undr YOUR SOIL REPORT

Hi Carson,

Let's see what's in your dirt!

Health & Safety Plus • Redding, CA

What we found in your sample

Share my soil's story

23/54 Elements detected in your sample →

2/10 Heavy metals detected →

0/12 Petroleum compounds found →

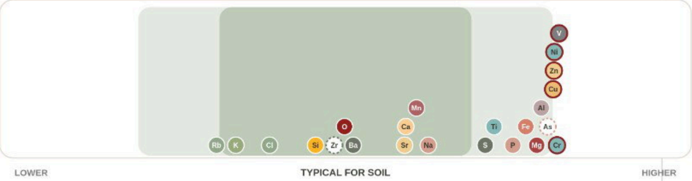
5 Elements we picked out to explain →

ANYTHING NOTEWORTHY?

Your sample fits your area

Every element we measured is either in the typical range or explained by where you are. Five elements, chromium, copper, nickel, vanadium and zinc, would look high measured against the country as a whole. They are ordinary for the ground you are standing on. That is the rock underneath showing through, and it shows up in most samples from your area. Chromium reads above the usual range on the scale we use for heavy metals, but soil near you runs that high on its own, so it is not counted as a finding here. The heavy metals section explains it.

Tap any dot to read about that element.



🟩 Where most soil sits ⬜ Still typical for soil ● Red outline: outside the typical range ○ Hollow dot: trace amount

5 of your 23 elements sit outside the green band. Being outside it is not automatically a problem, and the sections below say which of them mean anything.

CONTAMINANTS

2 detected

Chromium reads above the usual range on the screening scale but is ordinary for your area. Tap for more information.

OUTSIDE THE TYPICAL RANGE

5 elements

They run high against the country as a whole but are ordinary for your area.

SALT LEVEL

Typical

Good news for whatever you plant, and easier on your pipes if you have a well.

MOST DISTINCTIVE

Chromium

4.6× above the typical range

SOIL TEXTURE

Clay leaning

It holds water and nutrients, and it is slower to drain and dig.

YOUR SAMPLE

Getting to know your dirt

Here is a name for what you sent us, and some things that shape how it behaves.

IF WE HAD TO GIVE YOUR SAMPLE A NAME

Share my soil's name

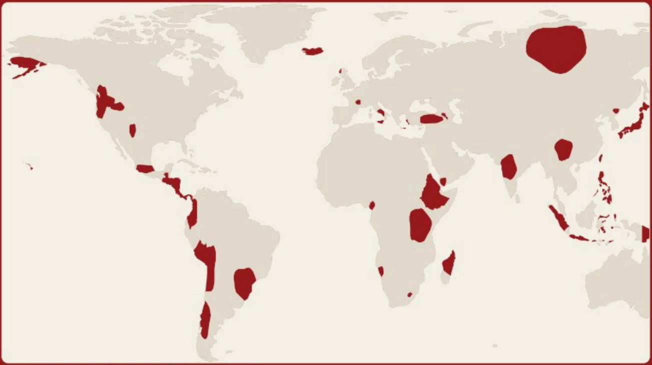
Volcanic

SERPENTINE TYPE

Iron, magnesium, chromium and nickel all came in high together, which is the fingerprint of soil that formed from volcanic rock. This is young ground by geological standards, and it is rich in the metals that come up from deep in the earth.

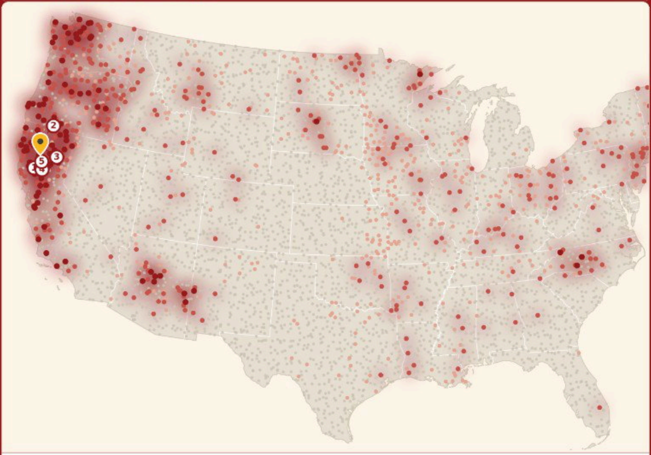
Chromium, nickel and magnesium far ahead of everything else, which is the signature of serpentine: a greenish, magnesium-heavy rock that started out as ocean floor and was pushed up onto land. The Klamath Mountains are the classic example.

