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Bottled Water Microplastics Frequently Asked Questions

Why did Orb Media commission this research?

Following Orb's reporting on microplastics in tap water, it was logical to continue our research and reporting to include bottled water. The global dependence on bottled water as the sole source for safe, clean drinking water impacts billions of people. Orb Media is dedicated to telling stories that matter to billions of people around the globe.

How did Orb Media select the brands it tested?

Sample lots were procured with an eye to geographic diversity (five continents are represented), size of the national packaged drinking water market (China, USA, Brazil, India, Indonesia, Mexico), and high per capita consumption of packaged drinking water (Lebanon, Mexico, Thailand, USA).

Leading international brands in this study included Aquafina, Dasani, Evian, Nestlé Pure Life, and San Pellegrino.

Leading national brands included Aqua (Indonesia), Bisleri (India), Epura (Mexico), Gerolsteiner (Germany), Minalba (Brazil), and Wahaha (China).

How did Orb Media source the bottled water you tested?

Orb Media reporters purchased bottled water in 19 locations across nine countries on five continents, including through Amazon. All purchases made were of a pre-packed case of water (no single bottles). All purchases and shipments to the lab were video documented.

Countries included: Brazil, China, India, Indonesia, Kenya, Lebanon, Mexico, Thailand, and the United States.

How does Orb Media define microplastics?

Researchers counted plastic particles in the 100 micron (0.10 millimeter) size range or smaller as microplastics. For plastic particles in the 100 micron size range, tests conducted for Orb Media at the State University of New York at Fredonia revealed a global average of 10.4 plastic particles per liter. The tests also showed a much greater number of even smaller particles that researchers have noted are also likely plastic. The global average for these particles was 325 per liter.

How did Orb Media determine what particles were counted?

Researchers analyzed bigger particles, about 100 microns (0.10 millimeters), by Fourier-Transform Infrared spectroscopy (an industry standard infrared microscope), which beams infrared light into an object to read its molecular signature. To quantify the particles, Orb Media developed a counting method that recorded the number of fluorescing objects in photographs of lab filters.

Can others replicate Orb Media's tests?

Yes. The methods for testing are readily available and the study is currently submitted for peer-review. We encourage additional testing by others following the same rigorous standards.

How did Orb Media develop the Galaxy Count method?

The Galaxy Count application was created to rapidly count the number of fluorescing particles photographed on laboratory filters during Orb Media's investigation with Dr. Sherri Mason into microplastic contamination of bottled water. The app runs on Processing language and uses the BlobScanner library.

How did Orb Media determine the particles were plastic?

Researchers read the molecular signature of the particles. Their results identified particles that were polypropylene, nylon, and polyethylene terephthalate (PET).

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