



HOW DO WILDFIRES IMPACT THE SOIL?

Here's everything you need to know.





In the wake of January's devastating fires, many people have questions about the state of the soil in our urban and wilderness areas. Fire can certainly have a big impact on soil health and contamination levels. However, it's important to understand that **those impacts can vary widely depending on factors like fire intensity, the location of the blaze, and what was burned.**

Here at TreePeople, our soil experts have been testing the soil in impacted areas to get a better sense of how these recent fires may have altered it. While there's still a lot we don't know, we've compiled this guide for those seeking to **better understand the relationship between fire, soil health, and contamination**—as well as some tips for those who are concerned about soil contamination in their own backyards.



HOW CAN FIRE CHANGE THE SOIL?

Fire can alter the composition of soil in a variety of ways.

It can impact **soil health**, by altering the fertility of the soil and its role in the ecosystem. This happens when the soil's existing microbiome and levels of organic matter are changed, and is a process that can either be **beneficial or destructive**, depending on the intensity of the fire and how much direct contact it has had with the soil.



Fire can also contribute to **soil contamination**. This happens when burned materials **deposit harmful chemicals into the soil**, and the level and nature of contamination depend on what has been burned. In wildland areas, where mostly plants are burned, contamination risk is quite low. But in urban areas the risk is higher, particularly when materials such as lead paint or treated wood catch fire.





DID THE RECENT FIRES CONTAMINATE OUR SOIL?

In areas like Altadena, where housing stock is older and might be coated in lead paint, the risk of **soil contamination as a result of ash deposition is higher**. You can start to gauge the contamination risk of different areas by looking at where ash has fallen, since ash typically has much higher contaminant concentrations than burned soil.

However, even when testing is done post-fire, it can be difficult to gauge where contaminants came from. It's very likely that soil in the fire-affected areas already had a good deal of pre-existing **legacy contamination**, which can result from things like past land use, leaded fuels, or industrial activity. While contaminants typically don't go away once they're already in the soil, surface contamination levels can also **fluctuate over time** due to factors like rainfall and wind dispersal, which erode and transport contaminants into surrounding areas or watersheds.

Because of this, **we still need a lot more data to understand the extent of contamination that may have resulted from these fires**.

WHO IS AT RISK FROM SOIL CONTAMINATION?

In urban areas, the most widespread type of contamination is **inorganic contamination**. Often referred to as ‘heavy metals,’ these contaminants can contribute to a wide variety of health problems, including **developmental harm and behavioral issues**. Because of this, it can be nerve-wracking to hear that they might be in your soil. Should you be concerned?



If you are a **healthy adult**, then the answer is probably not. You would need fairly extreme levels of contamination and repeated exposure to soil contaminants to get sick.



For **pregnant women, those with immune system conditions, and especially young children**, soil contamination can cause more serious health problems with repeated exposure. If an area is known to be contaminated, these groups should minimize **ingesting, inhaling, or touching** the soil, since these are the main ways contaminants enter the body.

If you are worried you or a family member have been exposed, ask your doctor for a blood test.

HOW CAN I FIX CONTAMINATED SOIL?

The most effective way to remove contamination is to scrape the top 3-6" of the contaminated soil and dispose of it. However, we only recommend this in situations where contaminant levels are **extremely high**, because it is costly, degrades the overall quality of the soil, and ultimately just moves the contamination elsewhere.

In most cases, you can mitigate the risks of contamination by **covering the area with clean soil, compost, and mulch, and then growing plants to prevent this new material from eroding.**



This will help eliminate inhalable dust, and stops soil from making contact with skin. It will also help prevent children from ingesting soil. If you grow edible plants, it's unlikely heavy metals will enter them as they grow. However, **root vegetables or leafy greens grown in contaminated soil may have particles stuck to their surface**, so it's best to avoid eating them, and to use raised beds to grow your carrots and kale in the future.

HOW CAN I TEST MY SOIL FOR CONTAMINATION?

Soil testing can be costly and requires special equipment, but there are a few ways to get testing for free.

- ◆ Right now, LA County is offering **free lead testing** for properties downwind of the Eaton Fire.
- ◆ USC is also offering **free lead testing** for people in the Eaton and Palisades burn zones.



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If you want more **comprehensive heavy metal testing**, universities such as UMass Amherst and Rutgers offer reasonably priced soil testing services for heavy metals. Commercial environmental laboratories also offer soil testing services for a fee.

For more information on soil and links to these resources, head to the link in bio!