What it means for you: This soil is likely shallow, stony and quick to drain, and it probably sits over hard rock not far down. Gardeners on ground like this usually build raised beds or bring in topsoil rather than fighting it, and most of the metals that came in high come from the rock underneath rather than from anything that happened at the surface.



Shaded areas are where this kind of ground is common.

Name of every shaded area on this map 46 ▾



●●●● Less like yours → more like yours ● Pin: your zip code ① Numbered: your five chemistry twins

YOUR FIVE CHEMISTRY TWINS

① **Glenn County, CA** 80 mi
② **Klamath County, OR** 111 mi
③ **Lassen County, CA** 76 mi
④ **Glenn County, CA** 83 mi
⑤ **Tehama County, CA** 50 mi

WHAT THEY SHARE WITH YOU

Chromium, nickel and copper came in high together and rubidium and potassium came in low, and the dark dots are the survey sites where the same pattern shows up. Each dot is one survey site, shaded by how closely its chemistry matches yours.

These dots show where the survey found chemistry like your sample's. They say nothing about your land itself, and the pin marks your zip code, not your yard.

SIGNATURES IN THIS SAMPLE

The leanings that show in the chemistry. Tap one for what it means.

- **Volcanic signature** ⌄
- **5 ore metals above typical** ⌄
- **Rare earth rich** ⌄
- **Clay leaning** ⌄
- **Iron rich** ⌄
- **Phosphate rich** ⌄

START HERE

What's a ppm?

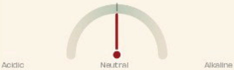
Every number in this report is a ppm. It takes about a minute to learn how to read them all.

YOUR GROUND

Your ground's stats

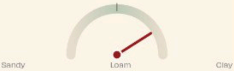
Six leanings read from the chemistry, each set against typical U.S. soil, each with a test you can run at home.

ACIDITY



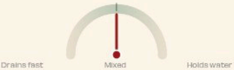
Likely neutral

TEXTURE



Clay leaning

DRAINAGE



Puddles, then bone dry

Calcium sits near typical, which is the range most plants are comfortable in. Nothing here to work around.

Try this at home: vinegar on a spoonful >

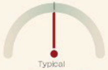
Aluminum came in at 1.7× typical against silicon, which points to clay. Clay is heavy going with a shovel, it puddles after rain and it can crack when it bakes, and the upside is that it holds onto water and nutrients once plants are established.

Try this at home: roll a ribbon >

The chemistry says clay, and ground on magnesium-heavy rock like this is often shallow, so it can go from standing water to dust in a week. Gardeners on ground like this usually build raised beds.

Try this at home: the jar test, then dig after a storm >

SALT

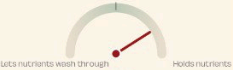


Typical

Sodium came in at 11,170 ppm, which is an ordinary amount for soil. Salt sensitive plants are not at a disadvantage here.

Try this at home: look for a white crust >

NUTRIENT HOLDING POWER

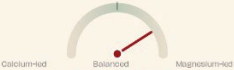


High

Clay and magnesium together hold onto whatever goes into the ground, so compost lasts a long time here and so does anything else that gets added.

Try this at home: the mulch check >

CALCIUM TO MAGNESIUM



Magnesium-heavy

Magnesium came in at 3.2× typical, which is what serpentine does to soil. Serpentine is a greenish, magnesium-heavy rock that began as ocean floor, and it sits under a lot of ground with this chemistry. Many garden plants find magnesium-heavy ground hard going, and the natives that grew up on it, along with most Mediterranean herbs, do fine.

