



SINCE 1933

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- Senior Editor, BottledWaterWeb
- Author: Our World of Water
- Water Journalist: Fox News Health, Draft, Water Quality Products Magazine, The Tasting Panel, Food & Beverage World, Planet Experts
- Judge: Global Bottled Water Awards (Prague, Barcelona, France, Dubai)
- Judge: Berkeley Springs International Water Tasting (Berkeley Springs, WV)

- Drink More Water
- Think About Water
- Respect Water
- Fight For Water

TO DISCUSS

- History & Popularity of Bottled Water
- Testing Standards
- Health Risks of Plastic Bottles
- Effects of Nanoplastics on the Human Body
- New Bottle Technology

As a beverage category
in 2017, 420 billion liters (by volume)
of bottled water were sold globally
worth \$194 billion.



BOTANICALLY INFUSED SPRING WATER
one
ORIGINS
organic
hibiscus
raspberry
& mint

Qomolangma
glacier
Everest
Glacier
Natural Artesian Mineral Water
Deuterium Depleted Water
333 ml

BRU
BRU
BRU
BRU

WAIAKEA
HAWAIIAN
VOLCANIC WATER
NATURALLY ALKALINE
ELECTROLYTE
DEEP WELL WATER

NATURAL
MINERAL WATER
SODIUM FREE
AQUA
CARPATICA
750 ml

AGUA MINERAL NATURAL
SOLAN
DE CABRIAS
0,5 L

RAW
LAVA/ICE
500 ml



Bouteille, verre et éventail
à destination des curistes

Fin XIX^e – Début du XX^e siècle

Bottle, glass and hand-held
fan for spa visitors

End of the 19th – Beginning of the 20th century

Plateau du Gavot

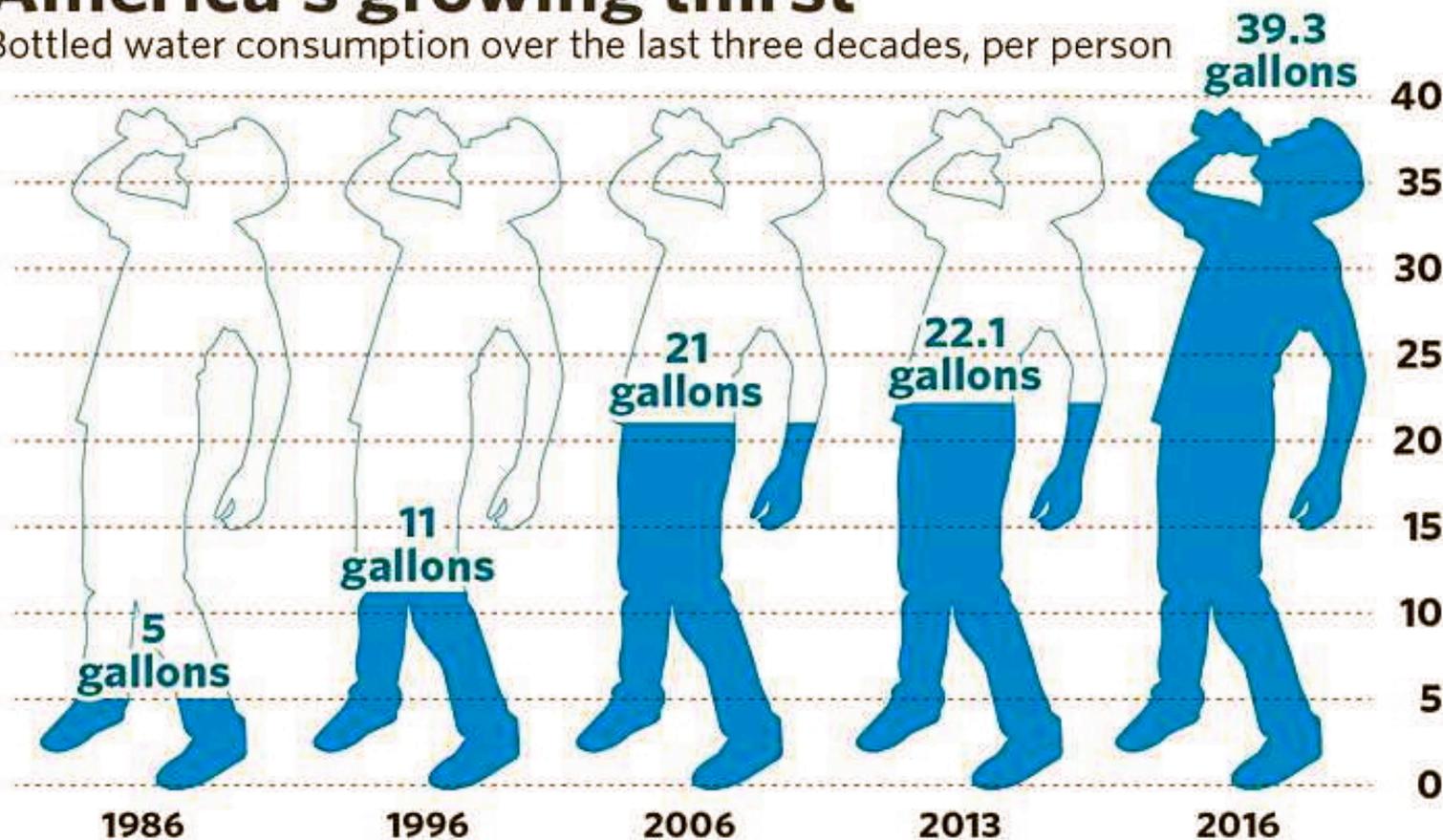






America's growing thirst

Bottled water consumption over the last three decades, per person



Source: Beverage Digest

Who Is Drinking It? The Top 10

- China
- United States
- Indonesia
- Mexico
- India
- Brazil
- Germany
- Italy, Turkey & France

Testing Standards

The image shows the logo for the Food and Drug Administration (FDA). It consists of the letters "FDA" in a bold, white, sans-serif font, centered on a solid blue rectangular background. The letters are closely spaced and have a clean, modern appearance.

FDA

