



Yellowstone's acidic hot springs

Pools of dangerous geochemistry.

Yellowstone is home to many amazing geothermal features: Old Faithful, rainbow-hued hot springs and boiling mud pots. Many of these have a neutral or basic pH (≥ 7), but some are extremely acidic – as low as pH 2. **What's the chemistry behind these hot springs?**

Yellowstone National Park sits over a volcanic hotspot, and the geological activity superheats rainwater that has percolated deep underground. While underground, the water can pick up a variety of volcano-related chemicals, like hydrogen sulfide and carbon dioxide.

As the water rises back up to the surface, heat-tolerant microbes can convert hydrogen sulfide to sulfuric acid. That, plus dissolved carbon dioxide, contributes to the acidic pH of some of Yellowstone's hot springs and steam vents.

In other areas of the park, the volcanic gases that contribute to acidity can vaporize when the rising water boils. This means that the water reaches the surface at a neutral or basic pH (8-10).

It's crucial to heed warnings and stay on trails at Yellowstone, because you can't tell which pools are deadly hot just by looking at them.

*Can an acidic hot springs off a human?

Source:

<https://www.livescience.com/18813-yellowstone-hot-water-source.html>

<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2011GC003835>

<https://pubs.usgs.gov/of/2004/1316/pdf/OFR%2020041316.pdf>

<https://www.cpsc.gov/content/cpsc-warns-of-hot-tub-temperatures>

<https://www.menshealth.com/health/a19532321/man-dies-in-yellowstone-hot-spring/>

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