Try this at home: slick as soap >

Would it be happy here?

Pick a plant. The answer is read from the six stats above, and it is a leaning, not a promise.

Blueberries · Lavender · Tomatoes · A lawn · Roses · Fruit trees · Hydrangeas · A vegetable bed · Native plants

BLUEBERRIES

Would probably sulk here

Likely neutral · Puddles, then bone dry

Blueberries want acid, sharply drained ground, and this sample leans the other way. Gardeners with ground like this tend to grow them in pots or a raised bed of acidic mix rather than fight the soil.

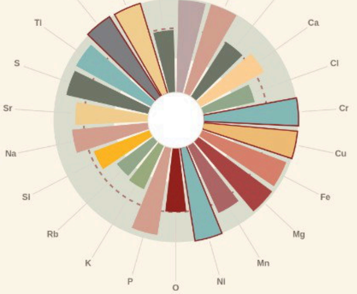
Confirm first: A pH strip. A reading under 6 means the ground suits them after all.

These are leanings read from the chemistry of the sample you sent, checked against typical U.S. soil. They can't tell you the exact pH or what is on offer to roots this season. Your county extension office runs that test for about $20, and it reads well next to this page.

EVERYTHING AT ONCE

Element Breakdown Fingerprint

Every sample has a fingerprint. This is yours. It looks a little like an eye, and it reads like a fingerprint: each element is plotted against a typical reference range, so you can see at a glance what came in below, within or above what is commonly found in soil. The dashed ring is a typical reading and the green band around it is the typical range. **Click any spoke** to read about that element.

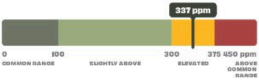


○ The ring is the typical reading ● The green band is the typical range ☐ Outlined, above the typical range

What Stood Out In Your Sample

Five elements read high against soil nationally but are ordinary for your area. We picked the 5 that landed furthest from a typical reading, the ones that make your dirt *your* dirt.

Cr **Chromium**
337 ppm



ELEVATED **ABOVE MOST U.S. SOIL**

Chromium came in above the usual range. Away from old industrial areas, a reading like this is usually nothing to worry about, since nearly all chromium in soil is the harmless form and the harmful kind from industry is under one percent of what soil holds. Volcanic rock underneath reads this way on its own, and so does industry.

YOUR READING
337 ppm
Margin of error ± 76 ppm

WHERE THAT SITS
Elevated

HOW YOUR CHROMIUM COMPARES

This scale is a screening scale built on EPA reference values. But there is a different question: where does the reading sit among U.S. soils?

Typical range, U.S. soil	**5 to 74 ppm**
Typical range near you	**62 to 584 ppm**
Your sample	**337 ppm**

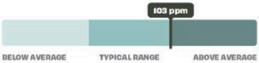
Against the country as a whole, that is **higher than most soil**. Against soil near you, it is **on the high side of average**.
Soil around you runs high in chromium. It comes from the rock underneath, and it shows up in most samples from this area.

SOME PEOPLE FOLLOW UP ON THIS

Above about 200 to 300 ppm, some people would consider following up on this reading, especially near industrial history. The first step people usually take is the separate hexavalent chromium test, which tells the harmless form from the harmful one, since a soil screen reports total chromium. In the meantime people generally keep kids and pets off the bare ground in that spot. Your local environmental agency can talk it through.

Your local environmental agency can tell you about testing and cleanup programs in your area. **Where to start is in Additional Resources below →**

Ni **Nickel**
103 ppm



ABOVE AVERAGE FOR THE U.S.

Nickel came in above the typical range, which is nothing to worry about under about 200 ppm, the point where skin reactions in people and stress in animals that eat soil can start. Mineral-rich rock underneath is the usual natural reason, and old plating or metal-finishing sites, sewage sludge spread as fertilizer, and some fertilizers are the human ones.

