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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

PERRY BRUNO, individually, and on behalf of other members of the general public similarly situated,

Plaintiff,

v.

BLUETRITON BRANDS, INC.,

Defendant.

Case No. 2:24-cv-01563 MWF (JPRx)

DEFENDANT BLUETRITON BRANDS, INC.'S:

(1) NOTICE OF MOTION AND MOTION TO DISMISS PLAINTIFF'S COMPLAINT; AND

(2) MEMORANDUM OF POINTS AND AUTHORITIES

[Request for Judicial Notice Filed Concurrently]

Date: April 8, 2024
Time: 10:00 a.m.
Courtroom: 5A
Judge: Hon. Michael W. Fitzgerald

NOTICE OF MOTION AND MOTION TO DISMISS

NOTICE IS HEREBY GIVEN that on April 8, 2024, at 10:00 a.m., or as soon thereafter as the matter may be heard before the Honorable Michael W. Fitzgerald, Judge presiding, of the United States District Court for the Central District of California, 350 West First Street, Courtroom 5A, Los Angeles, CA 90012, defendant BlueTriton Brands, Inc. ("BTB") will move this Court to dismiss plaintiff's complaint with prejudice.

This motion is made, pursuant to Federal Rules of Civil Procedure 8, 9(b), 12(b)(1), and 12(b)(6), on the following grounds: (1) Sections 403A and 337(a) of the federal Food, Drug, and Cosmetic Act expressly preempt plaintiff's claims; (2) the complaint fails to state a claim upon which relief may be granted; (3) the complaint should be dismissed under the primary jurisdiction doctrine to allow FDA to determine what concentration of microplastics might violate FDA's regulations concerning "spring water" and consider technical and policy issues better suited for decision by FDA; and (4) Plaintiff lacks standing to seek injunctive relief and to assert claims on behalf of consumers outside of California.

This motion is based on this notice of motion, the memorandum of points and authorities, the request for judicial notice, the pleadings and documents on file, and argument and other matters as may be presented to the Court at the hearing.

This motion is made following the conference of counsel pursuant to L.R. 7-3 which took place on February 22, 2024.

Dated: March 4, 2024

WHITE & CASE LLP

By: */s/Bryan A. Merryman*
Bryan A. Merryman

Attorneys for Defendant
BLUETRITON BRANDS, INC.

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I. INTRODUCTION

Plaintiff Perry Bruno alleges that he purchased Arrowhead® Brand Mountain Spring Water in October 2022. The claim of "100% Mountain Spring Water" on the label accurately informed Bruno that 100% of the water he was purchasing came from mountain springs, in accordance with the standard of identity imposed by the United States Food & Drug Administration ("FDA"). Bruno does not dispute that 100% of the water he received came from mountain springs—nor could he. Instead, he contends the claim "100%" misled him to believe the spring water was free of "microplastics," *i.e.*, plastic particles that are ubiquitous in ecosystems across the planet.

Bruno alleges that the Arrowhead® brand bottled spring water he purchased must have contained unspecified amounts of "microplastics" even though he did not test the bottled water he purchased, or any Arrowhead® brand bottled spring water sold around the same time and place. Instead, he draws this conclusion solely from a single, non-replicated study in 2018—*four years* before his purchase—in which a third party tested a small number of bottles dispersed across eleven global water brands (not including Arrowhead® or any other "spring water" brand) and found that most "showed signs of microplastic contamination." Bruno's complaint alleging that defendant BlueTriton Brands, Inc. ("BTB") violated consumer protection laws rests on nothing more.

Bruno's causes of action for violation of California's False Advertising Law ("FAL") and Unfair Competition Law (UCL") fail for several reasons. To start, Sections 403A and 337(a) of the federal Food, Drug, and Cosmetic Act ("FDCA"), which regulates the labeling of bottled spring water to the exclusion of any divergent state requirement, and confers exclusive enforcement authority on the United States, completely preempts Bruno's claims.

Bruno's claims also suffer from multiple pleading defects. *First*, Bruno bases the key factual premise underlying each claim—that Arrowhead® brand bottled spring water contains microplastics—on an outdated study lacking any factual nexus with the product he actually purchased. This speculative theory falls far short of the standard Bruno must meet to subject BTB to the cost and reputational risk of a consumer fraud action. *Second*, Bruno does not plausibly allege that a reasonable consumer would interpret "100% Mountain Spring Water" to guarantee the complete absence of microplastics. The product label makes no representations about its plastic packaging or whether "microplastics" could migrate into the water. Rather, the label claims—correctly—that the *source* of "100%" of the water is "mountain springs." *Third*, Bruno fails to state a FAL or UCL claim based on nondisclosure, because he does not allege with the particularity required by Rule 9(b) that microplastics present a safety threat. *Fourth*, and for the same reasons, Bruno fails to state a claim under the UCL's "unfair" prong. *Fifth*, Bruno fails to allege he relied on representations or nondisclosures concerning microplastics. *Sixth*, Bruno's claims fail because he does not adequately allege he suffered actual injury as a result of the challenged label claims. For each of these reasons, the Court should dismiss the entire action with prejudice.

