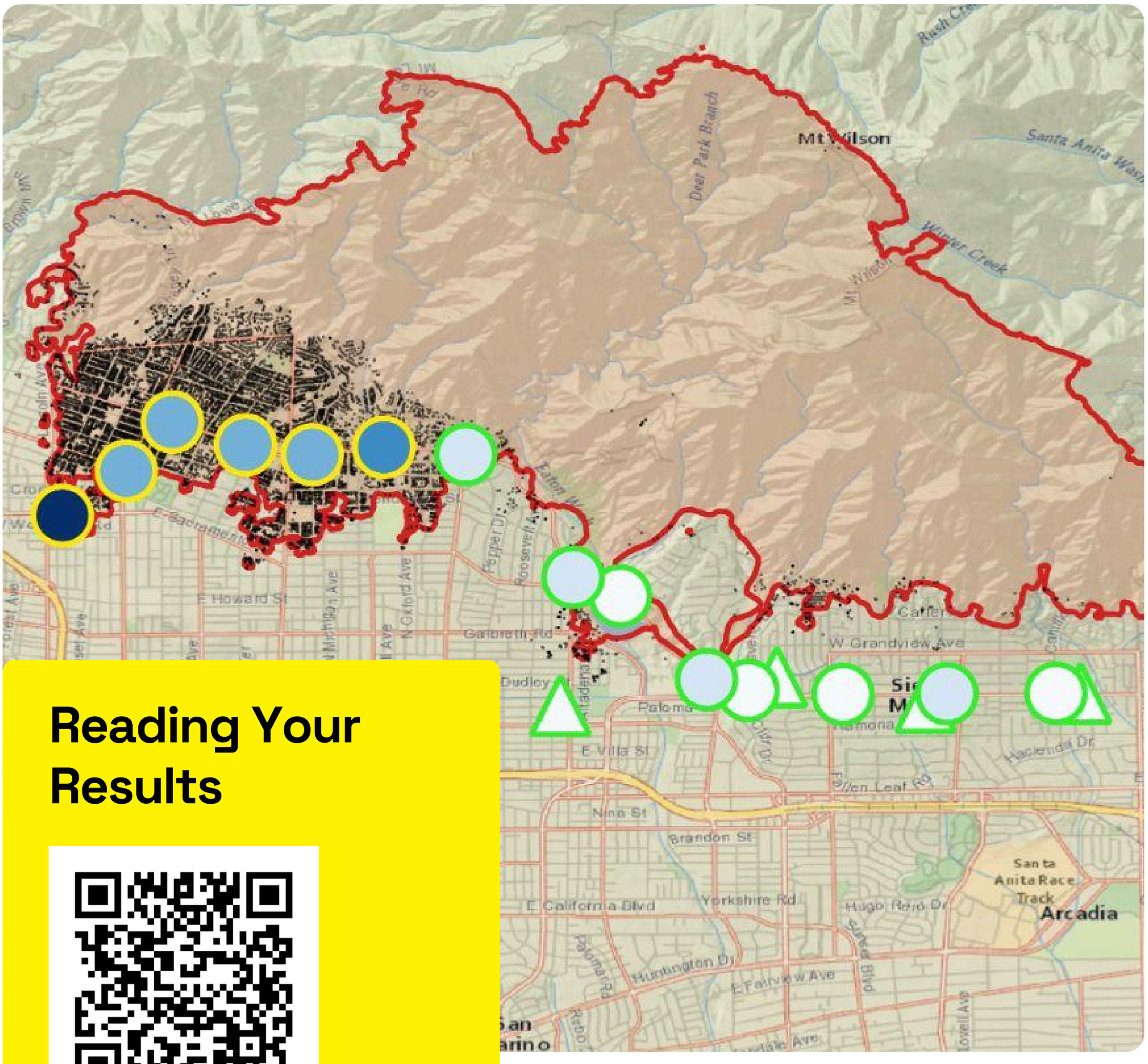
Keck School of Medicine of USC

CLEAN

Contaminant Level Evaluation & Analysis for Neighborhoods



Reading Your Results

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About

Thank you for your interest in participating in CLEAN, a rapid response soil testing program from the USC Department of Earth Sciences and Public Exchange. The CLEAN project was developed by a group of USC faculty, students, and staff, with the aim of applying scientific research tools to assist local communities impacted by the Eaton and Palisades fires. CLEAN is partly funded by FireAid.

In the interest of testing soil samples rapidly and providing the public with information as soon as possible, this program focuses on testing soils for lead contamination. Any amount of lead is harmful to health, but USC's instrumentation can quickly evaluate lead levels and assess what soil poses a threat. CLEAN is also expanding its scope to analyze some samples for additional contaminants, such as polycyclic aromatic hydrocarbons (PAHs).