YOUR READING **103 ppm** Margin of error ± 35 ppm

HOW MUCH
2.6× above the typical range
Typical soil runs 2.6 to 40 ppm

HOW COMMON IN U.S. SOIL
Uncommon
■■■□□
3rd most distinctive in your sample

HOW YOUR NICKEL COMPARES

Typical range, U.S. soil	**2.6 to 40 ppm**
Typical range near you	**39 to 285 ppm**
Your sample	**103 ppm**

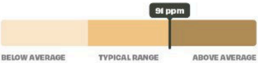
Against the country as a whole, that is **higher than most soil**. Against soil near you, it is **right in the typical range**.
Soil around you runs high in nickel. It comes from the rock underneath, and it shows up in most samples from this area.

WORTH UNDERSTANDING

Plant effects show up nearer 500 ppm, well above the typical range, and if plants come up stunted, adding organic matter is what people reach for, since it ties up whatever nickel is loose. Nickel from rock stays locked in minerals, so a reading like this mostly tells you what the ground is made of.

Cu Copper

91 ppm



ABOVE AVERAGE FOR THE U.S.

Copper came in above the typical range, which is nothing to worry about under about 200 ppm, where livestock and pets can see liver effects, while plants react around 100 to 200 ppm. A reading like this usually says more about volcanic or mineral-rich rock underneath than anything added, though copper sprays and treated wood leave it behind too.

YOUR READING **91 ppm** Margin of error ± 30 ppm

HOW MUCH
1.9× above the typical range
Typical soil runs 3.6 to 48 ppm

HOW COMMON IN U.S. SOIL
Uncommon
■■■□□
4th most distinctive in your sample

HOW YOUR COPPER COMPARES

Typical range, U.S. soil	**3.6 to 48 ppm**
Typical range near you	**28 to 124 ppm**
Your sample	**91 ppm**

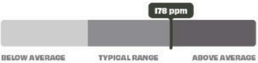
Against the country as a whole, that is **higher than most soil**. Against soil near you, it is **right in the typical range**.
Soil around you runs high in copper. It comes from the rock underneath, and it shows up in most samples from this area.

WORTH UNDERSTANDING

If treated wood or old copper sprays are the likely source, keeping a vegetable bed away from that spot is the usual precaution. Where the rock underneath is the source, there is nothing to change, and plants that come up full and green tell you copper isn't bothering them.

V Vanadium

178 ppm



ABOVE AVERAGE FOR THE U.S.

Vanadium came in above the typical range, and that is nothing to worry about under about 200 ppm, the mark where crop growth can slow and where long exposure has been linked to lung and kidney irritation. Under that mark, a high reading is mostly the rock underneath talking, usually volcanic rock or dark, layered shale.

YOUR READING **178 ppm** Margin of error ± 77 ppm

HOW MUCH
1.3× above the typical range
Typical soil runs 11 to 139 ppm

HOW COMMON IN U.S. SOIL
Uncommon
■■■□□
The most distinctive reading in your sample

HOW YOUR VANADIUM COMPARES

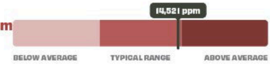
Typical range, U.S. soil	**11 to 139 ppm**
Typical range near you	**93 to 208 ppm**
Your sample	**178 ppm**

WORTH UNDERSTANDING

If you're on a well, having the water tested is what some people do with a number that runs high, since groundwater near mining or industrial ground can pick up vanadium. In a garden, crop growth slowing is the only sign to watch for, and readings past 500 ppm are tied to mining country.

Against the country as a whole, that is **higher than most soil**. Against soil near you, it is **right in the typical range**.
Soil around you runs high in vanadium. It comes from the rock underneath, and it shows up in most samples from this area.

Mg **Magnesium**
14,521 ppm



TYPICAL RANGE

Magnesium landed inside the typical range, which is where most soil lands, and it is nothing to think about. Plants cannot photosynthesize without magnesium, and a reading here covers what they need with room to spare, since it stays put in soil for years unless heavy rain washes it out.