Alternatively, Bruno's requests for injunctive relief and to represent a class including purchasers outside of California should be dismissed, because Bruno lacks standing to pursue them. His claims also warrant dismissal under the primary jurisdiction doctrine because the regulation of the contents and labeling of bottled water falls squarely within FDA's jurisdiction and thus the case should be dismissed to allow FDA to determine whether spring water may contain microplastic particles, as another court in this district recently held in the context of "purified water."

II. BACKGROUND

BTB manufactures and distributes many unique bottled water products, including Arrowhead® Brand 100% Mountain Spring Water. Compl. ¶ 8. "The FDA protects consumers of bottled water through the [FDCA], which makes manufacturers responsible for producing safe, wholesome, and truthfully labeled food products." U.S. Food & Drug Admin., *Bottled Water Everywhere: Keeping it Safe* (2022), *available at* https://www.fda.gov/consumers/consumer-updates/bottled-water-everywhere-keeping-it-safe (last visited Mar. 4, 2024), RJN Ex. 1.[1] BTB must comply with FDA regulations, known as "standards of identity," for products labeled "spring water." The standard for "spring water" is, in relevant part:

> The name of water derived from an underground formation from which water flows naturally to the surface of the earth may be "spring water." Spring water shall be collected only at the spring or through a bore hole tapping the underground formation feeding the spring …. [s]pring water collected with the use of an external force shall be from the same underground stratum as the spring ... and shall have all the physical properties, before treatment, and be of the same composition and quality, as the water that flows naturally to the surface of the earth.

21 C.F.R. § 165.110(a)(2)(vi). FDA also sets "standard of quality" regulations that limit the trace levels of common atmospheric contaminants in bottled water. *See* 21 C.F.R. § 165.110(b)(4). Bruno does not, and cannot, allege that the Arrowhead® brand bottled spring water he purchased was not "derived from an underground formation from which water flows naturally to the surface of the earth," or that it lacked "all the physical properties" and "the same composition and quality" as "water that flows naturally to the surface of the earth." *See generally* Compl. Nor does he allege the water he purchased violated applicable standards of quality. *Id.*

Bruno alleges that on October 19, 2022, he purchased an unspecified Arrowhead® brand bottled water product labeled "100% Mountain Spring Water" from a Walmart in an unidentified location. Compl. ¶ 28. Bruno does not allege how much he paid for the product, nor that he consumed it, or used (or could not use) it

[1] The Court may take judicial notice of government websites under Federal Rule of Evidence 201(b). *Organic Cannabis Found., LLC v. Commissioner*, 962 F.3d 1082, 1096 (9th Cir. 2020).

for any other purpose. *See generally id*. Bruno nevertheless alleges he suffered injury because he paid a premium for "100% Mountain Spring Water" containing "microplastics." *Id*. ¶¶ 29-38.

"Microplastics," or "plastic particles ranging in size from 5 mm to 1 nm … have been found in every ecosystem on the planet from the Antarctic tundra to tropical coral reefs." U.S. Environmental Protection Agency, *Microplastics Research*, *available at* https://www.epa.gov/water-research/microplastics-research (last visited Mar. 4, 2024), RJN Ex. 2.[2] FDA does not require bottled water manufacturers to disclose, or even test for, the presence of microplastics. *See* 21 U.S.C.A. § 343(g); 21 C.F.R. § 165.110(a)(2)(vi). Bruno alleges a study hypothesized that "frequent opening and closing" of plastic bottles may cause "microplastic contamination," Compl. ¶ 14, but he does not specify whether microplastics that purportedly tainted the water *he* purchased were found at the source or introduced through bottling. *See generally id*. Nor does he specify the type of "microplastics" the water allegedly contained. *Id*. ¶¶ 9, 28-29. Bruno also does not allege that he tested any of the water he purchased. *See generally id*. Instead, he relies on a 2018 "global study" of 259 bottles of water "across 11 brands purchased in 19 locations in 9 countries"—not including Arrowhead® or other "spring water" brands—which concluded that "[n]inety-three percent" of the samples "showed signs of microplastic contamination." *Id*. ¶ 13.