Participating in this program will provide you with key information about your potential risk of exposure to lead in your soil and will allow you to make informed decisions about your health. It is also an opportunity to participate in the scientific process and could inform future publications and decision-making (see: USC study on lead in children's teeth).

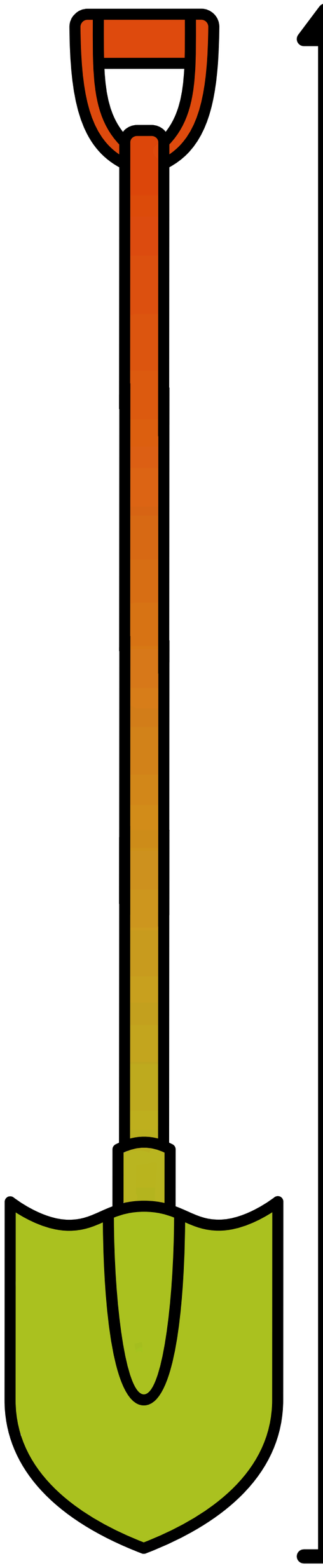
This guide will help you:

- **Interpret Your Results**
- **Take Measures to Reduce Lead Exposure**
- **Get Connected to Testing & Other Resources**

Guide last updated October 6, 2025

Interpret your results

While no amount of lead is safe for human health, thresholds set by government agencies can help you understand your potential risk.



If lead levels are elevated above 1,000 parts per million (ppm) seek out additional testing, as levels can vary widely even within a small area. Soils above this level are considered hazardous waste. Consider taking action to remove or cover the soil, as young children, pregnant people, and others are at risk of lead poisoning. Consult your doctor about blood lead level testing for you and your family.

— 1,000 ppm Hazardous Waste Threshold

In 2024, the EPA set a safety threshold for lead levels of 200 parts per million (ppm), down from the previous level of 400 ppm. Soils above this threshold may be hazardous, and more rigorous testing is recommended. Children should not play in this soil, and consult your doctor about seeking blood level testing (see following sections). Consider hiring lead abatement contractors to remove or permanently cover the soil. When gardening, be sure to completely clean all root vegetables and low-hanging leaves. Consider installing raised beds or other topsoil.

— 200 ppm EPA Screening Level

Cal EPA/OEHHA uses a level of 80 ppm as their screening level cutoff where concentrations may be unsafe for young children, fetuses, and pregnant people.

— 80 ppm California Screening Level

Lead occurs naturally in soil at low levels. Below 80 ppm, you can grow food in these soils and children can play in them. Make sure to wash your hands and any crops, as you would normally when handling soil.

If your sample's result is "**<LOD**", that means lead levels were below the testing instrument's limit of detection (LOD). The LOD is different depending on the sample, but is generally around 20 ppm.

Interpret your results

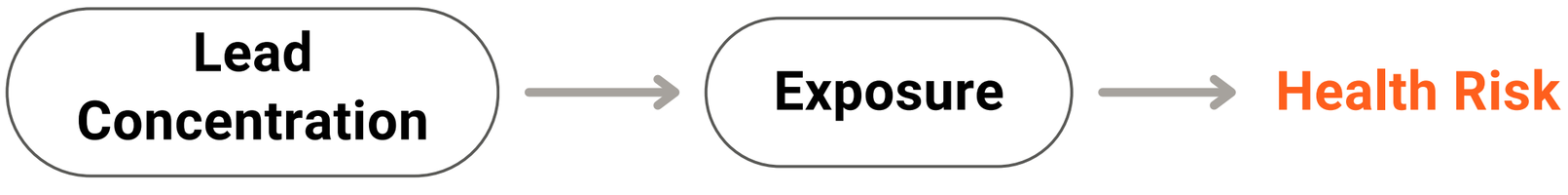
Thresholds:

California's Office of Environmental Health Hazard Assessment (OEHHA) has developed soil screening levels for lead of 80 ppm in residential settings and 320 ppm in workplace settings. According to OEHHA, soil lead levels of 80 ppm are “highly unlikely to produce adverse effects to the most sensitive individuals exposed in a residential setting.”

