BEAUTY

Does Hard Water Actually Matter?

Hard water may affect dry skin, but the evidence on wider health effects is uncertain-and hardness is not the same as unsafe water.

The water is getting blamed

You step out of the shower, reach for the towel and notice that your skin feels dry again. Perhaps someone has already supplied an explanation: the water is hard. Suddenly the same suspect seems responsible for every concern involving the tap, from uncomfortable skin to whether the water is healthy enough to drink.

The phrase sounds alarming, but hardness describes the calcium and magnesium in water. It does not, by itself, tell you whether the water contains germs or harmful contaminants. Drinking-water quality varies by location because the source and the treatment vary, and treatment can include chlorine to kill germs or fluoride to help prevent cavities.

That distinction matters. Hard water can be worth investigating without turning it into a verdict on your water supply. The evidence supports a possible connection with dry skin and raises an unresolved question about cardiovascular health. It does not support treating every hard-water complaint as a medical threat.

The skin link is real but limited

The clearest human evidence in the supplied research concerns xerosis, the clinical term used in the study for moderately or severely dry skin. A 2021 Danish study examined more than 30,000 blood donors, comparing participants' self-reported dry skin with information about residential water hardness.

Among the participants, 15.5% reported moderately or severely dry skin. After excluding people with certain skin disorders, the researchers found that exposure to softer water was associated with a lower probability of dry skin, while harder water was associated with a higher probability. The association remained after people with dermatitis were excluded.

That is a meaningful signal, but it is not proof that hard water caused anyone's dry skin. The study was retrospective, water hardness was assigned from residential data and the skin outcome was self-reported. It can show that two things occurred together; it cannot establish that changing the water would resolve the problem.

The result is best used as a clue. If your skin is persistently dry and you live in an area with hard water, hardness may be one part of the picture. The study does not show that it is the only part, and the supplied evidence does not establish that buying a water-softening system improves dry skin.

If skin problems are prompting concern about your health, this stops being only a household-water question. A healthcare professional can assess the skin itself rather than assuming the tap is responsible. The honest sentence here is less satisfying than a sales pitch: the association exists, but the benefit of changing your water was not tested.

Hardness is therefore one characteristic of water, not a complete safety assessment.

Drinking it is a different question

The evidence does not justify equating hard water with unhealthy drinking water. Calcium and magnesium are the components under discussion, while drinking-water safety also depends on the condition of the source, the treatment it receives and any contaminants present. Hardness is therefore one characteristic of water, not a complete safety assessment.

Some research has even suggested that higher calcium and magnesium concentrations in drinking water might be associated with lower cardiovascular disease risk. A 2017 systematic review and meta-analysis combined seven case-control studies involving about 44,000 people. Participants exposed to the highest concentrations were compared with those exposed to the lowest.

The combined results suggested protective associations for both calcium and magnesium. But the studies varied substantially, and the review identified publication bias-the possibility that the available published literature did not represent all the research conducted. The authors concluded that the findings had limited robustness and generalisability and needed confirmation in better studies.

So hard water should not be sold to you as heart protection. Nor does this evidence support removing calcium and magnesium for health reasons. The research leaves an interesting possibility, not a recommendation. It is a reminder that "hard" and "harmful" are not synonyms.

There is a separate environmental question at very high concentrations. A 2019 meta-analysis examined calcium and magnesium toxicity in aquatic species, not human drinking-water effects. It found that toxicity depended partly on the calcium-to-magnesium ratio and concluded that the data were insufficient to create formal, broadly applicable hardness guidelines. Those findings should not be repackaged as evidence that ordinary household hard water harms people.

Plumbing problems are not health findings

Hardness can matter operationally even when the health case is uncertain. A 2023 meta-analysis of reclaimed-wastewater drip irrigation found that increasing concentrations of several substances, including water hardness and calcium ions, raised the risk of emitter clogging. This was agricultural equipment using reclaimed wastewater, not domestic plumbing, so it cannot quantify what will happen at your tap.

Still, it illustrates why conversations about hard water become muddled. A property of water can affect equipment without establishing that drinking the same water is dangerous. Evidence about irrigation emitters cannot be used to diagnose a skin problem, and evidence about dry skin cannot tell you whether a pipe or appliance needs attention.

The same discipline applies in reverse. If your concern is contamination, a hardness result does not settle it. Contaminated water can transmit infections, including Giardia, and disasters can wash germs or chemicals into water-storage systems. Fuel or toxic chemicals in water cannot be made safe simply by treating it at home.

During a water emergency or outbreak, official advice-not hardness-should direct what you use for drinking, cooking and brushing your teeth. Unopened commercially bottled water is described in emergency guidance as the safest and most reliable option when safe tap water is unavailable. That is a different situation from living with an ordinarily functioning supply that happens to be hard.

Read your water report this week

Your useful next step is not to guess from how the water feels. Get your water supplier's annual drinking-water report. Suppliers must provide one, and it tells you where the water came from and what contaminants were found. That gives you evidence about your local supply rather than a general claim about hard water.

This step takes the report itself, on paper or as a downloaded document. Look separately at hardness, if it is included, and at contaminants. Do not use one as a substitute for the other. If the report raises a health question you cannot interpret, write that question down and take it to a healthcare professional or the relevant water authority.

For the next week, keep the decision small. Read the report before buying anything intended to change the water. Hardness may help explain dry skin, but the available study did not test a remedy, and the cardiovascular evidence is too uncertain to turn calcium and magnesium into either villains or medicine.

A water report cannot answer every question, but it can stop the wrong question from taking over. You will know whether you are dealing with hardness, a listed contaminant or an active water-safety notice-and those are not the same problem.

Where this comes from

- Drinking Water

  MedlinePlus, U.S. National Library of Medicine · https://medlineplus.gov/drinkingwater.html
- Parasitic Diseases

  MedlinePlus, U.S. National Library of Medicine · https://medlineplus.gov/parasiticdiseases.html
- How to Create an Emergency Water Supply

  Centers for Disease Control and Prevention · https://www.cdc.gov/water-emergency/about/how-to-create-and-store-an-emergency-water-supply.html
- Emergency Water Supply Planning Guide for Hospitals and Healthcare Facilities

  Centers for Disease Control and Prevention · https://www.cdc.gov/water-emergency/hcp/toolkit/
- Cistern Safety and Disasters: Before, During, and After

  Centers for Disease Control and Prevention · https://www.cdc.gov/water-emergency/about/cistern-safety-and-disasters-before-during-and-after.html
- The association between water hardness and xerosis-Results from the Danish Blood Donor Study.

  PloS one, 2021 · https://pubmed.ncbi.nlm.nih.gov/34077478/
- Emitter clogging characteristics under reclaimed wastewater drip irrigation: a meta-analysis.

  Journal of the science of food and agriculture, 2023 · https://pubmed.ncbi.nlm.nih.gov/35018656/
- Challenges and future prospects for developing Ca and Mg water quality guidelines: a meta-analysis.

  Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 2019 · https://pubmed.ncbi.nlm.nih.gov/30509926/
- Cardiovascular diseases and hard drinking waters: implications from a systematic review with meta-analysis of case-control studies.

  Journal of water and health, 2017 · https://pubmed.ncbi.nlm.nih.gov/28151437/