

# Water as a Source for Magnesium

By Paul Mason

**M**agnesium (Mg) has been used to augment drinking water since ancient times to make it healthier. In 1697 in England, Dr. Nehemiah Grew promoted the use of Epsom Salts (Mg sulphate) in drinking water to prevent or treat heart disease, kidney stones and migraine headaches—the same ailments it is good for today.<sup>1</sup>

In 1836, the Hartwall family in Finland began treating water low in total dissolved solids (TDS) to create “artificial mineral water.” More than 150 years later, Hartwall is a company producing artificial mineral waters under the brand names Vichy Novelle and Vichy Original, each containing 110 milligrams per liter (mg/L) magnesium, with annual sales of 2.8 million gallons. Hartwall has used both magnesium chloride and magnesium sulphate to harden water.

## OPINION

### *From then to now*

Now, the Perrier-Vittel Water Institute is funding research into magnesium-in-water through the Nestle Research Center, Lausanne, Switzerland, and funding research at the University of California at Davis (see *EXTRA*) to prove that Mg in water is especially bio-available, or more easily absorbable by the body.<sup>2</sup>

Interest in Mg in water seems likely

to grow, as it's uncommon to get enough Mg from food. Average U.S. men get 327 milligrams per day (mg/day) from food, but the Recommended Daily Intake (RDI) is 420 mg/day, says the National Academy of Sciences.<sup>3</sup> As foods are increasingly processed, and soils become Mg-depleted, Mg intakes from food are likely to decline further.

### *Connection to POU*

The Mg issue is good for the point-of-use (POU) water treatment industry, because there's no way the municipal tap water companies can fortify tap water with magnesium. Not only would the cost be prohibitive, Mg in tap water is a nuisance and leaves unsightly mineral deposits on dishes, windows, cars and appliances. So, as the public becomes more aware of the health benefits of Mg in water, it will increasingly turn to

Soaking in hot springs of magnesium-rich mineral water can be very relaxing and therapeutic. Many cultures around the world have embraced such mineral baths for millennia. Soaks in mineral baths may be a good way of getting transdermal uptake of Mg through the skin, just as many medicines are now given by skin patches. There is, however, a big difference between soaking in mineral water, and just washing off dirt. Mg prevents soap from lathering. So, for people on the go who just want to shower and run, soft water and soap are convenient. Upscale consumers may want their tub to be filled with Mg-rich mineral water but their shower plumbed with soft water.

## EXTRA You're Soaking in It

To enlarge the POU market for Mg-rich water, research is needed to measure and prove consumers obtain transdermal uptake of Mg when soaking in mineral baths. That is, this phenomenon needs to be documented and quantified in a scientific way, instead of just relying on testimonials and the practices of many cultures. Professor Judith Turnlund at the University of California at Davis is doing Mg uptake studies funded by Perrier Vittel S.A., now Nestle Waters S.A., and is qualified to do transdermal uptake studies. For background on her research found at the U.S. Department of Agriculture, see: [www.ars.usda.gov/is/AR/archive/mar01/nutr0301.htm](http://www.ars.usda.gov/is/AR/archive/mar01/nutr0301.htm) or [www.ars.usda.gov/is/pr/2001/010316.htm](http://www.ars.usda.gov/is/pr/2001/010316.htm)

the POU treatment industry to make drinking water healthier.

There are a couple ways the POU water treatment industry can jump on the bandwagon of Mg-rich water:

1. If the source water is already rich in Mg—at least 25 mg per liter (L)—it may only need alternative disinfection at the kitchen sink to preserve its healthful qualities. Filtration followed by ultraviolet light and/or ozone are good possibilities for the kitchen, with reverse osmosis (RO) or softening reserved for laundry, dishwashing and showers.

2. If the source water is Mg-poor, or you're using RO or softening of the entire household supply, then add Mg back to the water in the kitchen for drinking and cooking. There are all sorts of metered-injection devices used in chemical processing plants, so all that's needed are cheap, simplified versions for the home.

Magnesium sulphate and magnesium chloride are inexpensive additives, but the best flavor may be from magnesium bicarbonate (which is what nature provides in what some consider the best-tasting spring waters). Mg bicarbonate is made from Mg carbonate treated with CO<sub>2</sub> in a century-old method called the

Pattison Process. The optimal level of Mg in water is in the range of 90-110 mg/L, as that's sufficient to make up the usual dietary shortfall of Mg.

### Conclusion

The four sources of commonly available drinking water are the POU industry, bottled water, municipal tap water and well water. Municipally treated tap water is rapidly losing share to POU and bottled water, mostly because of health concerns. So, the division of market share between POU and bottled water will be determined in part by which industry can deliver the healthiest water to consumers. With Perrier, now Nestle Waters, forging ahead with research on how to enhance the healthfulness of bottled water, it behooves the POU industry to likewise fund research on how to make its water more healthful.

### References

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### About the author

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