Based on these allegations, on January 23, 2024, Bruno filed a complaint in the Superior Court of Los Angeles County, which he served on BTB on January 25, 2024. In his complaint, Bruno asserts two claims for relief: (1) violation of California's False Advertising Law ("FAL"), Cal. Bus. & Prof. Code §§ 17500 *et seq*.; and (2) violation of California's Unfair Competition Law ("UCL"), Cal. Bus. & Prof. Code §§ 17200 *et seq*. Compl. ¶¶ 56-83. Bruno seeks to certify a nationwide

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[2] The Court may also take judicial notice of Exhibit 2 under Federal Rule of Evidence 201(b) because it is a government website. *Organic Cannabis Found., LLC*, 962 F.3d at 1096.

class and a California subclass of purchasers. *Id.* ¶¶ 42-43. BTB removed Bruno's complaint to this Court on February 26, 2024, under 28 U.S.C. §§ 1441 and 1446, and the Class Action Fairness Act of 2005, 28 U.S.C. §§ 1332(d) and 1453.

III. LEGAL STANDARD

"Dismissal under Rule 12(b)(6) is proper when the complaint either (1) lacks a cognizable legal theory or (2) fails to allege sufficient facts to support a cognizable legal theory." *Somers v. Apple, Inc.*, 729 F.3d 953, 959 (9th Cir. 2013). "To survive a motion to dismiss, a complaint must contain sufficient factual matter … to 'state a claim to relief that is plausible on its face.'" *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (quoting *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 570 (2007)). Courts must disregard allegations that are legal conclusions, even when disguised as facts. *See id*. at 681.

Rule 9(b) governs fraud-based allegations. "Rule 9(b) demands that, when averments of fraud are made, the circumstances constituting the alleged fraud be specific enough to give defendants notice of the particular misconduct so that they can defend against the charge[.]" *Vess v. Ciba-Geigy Corp. USA*, 317 F.3d 1097, 1106 (9th Cir. 2003) (cleaned up). In other words, "[a]verments of fraud must be accompanied by 'the who, what, when, where, and how' of the misconduct charged." *Id*. at 1106. Dismissal without leave to amend is appropriate where "the pleading could not possibly be cured by the allegation of other facts." *Ebner v. Fresh, Inc.*, 838 F.3d 958, 963 (9th Cir. 2016).

IV. ARGUMENT

Bruno's claims should be dismissed on several grounds. As a threshold matter, the FDCA preempts them, because Bruno may not impose additional or different requirements or enforce FDA's standard of identity for "spring water."

Bruno also fails to allege the elements of his claims with the particularity Rule 9(b) requires. *First*, he alleges no factual support for his contention that the Arrowhead® brand bottled spring water he purchased contained microplastics.

Second, Bruno fails to plead a reasonable consumer is likely to be deceived, because no reasonable consumer would interpret the claim regarding the *source* of "100% Mountain Spring Water" to guarantee the absence of microplastics. *Third*, Bruno fails to plead a nondisclosure-based claim under the FAL or UCL, because he alleges no factual support for the conclusion that microplastics pose a safety risk to consumers. *Fourth*, for the same reasons, Bruno fails to state a claim under the "unfair" prong of the UCL. *Fifth*, Bruno fails to allege he relied on representations or omissions regarding microplastics content in the spring water he purchased, as he must to state a claim under the UCL or FAL. *Sixth*, Bruno fails to allege he suffered injury as a result of the challenged conduct. Each of these significant deficiencies warrants dismissal.

In addition, Bruno lacks standing to seek injunctive relief because he alleges no real and immediate threat of repeated injury, or to represent purchasers outside of California because he alleges no injury in other states. Dismissal is also warranted under the primary jurisdiction doctrine to allow FDA to consider technical and policy issues involving microplastics in "spring water" better suited for decision by FDA.

A. Bruno's Claims Are Preempted

Sections 403A and 337(a) of the FDCA preempt Bruno's claims. Congress enacted Section 403A, 21 U.S.C. § 343–1(a)(5), in connection with the federal Nutrition Labeling and Education Act of 1990 ("NLEA"). *Ochoa v. Church & Dwight Co*., No. 517CV02019ODWSP, 2018 WL 4998293, at *3-5 (C.D. Cal. Jan. 30, 2018) (discussing NLEA and section 403A). Section 403A "forbid[s] states from establishing any requirement that is 'not identical to' the federal requirements in five areas of food labeling," including the "standard of identity" set forth in Section 343(g). *Nemphos v. Nestlé Waters N. Am., Inc*., 775 F.3d 616, 619-20 (4th Cir. 2015). Thus, any inconsistent, additional, or different state labeling requirement—including "common-law rules and duties from the judiciary"—is expressly preempted. *Nemphos*, 775 F.3d at 619-20. Section 337(a) provides that actions to "enforce[], or to restrain" FDCA violations "shall be by and in the name of the United States." 21 U.S.C. § 337(a). It has "an implied preemptive effect" on claims "based on conduct that was wrongful solely because it violated the FDCA." *Patane v. Nestlé Waters N. Am., Inc.*, 314 F. Supp. 3d 375, 385 (D. Conn. 2018) (citing *Buckman Co. v. Plaintiffs' Legal Comm.*, 531 U.S. 341 (2001)).