YOUR READING **14,521 ppm** Margin of error ± 271 ppm

HOW MUCH
Toward the high end of the typical range
Typical soil runs 400 to 15,540 ppm

HOW COMMON IN U.S. SOIL
Less common
■■□□□
5th most distinctive in your sample

NOTHING STANDS OUT
Plants have the magnesium they need at this level, and it stays put for years. If older leaves ever yellow from the edges inward while new growth stays green, that is the one sign that magnesium has run short, and it is easy to spot.

HOW YOUR MAGNESIUM COMPARES

Typical range, U.S. soil	**400 to 15,540 ppm**
Typical range near you	**6,490 to 33,670 ppm**
Your sample	**14,521 ppm**

Against the country as a whole, that is **higher than most soil**. Against soil near you, it is **right in the typical range**.
Soil around you runs high in magnesium. It comes from the rock underneath, and it shows up in most samples from this area.

Coming soon: once we have analyzed enough samples, this will compare your sample against every other sample UNDR has tested, not just a general soil average. The more people dig, the sharper this gets.

YOUR SAMPLE'S VANADIUM LEVEL IS IN THE RANGE OF

Scottish Highlands

Hills rolling toward cold lochs, peat bogs famous for producing rich, smoky single malt Scotch.

VANADIUM, 178 PPM IN YOUR SAMPLE

YOUR SAMPLE'S IRON LEVEL IS IN THE RANGE OF

Australia's Pilbara region

Sun-scorched plains blazing red-orange, ancient rock formations jutting from the earth, the ground so iron-rich it's been mined for decades, harsh land where only the toughest native spinifex grass takes root.

IRON, 42,520 PPM IN YOUR SAMPLE

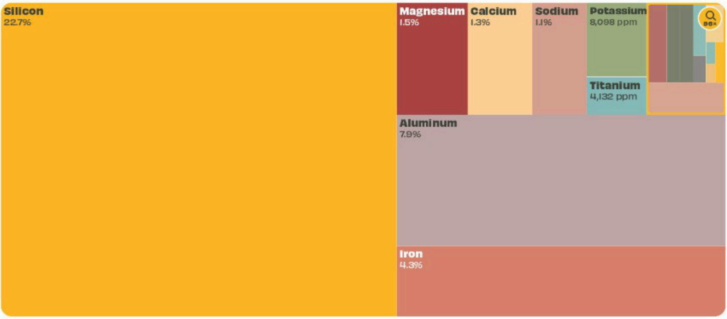
The building blocks of your soil

What a scoop of your dirt is made of

Whole sample 22 elements | **The last 1.0%** Magnified 96x | **The last 0.04%** Magnified 24x more

Back

Magnify 96x



Every block is drawn to scale with the others in its square, except the gold one, which is kept big enough to tap. Tap any block to read about that element. Tap the gold block to magnify it.

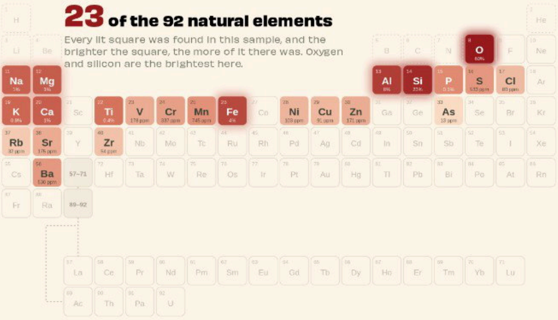
○ Show oxygen

Share this square

Oxygen is real and it is most of the ground, but it is locked inside the minerals rather than loose in your soil. It starts hidden so the other elements have room to show their names. Switch it on and the square shows the true proportions.

23 of the 92 natural elements

Every lit square was found in this sample, and the brighter the square, the more of it there was. Oxygen and silicon are the brightest here.



13 ppm — 60% Tap any lit square to read about that element.

