AMERICA'S FOREMOST HEALTH & PREVENTIVE MEDICINE MAGAZINE

# Let's Live

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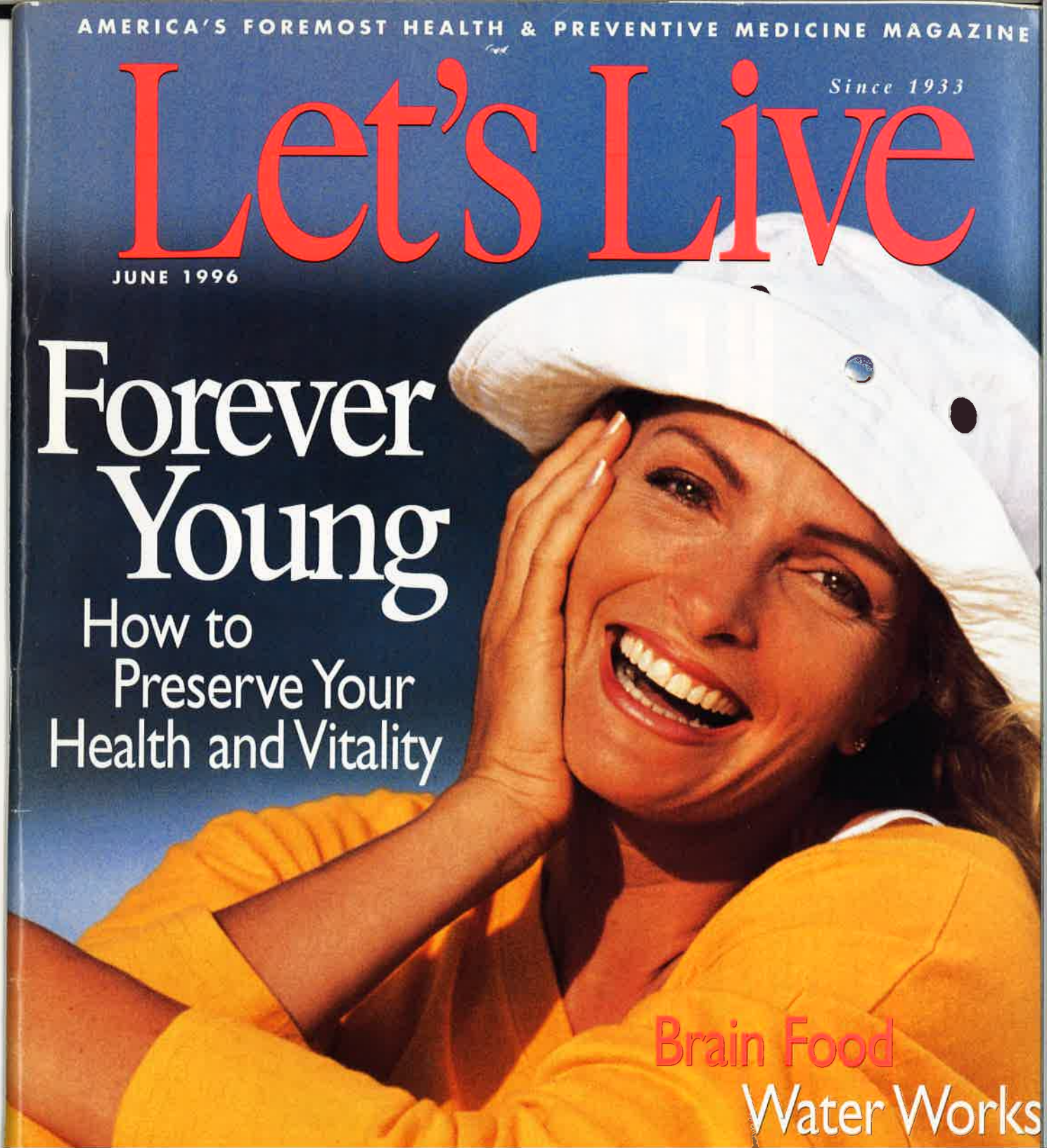

## Forever Young

How to Preserve Your Health and Vitality

Brain Food

Water Works

## What You Can't See Can Hurt You

Water is the universal solvent and carries a variety of substances, some of which are beneficial, but many of which are not. These contaminants—chemicals, radiation and microorganisms—threaten thousands of lives as they regularly find their way into public drinking water systems. For example:

- Industrial solvents like benzene and toluene are carcinogenic and adversely affect the kidneys, lungs and nervous system.
- Water-borne bacteria like *Giardia lamblia* and *Cryptosporidium* are not killed by chlorine, the primary disinfecting agent used by water suppliers, and have caused thousands of illnesses and a number of deaths over the years.
- While the upside of chlorination is some reduction of bacteria levels in water, the downside is that when water already contaminated with organic compounds and other pollutants reacts with chlorine, trihalomethanes (THMs), which are also carcinogenic, are produced. In fact, a Natural Resources Defense Council report, *Think Before You Drink: The Failure of the Nation's Drinking Water System to Protect Public Health* (September, 1993), says that THMs alone are associated with more than 10,000 bladder and rectal cancers per year, which is about 30 cancers per day.
- Lead is one of the most worrisome drinking-water pollutants. It is carcinogenic, threatens fetuses, infants and children with nervous system damage, and is linked to permanent learning disabilities and hyperactivity. Most lead exposure results from old home plumbing systems (i.e., service pipes from water mains, leaded solder in plumbing and brass faucets). Also, consumers with soft water, which is corrosive, have higher risks of lead exposure.
- In rural areas, pesticides might be seeping into private wells. Pesticides also pose a threat to some public water supplies. A 1990 Environmental Protection Agency (EPA) report estimates nearly 10,000 community wells contain pesticides, which are linked to cancer as well as liver, kidney and nervous system damage.
- Radiation contamination in drinking water occurs in both surface water and ground water as a result of fission products like strontium 90 or naturally occurring radium. Radon, a naturally occurring radioactive gas, has been estimated by the EPA to be responsible for more cancer deaths than all other drinking-water contaminants combined.

Although many cities and counties provide residents with clean drinking water, many others do not, and specific contaminants (e.g., bacteria, pesticides, industrial solvents) are likely to vary from area to area.

## Regulations Fall Short

Technically, municipal water suppliers are required to follow regulations set by the Safe Drinking Water Act (SDWA) in 1974 and amended in 1989; in reality, the rules allow Maximum Contaminant Levels, which permit low levels of toxins to remain in the water, due to the cost considerations of removing them. The SDWA requires water-system operators to report to the EPA and inform their customers of any excessive contaminant levels detected in the water supply. But, according to the editors of *Staying Healthy in a Risky Environment: The New York University Medical Center Family Guide* (Simon & Schuster, 1993), a study of EPA computer records found that operators failed to notify customers that they were drinking substandard water in 94 percent of the cases where the systems violated the law.

According to David Steinman in his book, *Diet for a Poisoned Planet* (Harmony Books, 1990), people should demand stricter regulations from Congress, not the EPA, which enforces and implements the law. Steinman asserts that there is no safe level of exposure to cancer-causing substances in water supplies.

Also, the SDWA excludes privately owned wells and non-public water suppliers from regulation, so there is no law to protect people from contaminated water coming from these sources.

The public water supply comes mostly from two sources: surface water and ground water. Surface water is water in rivers, ponds or lakes, which becomes contaminated by acid rain, storm-water runoff, pesticide runoff and industrial waste. Ground water is generally found in aquifers running below the earth's surface, and becomes contaminated by pesticides and fertilizers, hazardous wastes, industrial wastes, leaking underground gasoline storage tanks or discarded household chemicals.

## Test the Waters

To find out what's in your tap water, call your local water supplier and ask for a water-monitoring report. Steinman and co-author Samuel S. Epstein, M.D., in *The Safe Shopper's Bible: A Consumer's Guide to Nontoxic Household Products, Cosmetics, and Food* (Macmillan, 1995), recommends people use key words in their requests to get a more complete report. They suggest asking for weekly or monthly average measurements in a 12-month period for these contaminants: bacteria; volatile organic chemicals and other industrial chemicals; total dissolved solids; nitrates; pesticides; radiation; trihalomethanes and chloroform; metals; minerals (including fluoride); and alkalinity. Steinman and Epstein also warn that because of variables (e.g., water companies may "crunch the numbers" to make the water appear less contaminated; or contaminants, such as lead from your home pipes, won't show up), you may not want to depend solely on their information. You can take a water sample to a local laboratory for analysis or send it to one of the national water-testing labs. *(See sidebar.)*

## What You Can Do

Once you know what is in your water, you can decide which method to use to get cleaner water. If your water is already clean, you're lucky; if it's not, there are several filtration methods and/or bottled waters to choose from—different methods filter out different substances.