Bruno challenges BTB's claim of "100% Mountain Spring Water" on the label of Arrowhead® brand bottled spring water because the water allegedly contained "microplastics." Because FDA has issued a standard of identity for bottled "spring water," 21 C.F.R. § 165.110(a)(2)(vi), "a State may not impose a 'spring water' requirement that varies in scope or substance from the federal definition." *Patane*, 314 F. Supp. 3d at 385. This standard provides that "spring water" must be "derived from an underground formation from which water flows naturally to the surface of the earth," and "have all the physical properties, before treatment, and be of the same composition and quality, as the water that flows naturally to the surface of the earth." 21 C.F.R. § 165.110(a)(2)(vi). Bruno alleges the water he purchased is "not 100% Mountain Spring Water" because it purportedly "contained microplastics." Compl. ¶¶ 20, 29. He does not specify how microplastics allegedly tainted the water; that is, whether they were there at its source, or migrated from its plastic packaging.

Either way, Bruno's claims are preempted. If Bruno alleges BTB failed to disclose that spring water otherwise meeting the standard of identity may contain microplastics, then Section 403A bars his claims because such a disclosure requirement would depart from the FDCA. *See* 21 U.S.C.A. § 343(g); 21 C.F.R. § 165.110(a)(vi). Even if such a disclaimer "would be consistent with the requirements imposed by the [FDCA], consistency is not the test; identity is." *Turek v. Gen. Mills, Inc.*, 662 F.3d 423, 427 (7th Cir. 2011). As long as Arrowhead® spring water has the same physical properties, composition, and quality as "water that flows naturally to the surface of the earth" (and the complaint makes no allegation it does not), claims seeking to prevent BTB from labeling it as "100% Mountain Spring Water" are preempted. *See Baker v. Nestlé S.A.*, No. 18-03097, 2019 WL 960204, at *1-2 (C.D. Cal. Jan. 3, 2019) (state law claims based on labeling "purified water" as "pure" preempted).

If Bruno instead theorizes that BTB's bottling processes contaminated the spring water he purchased, then Section 337(a) prempts his claims. "[A] plaintiff may not simply dress up a generic state law claim of wrongful conduct to prosecute conduct that is 'wrong' only because it happens to violate the federal law requirements of the FDCA." *Patane*, 314 F. Supp. 3d at 386. If Bruno alleges BTB sold "spring water" lacking the "properties, composition, and quality" of "water that flows naturally to the surface of the earth," that plainly is a claim that BTB violated the FDCA by selling "spring water" that violated its standard of identity. *See* 21 C.F.R. § 165.110(a)(2)(vi). "Despite the efforts plaintiff[] make[s] to clothe []his claims in the garb of state law, the reality is that [he is] suing solely to enforce the FDCA's federal 'spring water' standard," which Section 337(a) forbids. *Patane*, 314 F. Supp. 3d at 389; *accord Collyer v. Catalina Snacks Inc*., No. 23-CV-00296-AMO, 2024 WL 202976, at *6 (N.D. Cal. Jan. 18, 2024) (finding claim that "would require litigation of the alleged underlying FDCA violation in a circumstance where the FDA has not itself concluded that there was a violation" preempted).

B. Bruno Fails To State A Claim Upon Which Relief May Be Granted

In any event, Bruno fails to state a claim because he does not adequately allege the essential elements. The UCL prohibits "any unlawful, unfair or fraudulent business act or practice and unfair, deceptive, untrue or misleading advertising..." Cal. Bus. & Prof. Code § 17200. The FAL renders it "unlawful for any person … with intent directly or indirectly … to make or disseminate … any statement, concerning … real or personal property … which is untrue or misleading, and which is known, or which by the exercise of reasonable care should be known, to be untrue or misleading." Cal. Bus. & Prof. Code § 17500. As explained below, Bruno does not, and cannot, allege BTB engaged in fraudulent or unfair conduct, which warrants dismissal of his claims.

1. Bruno Fails To Plausibly Allege The Arrowhead® Brand Bottled Spring Water He Purchased Contained Microplastics

Bruno's claims depend entirely on the assumption that the water he purchased "contained microplastics." Compl. ¶ 29. This conclusion, however, finds no factual support in his allegations. *See Moore v. Kayport Package Express*, 885 F.2d 531, 540 (9th Cir. 1989) ("[M]ere conclusory allegations of fraud are insufficient."). Bruno premises his claims on a 2018 study by third party Orb Media (the "Orb Study") that tested 259 bottles from eleven global water brands—*not including* Arrowhead® or any other "spring water" brand—and found "signs of microplastic contamination." Compl. ¶ 13. That is, Bruno's claims rest entirely on a small sample of *different* types and brands of water tested more than four years before his earliest purchase. Such speculative, conclusory allegations fall well "short of the line between possibility and plausibility." *Iqbal*, 556 U.S. at 678 (quoting *Twombly*, 550 U.S. at 557).