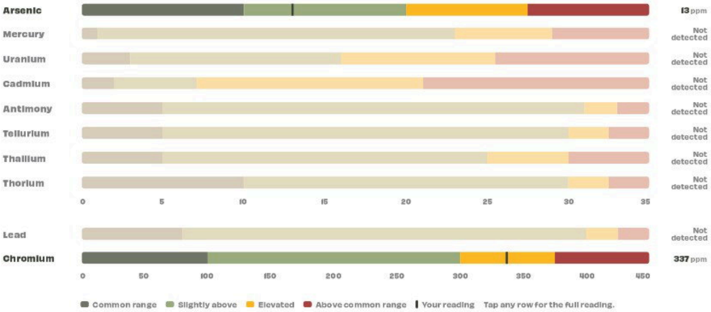
Share

Petroleum Contaminants

● Not Detected

Toxic Heavy Metals

We screened for all ten, and found two in this sample. The other eight did not show up. Chromium came in above the usual range, which is ordinary for soil near you, and it is explained below.



This is a screening result on the sample you sent us, not an assessment of your property.

EVERY ELEMENT

Complete list of elements

All 23 elements this kit found in your sample, one row each. Sort them however you like, and tap a row to read about that element.

O	**Oxygen** No. 8	**596,170 ppm** 60% of the sample	TYPICAL RANGE
Si	**Silicon** No. 14	**227,044 ppm** 23% of the sample	TYPICAL RANGE
Al	**Aluminum** No. 13	**78,836 ppm** 7.9% of the sample	TYPICAL RANGE
Fe	**Iron** No. 26	**42,520 ppm** 4.3% of the sample	TYPICAL RANGE
Mg	**Magnesium** No. 12	**14,521 ppm** 1.5% of the sample	TYPICAL RANGE
Ca	**Calcium** No. 20	**13,244 ppm** 1.3% of the sample	TYPICAL RANGE
Na	**Sodium** No. 11	**11,170 ppm** 1.1% of the sample	TYPICAL RANGE
K	**Potassium** No. 19	**8,098 ppm**	TYPICAL RANGE
Ti	**Titanium** No. 22	**4,132 ppm**	TYPICAL RANGE
P	**Phosphorus** No. 15	**1,181 ppm**	TYPICAL RANGE

Mn	**Manganese** No. 25	745 ppm	TYPICAL RANGE
S	**Sulfur** No. 16	533 ppm	TYPICAL RANGE
Ba	**Barium** No. 56	530 ppm	TYPICAL RANGE
Cr	**Chromium** No. 24	337 ppm	ELEVATED
V	**Vanadium** No. 23	178 ppm	ABOVE AVERAGE
Sr	**Strontium** No. 38	175 ppm	TYPICAL RANGE
Zn	**Zinc** No. 30	171 ppm	ABOVE AVERAGE
Ni	**Nickel** No. 28	103 ppm	ABOVE AVERAGE
Cu	**Copper** No. 29	91 ppm	ABOVE AVERAGE
Cl	**Chlorine** No. 17	80 ppm	TYPICAL RANGE
Zr	**Zirconium** No. 40	54 ppm	TRACE
Rb	**Rubidium** No. 37	32 ppm	TYPICAL RANGE
As	**Arsenic** No. 33	13 ppm	SLIGHTLY ABOVE

Elements Not Found

We looked for 31 more and found none in this sample.

Ac	Actinium	Sb	Antimony	At	Astatine	Bi	Bismuth
Br	Bromine	Cd	Cadmium	Cs	Cesium	Co	Cobalt
F	Fluorine	Fr	Francium	Ga	Gallium	Ge	Germanium
Hf	Hafnium	In	Indium	I	Iodine	Pb	Lead
Hg	Mercury	Mo	Molybdenum	Nb	Niobium	Po	Polonium
Pa	Protactinium	Ra	Radium	Re	Rhenium	Se	Selenium
Ta	Tantalum	Te	Tellurium	Tl	Thallium	Th	Thorium
Sn	Tin	W	Tungsten	U	Uranium		

Additional Resources

The kinds of people and services customers generally consider when something in a report catches their interest, and what each of them does.