**PAESTA Podcast Series- You Asked, We Answered**

**Episode 15- What is Hard Water?**

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Hey everyone, my name is Lathie Nichol, I’m a sophomore at Penn State Brandywine, and the purpose of this podcast is to talk to you today about hard water. As a human being you interact with water every day. If you don’t, well, you wouldn’t be alive to tell the tale. So needless to say, it’s pretty important to know almost all of the details about the water you drink every day. Have you ever washed your hands somewhere and felt like no matter how long you wash your hands it feels like you still have a layer of soap still on your hands? Or, have you ever done a load of dishes in your dishwasher and taken the dishes out when it’s done and noticed that there is this weird looking film or these white spots on them? This is all due to having hard water. Don’t be scared about it though, in almost every case, this won’t hurt anyone.

So, what exactly is hard water? Hard water simply put, is having a lot of certain minerals in your water. Hard water traditionally happens in homes that have wells. Most homes that have well water tend to not have treated water unlike many homes in cities. The main minerals in hard water is calcium and magnesium. These minerals come into contact with ground water that is flowing through the rocks that we stand on. The groundwater is then pumped from a well into millions of homes around the world. (1)

So let’s get into some of the nitty gritty about hard water. We’ve discussed some about hard water being comprised mostly of calcium and magnesium, let’s talk about how much calcium or magnesium is needed in water to be able to classify it as “hard”. The hardness of water is generally classified into four classes. The first class is 0-to-60 milligrams per liter, the second class is 61-to-120 milligrams per liter, the third class is 121-to-180 milligrams per liter, while the fourth and last class is anywhere above 180 milligrams per liter. These classes are also named as soft, moderately hard, hard, and very hard, respectively.(2) The long-term movement of excessively hard water through a houses plumbing can wreak havoc to the plumbing. Because of the excess minerals in the pipes, a build-up, or scale, forms on the inside of pipes and can eventually plug the plumbing. (1)

Hard water affects less than 10 percent of the population here in the United States, this is because public water supply systems serve up to 90 percent of the U.S. population. There are also private water systems that don’t have hard water, leaving less than 10 percent of the population to deal with hard water. (2)Public water supply systems don’t have hard water because they get most of their water from fresh surface water, this water can be from lakes, rivers, or reservoirs. This water is not terribly hard because they do not pick up a lot of calcium or magnesium from the ground around them. Water taken from huge underground aquifers are filtered and treated with chemicals such as chlorine to remove the hardness and many other pathogens in the water.(2)

There has been much research as to the health effects of drinking hard water, be it over a long amount of time or over small periods of time. As of now it is known that there are no bad effects to a person’s health. In fact, it can actually be healthier to drink hard water, this is because of the amount of minerals in the water. Drinking hard water can help people to obtain the optimal intake amounts of calcium and magnesium. Hard water also contains iron, zinc and phosphorus, all important minerals needed to have a healthy body. But, there can be side effects from drinking exceptionally hard water that will not affect a body’s longevity.(3) If someone drinks water that is exceptionally hard, they can suffer from diarrhea until they stop drinking the water.(6) So a word of advice if you’re traveling, bring bottled water if you go somewhere where you aren’t used to the water. If you don’t, the results could be unfortunate.

Thank you all for listening to my podcast on hard water. Once more, my name is Lathie Nichol and I am a student at Penn State Brandywine. I hope that I helped inform you on hard water and the effects it has on everyday life for everyone.

*(This audio file was recorded by Lathie Nichol on March 31, 2016.)*

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