Fahey on behalf of D.C. v. Deoleo USA, Inc. is instructive. There, the plaintiff asserted a claim under an analogous consumer protection statute, alleging the Bertolli extra virgin olive oil ("EVOO") he purchased at a D.C. Walmart in 2018 was merely "virgin." No. 18-2047, 2018 WL 5840664, at *3 (D.D.C. Nov. 8, 2018). The plaintiff based his claim entirely on a report produced by UC Davis in 2010, which concluded a small sample of Bertolli EVOO bottles contained only "virgin" oil. *Id.* at *2. The court rejected the plaintiff's theory for three reasons. *First*, it held the "methods used in the UC Davis study," which tested only three bottles from different lots, could not "support general conclusions about the quality of" Bertolli's EVOO. *Id*. *Second*, it rejected the plaintiff's "temporal assumption," because he "offer[ed] no explanation for why the testing done … eight years ago should tell us anything about the quality of the Bertolli EVOO on store shelves today." *Id*. *Third*, it held testing of bottles purchased in *California* did not "plausibly suggest that the bottle" purchased in *D.C.* "was similarly deficient." *Id*.

Bruno's claims suffer from the same fatal flaws. *First*, the Orb Study sampled a small number of bottles—259—by comparison to the billions of liters of bottled water produced around the world each year.[3] Unlike in *Fahey*, where the same brand was tested, the Orb Study tested neither Arrowhead® brand bottled water products nor did it even test any brands of "spring water," which, as discussed in Section I, *supra*, has regulated sourcing requirements.[4] *See id*. This methodology cannot "support general conclusions about the quality of" bottled spring water generally, let alone the Arrowhead® brand bottled spring water Bruno purchased. *Fahey*, 2018 WL 5840664, at *3; *see also Otto v. Abbott Lab'ys, Inc*., No. CV 12-1411-SVW(DTB), 2013 WL 12132064, at *6 (C.D. Cal. Mar. 15, 2013) (finding none of plaintiff's cited studies "are apposite as they fail to test the precise combination of ingredients in the Products"); *Murray v. Elations Co*., No. 13-CV-02357-BAS WVG, 2014 WL 3849911, at *7 (S.D. Cal. Aug. 4, 2014) (dismissing UCL claim because plaintiff's "cited studies must have a bearing on the truthfulness of the actual representations made by Defendants").

Second, the same faulty temporal assumption exists. Bruno "offer[s] no explanation for why" testing in 2018 "should tell us anything about the quality of" water he purchased in 2022. *See Fahey*, 2018 WL 5840664, at *3. *Third*, Bruno's purchase lacks a geographic nexus with the Orb Study samples, which were not sourced in or near California, where Bruno resides and presumably made his purchase. *See* Compl. ¶ 5.[5] "[S]imply stating that the sales practices are the same in

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[3] *See* Chris Tyree & Dan Morrison, *Plus Plastic: Microplastics Found in Global Bottled Water*, Orb Media (2018), *available at* https://orbmedia.org/plus-plastic-text (last visited Mar. 4, 2024) ("Bottled water output will soon hit 300 billion liters a year."), RJN Ex. 3. The Court may consider Orb Media's website, as it is referenced in the complaint and central to Bruno's claims. *Janda v. T-Mobile USA, Inc*., 378 F. App'x 705, 707 (9th Cir. 2010).

[4] *See* Chris Tyree & Dan Morrison, *Plus Plastic: Microplastics Found in Global Bottled Water* (2018), *available at* https://orbmedia.org/plus-plastic-data (last visited Mar. 4, 2024), RJN Ex. 4.

[5] Sherri A. Mason, Victoria Welch, Joseph Neratko; *Synthetic Polymer Contamination in Bottled Water*, Dep't of Geology & Environmental Sciences, State Univ. of New York Fredonia (2018), *available at* https://orbmedia.org/s/2018-03-13_FinalBottledWaterReport.pdf (last visited Mar. 4,

two different states during two different time periods without any factual support is insufficient." *Camasta v. Jos. A. Bank Clothiers, Inc.*, 761 F.3d 732, 739 (7th Cir. 2014). Allegations that water not labeled "spring water" purchased in a handful of other locations from unknown sources showed "signs of microplastic contamination," Compl. ¶ 13, cannot "plausibly suggest" spring water water sold in California did so too. *Fahey*, 2018 WL 5840664, at *3; *accord Forsher v. J.M. Smucker Co.*, 612 F. Supp. 3d 714, 722 (N.D. Ohio 2020) (dismissing claims based on "generalized (and possibly outdated) statistics"). "To plead deception, it is incumbent on Plaintiff to allege facts that plausibly support the conclusion that the Product[] in fact" is deficient in the way he claims. *Otto*, 2013 WL 12132064, at *6. Bruno's allegations do not meet the Rule 8 plausibility threshold, let alone the requirements of Rule 9(b), and therefore dismissal is warranted.