- In 1974 the Safe Drinking Water Act gave regulatory oversight of public drinking water (tap/muni) to the EPA. FDA subsequently took responsibility for ensuring that the quality standards for bottled water are compatible with EPA standards for tap water.
- Each time EPA establishes a standard for a contaminant, FDA either adopts it for bottled water or finds that the standard isn't necessary for bottled water.
- For example - standards for bottled water and tap water differ. Because lead can leach from pipes as water travels from water utilities to home faucets, EPA has set its limit for lead in tap water at 15 parts per billion. For bottled water, for which lead pipes aren't used, the lead limit is set at 5 ppb.

How Many Chemicals?

- “The Society of Chemical Manufacturers and Affiliates reports that there are about 25,000 chemicals in commerce but this is probably a minimum estimate. There are somewhere between 25,000 and 84,000 chemicals in commerce in the United States.”
- Lynn R. Goldman, Dean of the George Washington University School of Public Health and Former Assistant Administrator for Toxic Substances at EPA

Title 21 of the *Code of Federal Regulations*

- 21 *CFR* §165.110[b]) “establish allowable levels for contaminants (chemical, physical, microbial and radiological) in bottled water
FDA also has established Current Good Manufacturing Practice (CGMP) regulations for the processing and bottling of bottled drinking water.”

- *21 CFR Part 129.* “These regulations require that bottled water be safe and that it be processed, bottled, held and transported under sanitary conditions. Processing practices addressed in the CGMP regulations include protection of the water source from contamination, sanitation at the bottling facility, quality control to assure the bacteriological and chemical safety of the water; and sampling and testing of source water and the final product for microbiological, chemical, and radiological contaminants. Bottlers are required to maintain source approval and testing records to show to government inspectors.”