OEHHA set the screening level at 80 ppm because that is the level associated with reducing a child's IQ by one point. It assumes that children consume 80 mg of soil per day—about 2 tablespoons of dirt per year. View the OEHHA Lead Fact Sheet for more on how this level was calculated.

So how worried should I be about my soil?

Health risks associated with soil lead exposure are related to both how much lead is in soil (**concentration**) and how much soil you consume or inhale (**exposure**). It might be more challenging to reduce the lead in your soil (e.g., through remediation), but there are actions you can take to reduce your exposure.



Let’s look at some examples:

Lead Concentration	Exposure	Level of Concern
80 ppm	Children’s play area, where children play often on exposed soil or sand	Moderate
250 ppm	Burned building foundation, where a new building will be constructed	Low
100 ppm	Front yard, where my dog plays and regularly returns inside the home	High

Interpret your results

In Los Angeles (LA), generations of human activity have contributed to a heightened level of lead in soils citywide. Even before the fires, much of the city's soils would have exceeded the California lead screening level. Be aware that you likely have been taking on some risk of lead exposure for the duration of your time in LA. However, no amount of lead is safe for the body, so it is up to each of us to determine what level of risk we are willing to assume for ourselves and our families.

What does the research tell us about previously existing levels of lead?

Across the United States 1 in 4 Households May Have Dangerous Levels of Lead in Soil

This analysis of thousands of citizen-science collected soil samples from cities and communities around the United States indicates that nearly **one quarter of households** may contain soil lead that exceed the US EPA screening level of 200 parts per million (ppm). Filippelli et al., 2024

LA County Urban Soils Show Average Lead Levels of 180 ppm

This study of 600 soil samples from urban areas across Los Angeles County found an average of **180 ppm** of lead in soils. Wu, Kleinman, & Edwards, 2008

Lead is Above California Safety Guidelines in Over a Third of LA Parks

Lead concentrations in soil were assessed from 100 Los Angeles parks, for an average of **65.5 ppm** (range: 0.969–363 ppm). 35 of 100 parks exceeded the California lead guideline (80 ppm) for soil. Hung et al., 2018

What about soils located near a known source of lead?

The Environmental Justice Research Lab at USC Keck School of Medicine ran a study of residents living near the former Exide plant in Vernon. The plant recycled 11 million auto batteries per year and released 3,500 tons of lead until it closed in March 2015, as part of a legal settlement for hazardous waste violations.

Soils near this plant had average levels of **391 ppm** (range: 14 ppm - 32,392 ppm).

Interpret your results

Margin of Error

The methodology that CLEAN researchers use to measure lead levels in soil has a margin of error of **about 25%** *(multiply level by 0.25, and then add and subtract that amount to/from your result for the upper and lower bounds of the range)*.

If CLEAN reports that your lead level is...	Then it could fall between...
50 ppm	37 ppm - 73 ppm
100 ppm	75 ppm - 125 ppm
300 ppm	240 ppm - 340 ppm
500 ppm	375 ppm - 625 ppm

How does lead impact the body over a lifetime of exposure?

The most serious health risks of lead emerge through long-term exposure, where levels of lead build over years. The results of a single soil sample does not necessarily mean that your or your family's health will be impacted.

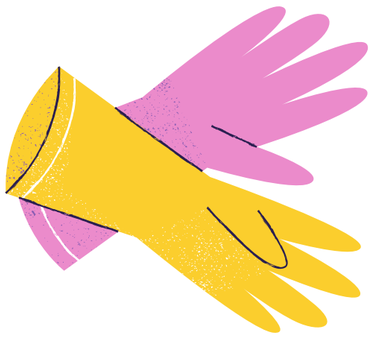
To learn more about the effects of lead on the body, visit the EPA website.

Please also refer to the Community & Environment Research Lab, which includes resources on how to talk to your child's pediatrician about lead exposure (English, Español), how to talk to your doctor about lead exposure (English, Español), and further guidance on living near known sites of lead contamination (English, Español).