2. The Words "100% Mountain Spring Water" Are Unlikely To Deceive A Reasonable Consumer

Bruno also fails to plead facts sufficient to establish that BTB labeled Arrowhead® brand bottled spring water with a claim that would deceive a reasonable consumer. In the product labeling context, courts often evaluate FAL and UCL claims alleging frauudlent conduct together, as each law demands that a plaintiff plausibly allege the challenged label statements are likely to deceive a "reasonable consumer." *See Moore v. Trader Joe's Co.*, 4 F.4th 874, 881 (9th Cir. 2021) ("Under the consumer protection laws of California … claims based on deceptive or misleading marketing must demonstrate that a 'reasonable consumer' is likely to be misled by the representation."). The "reasonable consumer" standard requires a plaintiff to show the defendant's representations regarding its product present "more than a mere possibility that [the seller's] label might conceivably be misunderstood by some few consumers viewing it in an unreasonable manner." Bruno must establish "a probability that a significant portion of the general consuming public or

2024), RJN Ex. 5 (showing only United States source location was "Fredonia, NY").

of targeted consumers, acting reasonably in the circumstances, could be misled." *Id.* (cleaned up).

Rule 9(b)'s heightened pleading standard applies to Bruno's FAL and UCL claims because they sound in fraud. *See, e.g., Vess,* 317 F.3d at 1103-04 (Rule 9(b) applies to state law claims "grounded in fraud" or that "sound in fraud," including UCL and FAL claims). Among other requirements, Rule 9(b) demands a plaintiff "set forth what is false or misleading about a statement, ***and why it is false.***" *Id.* at 1106 (cleaned up; emphasis added).

The only logical reading of "100% Mountain Spring Water" is as a representation that 100% of the water sold in the Arrowhead® brand bottle is *sourced* from mountain springs. The claim references a *place*—that is, a "Mountain"—and a type of water, "Spring Water," which, as discussed in Section I above, has regulated sourcing requirements. 21 C.F.R. § 165.110(a)(2)(vi). Bruno does not, and cannot, allege how or why a reasonable consumer would interpret the claim "100% Mountain Spring Water"—which says nothing about its chemical makeup or other properties—as a guarantee that the water would contain no trace of any synthetic substance. *See Moore*, 4 F.4th at 881-84 (affirming a reasonable consumer would not interpret "100% New Zealand Manuka Honey" as guaranteeing the honey was "100%" derived from Manuka flower nectar because the product met FDA's guidelines for the labeling of honey and "reasonable consumers would necessarily require more information before they could reasonably conclude Trader Joe's label promised a honey 100% derived from a single, floral source"); *Carrea v. Dreyer's Grand Ice Cream, Inc.*, No. C 10-01044 JSW, 2011 WL 159380, at *6 (N.D. Cal. Jan. 10, 2011), *aff'd*, 475 F. App'x 113 (9th Cir. 2012) ("[S]tatements that the Drumsticks products are 'Classic' or 'Original,' without specific claims about content or ingredients, are generalized statements that would not mislead a reasonable consumer into thinking that these ice cream products are wholesome or healthy.").

Moreover, "information available to a consumer is not limited to the physical label and may involve contextual inferences regarding the product itself and its packaging." *Moore*, 4 F.4th at 882. As Bruno's own complaint shows, the presence of microplastics in aquatic environments has been "extensively documented" over the course of the past several years. *See*, *e.g.,* Compl. ¶¶ 11-14, 16-19. From this context, the "reasonable consumer" purchasing naturally-sourced "spring water" would infer it may contain trace amounts of microplastics. *See Moore*, 4 F.4th at 883 ("Although a reasonable consumer might not be an expert in honey production or beekeeping, consumers would generally know that it is impossible to exercise complete control over where bees forage down to each specific flower or plant."). The unreasonableess of Bruno's alleged personal belief that "mountain spring water" must be entirely free of microplastics that permeate Earth's ecosystems is further undermined by FDA's own recognition that bottled water may contain myriad "synthetic or artificial" substances (e.g., arsenic, cyanide, carbofuran, PCBs) and still be safe for human consumption and properly labeled as "spring water." *See* 21 C.F.R. § 165.110(b) (setting forth standards of quality for bottled water).