When trying to match a filtration system to the contaminants you want to eliminate, you should consider not only the kind of filter, but also where it is used. Many people combine two or more types of filters in their home water-treatment systems. Be aware that all filters need cleaning and/or replacing regularly, so consider the system's maintenance requirements before buying.

**Point-of-use filters** fit either under the sink or at the faucet. Filters at the faucet are less effective than under the sink because the water doesn't come into contact with the carbon long enough to be effective.

**Point-of-entry filters** filter all of the water coming into your house, not just your drinking water. This is an important distinction because you also absorb water contaminants through skin: The hotter the water (e.g., showers, baths, dishwashers), the more volatilized chemicals become; and, children absorb more per pound of body weight than adults.

**Screen filters** are good at removing bacteria and are rated for the size of bacteria they remove. **Depth filters** are good for removing suspended solids and particulates and are rated for the size of the substances they remove from the water.

**Activated carbon filters** (granulated and block are best) are some of the most popular. The activated carbon absorbs organic compounds, including radon and THMs, but not metals or man-made fission products. Also, they promote bacteria growth, so they need to be combined with another filter.

**Reverse osmosis** is a good system for removing a variety of contaminants like metals, radiation, organic compounds, microorganisms and pesticides, but not THMs and nitrates. They work slowly, however, producing only about two gallons per day, and waste water.

**Distillation** removes a variety of contaminants—but not THMs or other volatile organic compounds—by boiling the water and condensing the steam. Since distillers remove minerals like calcium and magnesium, there is little taste to the water.

**Water-softener systems** are not meant to be water purifiers—they serve to remove calcium and magnesium (important for heart health) from "hard" water. They also add sodium back into the water as part of the process. Steinman and Epstein recommend an activated carbon filter with a reverse-osmosis system to remove a range of contaminants. *(For more help, see sidebar.)*

Whichever method you choose, do it! Just as clean water is essential to good health, so can contaminated water be the cause of ill health.

## where to go to find out more

For a shopping resource guide, look for these two books at your local health food store:

*The Safe Shopper's Bible: A Consumer's Guide to Nontoxic Household Products, Cosmetics, and Food* by David Steinman and Samuel S. Epstein, M.D. (Macmillan, 1995)

*Nontoxic, Natural, & Earthwise: How to Protect Yourself From Harmful Products and Live in Harmony With the Earth* by Debra Lynn Dadd (Tarcher/Putnam, 1985)

The Natural Resources Defense Council has three publications on drinking water for sale. For information, write to: NRDC Inf[illegible] 40 West 20th Street, New York, NY [illegible] or call: (212) 727-2700.

For general information about [illegible] water safety, regulations and contamination, call the Environmental Protection Agency Safe Drinking Water Hot Line: (800) 426-4791.

If a local laboratory can't help you (look under "laboratories, testing" in your phone book), contact these mail-order water-testing companies:

National Testing Laboratories, Inc.
6555 Wilson Mills Rd.
Cleveland, OH 44143
(800) 458-3330

Suburban Water Testing Laboratories, Inc.
4600 Kutztown Rd.
Temple, PA 19560
(800) 433-6595

## bottled water: what's *the* difference?

Safe or not, many people simply don't like the taste of their local tap water. For them, water that has been additionally purified is the way to go. To simplify the confusion over types of bottled water, the Food and Drug Administration (FDA) published new rules in November 1995 to establish a standard labeling system. The provisions—which lay out label wording for different types of bottled water—took effect in May.

The government document explaining the new rules was close to 300 pages long, but here's the basic idea:

"Spring water" is collected from an underground formation from which the water flows naturally to the surface of the earth. Water can be collected directly at a spring or at a bore hole tapping an underground spring.

"Mineral water" has certain minerals dissolved in the water, but less than 250 parts per million of total dissolved solids (TDS). The levels of these minerals have to be constant at the point where the water is collected for bottling.

"Purified water" has been produced by distillation, deionization or reverse-osmosis. This type of water can also be labeled "demineralized water," "deionized water," "distilled water" or "reverse-osmosis water," depending on how it's produced.

"Sparkling bottled water" is water that contains natural amounts of carbon dioxide. In some cases, sparkling bottled water is captured with its natural carbonation intact. In other cases, bottlers re-inject carbon dioxide into the water to bring it back to natural levels of carbonation.

Whenever bottled water comes from a public water system and is sold without additional treatment (it does happen), labels will state that the water is "from a community water system" or "from a municipal source."

—*Amy Roffmann New*