How you can reduce lead exposure

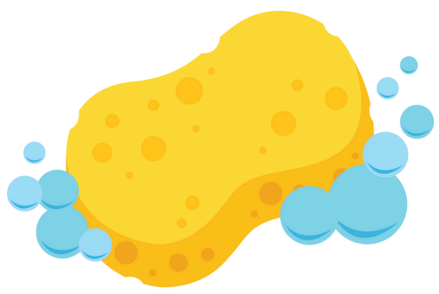
Back Up!

- Limit access to more contaminated areas.
- Prevent children from playing in bare soil and watch children carefully to prevent them from eating contaminated soil.
- Avoid growing produce directly adjacent to the street or near burnt areas, where lead levels are likely highest.



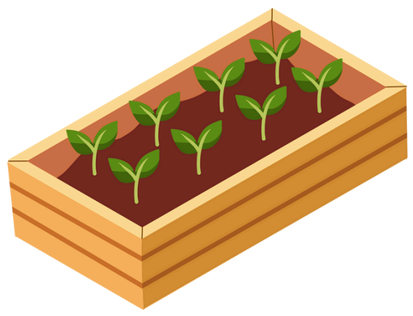
Suit Up!

- Wear gloves or wash hands and other exposed skin areas after coming into contact with soil.
- Keep soil outdoors. Use your doormat and **always take off your shoes before entering the house.**



Wash Up!

- Wash clothes that have come in contact with soil/dust separately from other clothes.
- Wash produce well, peel root crops, and discard outer leaves of leafy vegetables.
- Reduce exposure from pets that go outside by maintaining proper pet hygiene—wipe paws or use booties, trim paw hair and nails, etc.
- Wash toys and pacifiers frequently.
- If possible, power wash areas around your front door and adjacent sidewalk



Cover Up!

- Cover contaminated soil with a thick layer of clean soil, vegetation, mulch or other materials.
- Build raised beds with clean soil to grow food crops in more contaminated areas.
- Hire lead abatement contractors to remove or cover the soil.

Soil Testing

At this stage of the CLEAN Project, we are only able to test for lead in soils, as well as a small number of samples for some additional contaminants—more info about this expanded testing coming soon. Other contaminants, such as other heavy metals, asbestos, polycyclic aromatic hydrocarbons (PAHs), per- and polyfluoroalkyl substances (PFAS), and volatile organic compounds (VOCs), may also be present in soils. These contaminants may exist even if lead levels are low.

You may want to consider hiring certified professionals to conduct testing for and cleanup of these contaminants. Environmental consultants, industrial hygienists, asbestos inspectors, and lead risk assessors can offer services and guidance on the safe removal, handling, and disposal of hazardous materials. **CLEAN is unable to provide an approved list of companies at this time, but the City of Los Angeles has compiled a list of qualified environmental consultants** **on its website**. If you are filing an insurance claim, the insurance company may also have a list of approved companies.

LA County is maintaining a list of past and ongoing initiatives testing air quality, soil, sand, and water. See those services here.

Blood Testing

If you are concerned about your exposure to lead from the wildfire, you can obtain blood lead testing one of these two ways:

1. **Visit Your Medical Provider**
    - Ask your doctor for a blood lead test.
    - Testing is covered by most insurance plans, including Medi-Cal.

2. **Go to a Quest Lab for a Free Blood Lead Test**
    - Dial 1-800-LA-4-LEAD to request a free appointment through Quest Labs.
    - This service is simple, convenient, and confidential.

Note: Blood lead testing reflects the last 4-6 weeks of exposure. Lead accumulates in bones, so blood lead levels could look low even if some exposure has occurred. This is particularly relevant for people who are returning intermittently to their fire-impacted properties.

Other Resources

CLEAN has limited capacity to provide specific recommendations for residents to safely return home or remediate their properties. However, the resources below can inform LA residents when taking action to reduce their risk of exposure to environmental contaminants.

If you live downwind of the Eaton Fire, you may be eligible for the **Eaton Fire Soil Testing program** from LA County Public Health. Not sure if you're eligible? Check out the program's website for a map of eligible areas of Altadena.

LA County Public Health is maintaining a list of resources and responses to frequently asked question on their website, available here. This site includes English language resources for:

- Residents and business owners returning to properties in burned areas or just outside burned areas
- Pregnant people
- Pets
- Home gardeners
- Schools, child care facilities
- Mental Health Support
- And many more.

The **California Department of Toxic Substances Control** published an Emergency Wildfire Guidance hub. The guidance includes soil testing recommendations based on property condition, free soil testing programs, cleanup options and protective actions, as well as help understanding results and health screening levels.

The **California Department of Health** provides educational/informational resources on lead poisoning in a number of languages for parents. View that content here.

Additional content has been adapted from the **EPA** Lead in Soil guide, available here.