Because Bruno does not, and cannot, allege the Arrowhead® brand bottled spring water he purchased was not in fact sourced entirely (i.e., 100%) from mountain springs and did not otherwise meet FDA's regulator requirements for "spring water," the description of the water as "100% Mountain Spring Water" was true, and could not have misled a reasonable consumer. For this reason, his UCL and FAL claims should be dismissed.

C. To The Extent Bruno Bases His Claims On Nondisclosure, They Fail

While not entirely explicit in his complaint, Bruno appears to base his FAL and UCL claims on both an affirmative misrepresentation (i.e., the word "100%") and a non-disclosure (i.e., no warning regarding microplastics). In the consumer protection context, "California courts have generally rejected a broad obligation to disclose …." *Wilson v. Hewlett-Packard Co.,* 668 F.3d 1136, 1141 (9th Cir. 2012). Instead, relying on the California court of appeal's decision in *Daugherty v. American*

Honda Motor Co., 144 Cal. App. 4th 824 (2006), "California federal courts have generally … [held] that a manufacturer's duty to consumers is limited to its warranty obligations absent either an affirmative misrepresentation or a safety issue." *Id.* (cleaned up).

As demonstrated above, "100% Mountain Spring Water" is not an actionable or misleading representation when used to describe "spring water" sourced entirely from mountain springs. Thus, to proceed with his FAL and UCL claims under a non-disclosure theory, Bruno must allege the concealed matter—microplastics—presents a safety concern, and he must do so in a specific and particularized manner, in accordance with Rule 9(b). *See Benavides v. Kellogg Co.,* No. CV 10-2294, 2011 WL 13269720, at *5 (C.D. Cal. March 21, 2011) (in consumer protection lawsuit involving crackers recalled for potential Salmonella contamination, dismissing analogous CLRA claim based on non-disclosure where complaint did not include particularized allegations of safety threat).

The complaint falls short of alleging specific facts suggesting the alleged microplastic particles are a threat to human safety. The closest Bruno comes to implicating a safety issue are his allegations that "exposure to microplastics through ingestion can lead to gastrointestinal problems such as irritable bowel syndrome; endocrine disruption such as adverse effects on hormonal balance and reproductive function; and cardiovascular problems such as increase of oxidative stress and impaired regular heart function." Compl. ¶¶ 17-18. But Bruno undermines his own theory by alleging elsewhere in the complaint that the "studies" upon which he bases those allegations were performed on "marine invertebrates," fish, and mice, and "the pathophysiological consequences of acute and chronic exposure to microplastics in mammalian systems, ***particularly in humans***, are not yet fully understood." *Id.* ¶ 16 (emphasis added). Bruno therefore does not plausibly allege a factual basis from which to conclude the unspecified microplastics allegedly found in some bottled water pose a safety risk to consumers, because he does not, and cannot, allege any human has actually suffered injury as a result of ingesting microplastics from bottled water. Consequently, he cannot state a claim under the UCL or FAL on a theory of non-disclosure. *See, e.g., Daugherty,* 144 Cal. App. 4th at 835-36 (holding plaintiff "alleged no facts that would establish [defendant] was 'bound to disclose' the defect" because "[t]he complaint [was] devoid of factual allegations showing any instance of physical injury or any safety concerns posed by the defect").

Additionally, to proceed with UCL or FAL claims under a non-disclosure theory, Bruno must plausibly allege Arrowhead® contained microplastic particles in an amount BTB knew to be harmful when Bruno made his purchase. *See, e.g., Wilson,* 668 F.3d at 1145-46 (explaining CLRA and UCL claims based on non-disclosure require "[p]laintiffs [to] show that HP was aware of the alleged defect at the time the Laptops were sold"); *Punian v. Gillette Co*., No. 14–CV–05028, 2015 WL 4967535, at *9-10 (N.D. Cal. Aug. 20, 2015) (explaining plaintiff must plausibly allege defendant's knowledge of defect at the time of the sale to avoid dismissal of UCL and FAL claims, and holding plaintiff's allegation that "consumers [had] filed 'numerous complaints' [about the defect] with Defendants" was insufficient to establish knowledge). Bruno does not allege BTB knew of a potentially harmful level of microplastics in its Arrowhead® brand bottled spring water at the time he purchased the product, or today.