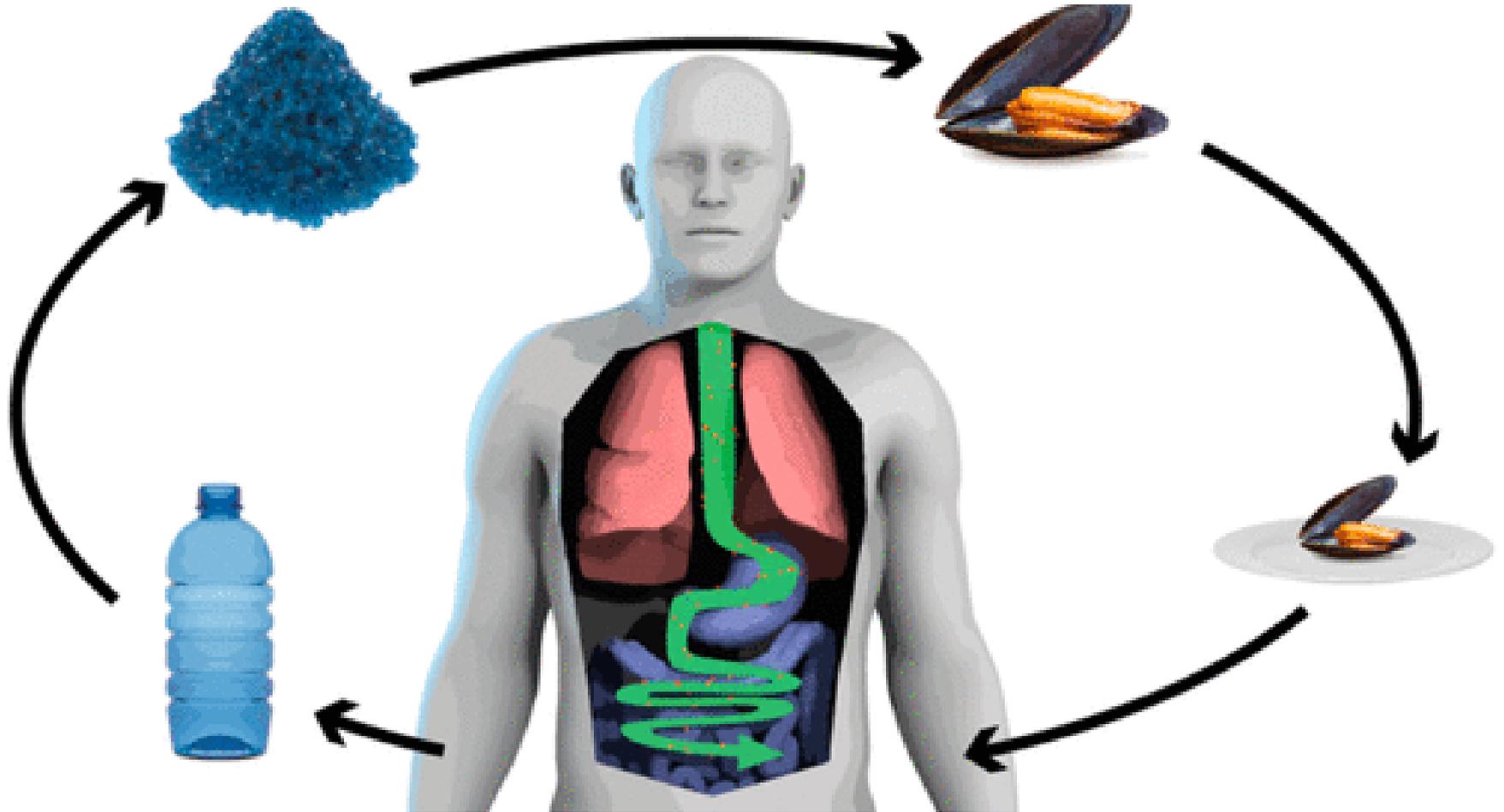
The Perrier Problem

- February 6, 1992, American regulators in North Carolina discovered Perrier bottles had been contaminated with benzene
- No one suffered as a result of drinking the benzene-contaminated water.
- Perrier recalled 160 million bottles from 120 countries at a cost of over \$250 Million

DANGERS/HEALTH EFFECTS OF PLASTIC BOTTLES

- Use By Date
- Leaching
- Long Term Exposure

Nanoplastics



Glass, Aluminum, Tetra Pak





Can We Build a Better Bottle?

- Recycling rates in:
- US - 45%
- Canada – 65-70%
- EU – 70-75%
- In 2017 PepsiCo's recycling program collected 72 million bottles/cans in the US
- Southeast Asia accounts for 80% of ocean plastic waste



Micro and Nano

- [Scientists have found microplastics](#) in 114 aquatic species, and more than half of those end up on our dinner plates. Now they are trying to determine what that means for human health.
- Experiments show that microplastics damage aquatic creatures, as well as turtles and birds: They block digestive tracts, diminish the urge to eat, and alter feeding behavior, all of which reduce growth and reproductive output.

- “We know that there are effects from plastics on animals at nearly all levels of biological organization. We know enough to act to reduce plastic pollution from entering the oceans, lakes, and rivers.” – National Geographic, June 2018
- Chelsea Rochman, Professor of Ecology at the University of Toronto

So...

- Long Term Studies
- Independent 3rd Party Research
- Candy at the Santa Barbara Airport

- “Plastics is really a land-based problem.”

Yui Kamikawa – Sr. Manager Public Policy,
Environmental Sustainability, Coca-Cola

- “10 years ago we talked about carbon footprint, now people talk about plastic in the ocean. A bio-based bottle will not solve plastics in the ocean.”

Andy Peykoff, CEO, Niagara Bottling Co.

New Bottle Technology

- Fully biodegradable bottle, label and cap
- Plant-based bottles
- Independent 3rd Party Testing

Bioplastic Feedstock Alliance

- Harvesting of feedstocks – such as sugar cane, corn, bulrush and switchgrass – used to make plastics from agricultural materials.
- Conventional plastics made from renewable resources like polyethylene derived from sugar cane.
- Third generation will come from completely non-food sources; materials like waste products, possibly algae, drought resistant plants and cellulose.
- **What's the problem?**
- Currently less than 3% of plastics being produced (all plastics, not just water bottles) are made with plant materials in spite of material already in commercial use by Coca-Cola and others, for example that is made of 30% plant material from sugarcane.

What's the Problem?

- \$\$\$

- Homo Sapiens

Our Water. Our Future.



Ours to Protect