D. Bruno Fails To State A Claim Under The UCL's "Unfair" Prong

Bruno similarly fails to state a claim under the "unfair" prong of the UCL. To do so, Bruno "must allege facts that Defendant's practice offends an established public policy or that the practice is immoral, unethical, oppressive, unscrupulous or substantially injurious to consumers." *Chong v. Nestlé Waters N. Am., Inc*., No. CV1910901DMGKSX, 2020 WL 7690175, at *9 (C.D. Cal. Nov. 30, 2020), *aff'd sub nom. Chong v. Nestlé Water N. Am., Inc*., No. 20-56373, 2021 WL 4938128 (9th Cir. Oct. 22, 2021). He does neither. As explained above, Arrowhead® brand bottled spring water is "not mislabeled or apt to mislead the reasonable consumer," because the water Bruno purchased was in fact sourced entirely from mountain springs and otherwise meets FDA's requirements for "spring water," and Bruno alleges nothing to the contrary. *Id.* Moreover, where an "unfair prong claim overlaps entirely with [a] claim under the fraudulent prong" of the UCL, the unfair prong claim cannot survive if the fraudulent prong claim fails. *Sue Shin v. Campbell Soup Co.*, No. CV 17-1082, 2017 WL 3534991, at *8 (C.D. Cal. Aug. 9, 2017). Because Bruno "does not suggest any other reason the Arrowhead [w]ater labeling would be immoral, unethical, or otherwise satisfy the requirements for a UCL unfair prong claim" beyond those that were insufficient to support his fraudulent prong claim, *Chong*, 2020 WL 7690175, at *9, his unfair prong claim should be dismissed.

E. Plaintiff Fails to Sufficiently Allege Reliance

Bruno's claims fail for the additional reason that he does not plead reliance with specificity or that the label claim caused an alleged injury. *See Guzman v. Polaris Indus., Inc.*, No. 819CV01543JLSKES, 2020 WL 2477684, at *3-4 (C.D. Cal. Feb. 13, 2020) (discussing the "actual reliance" requirement under the UCL and FAL).

Bruno's broad allegation that he "reasonably relied upon Defendant's representations regarding the Product, namely that the Products were '100% Mountain Spring Water,'" Compl. ¶ 61, falls far short of Rule 9(b)'s heightened pleading requirement. Courts in this district have held that more particularized allegations—including allegations that "[p]rior to purchasing the product, the plaintiff was exposed to, read, and relied upon the Misbranded Claims" and "[a]bsent the Misbranded Claims, plaintiff would not have purchased the product at all or would only have been willing to pay less" for the product—are "too conclusory to satisfy the reliance requirement." *Gumner v. PepsiCo, Inc.*, No. SACV2300332CJCKESX, 2023 WL 9019040, at *4 (C.D. Cal. Aug. 3, 2023) (cleaned up); *see also Guzman*, 2020 WL 2477684, at *3 (dismissing UCL and FAL claims because an allegation that the sticker was "visible at the point of sale" is insufficient to establish the plaintiffs read and relied on the sticker). Bruno does not allege that he "saw, read, or was informed of th[e] statement ['100% Mountain Spring Water'] or otherwise relied on it before deciding to purchase" the water. *Rothman v. Equinox Holdings, Inc.*, No. 220CV09760CASMRWX, 2021 WL 124682, at *5 (C.D. Cal. Jan. 13, 2021) (dismissing UCL and FAL claims for this failure). Thus, Bruno's claims also fail for this reason.

F. Bruno Fails to Allege Actual Injury and Damages

Bruno's claims fail for another reason: he does not plausibly allege injury or damages. "To properly plead an economic injury, a consumer must allege that she was exposed to false information about the product purchased, which caused the product to be sold at a higher price, and that she would not have purchased the goods in question absent this misrepresentation." *Babaian v. Dunkin' Brands Grp., Inc.*, No. LACV174890VAPMRWX, 2018 WL 11445614, at *7 (C.D. Cal. Feb. 16, 2018). A "hollow, conclusive assertion that" the disputed products are "worth less than what the putative class members paid/pay for them" is insufficient. *Id.* Bruno's conclusory and unsupported allegations that he did not receive "the benefit of the bargain," Compl. ¶ 33, and "paid a price premium for a premium product, but instead received a non-premium Product with Microplastics," *id.* ¶ 35, do not meet the standard.

In *Babaian v. Dunkin' Brands Group, Inc.*, the court dismissed the plaintiff's claim that he paid a price premium for donuts based on allegations that he "'bargained for and paid for blueberry donuts and maple donuts' with real blueberries and maple rather than artificial flavoring." 2018 WL 11445614, at *8. It held the "factual support for Plaintiff's allegation of a price premium is too tenuous for this Court to accept" because he did not allege, for example, that the donuts were priced higher than the products of defendant's competitors. *Id.* The mere "allegation that real ingredients are more expensive than artificial ingredients is insufficient to give rise to these inferences of price-value differentials in the market." *Id.*

The same reasoning applies here. Bruno's bare allegation that he paid more for "premium" bottled spring water because he believed it did not contain microplastics is insufficient to give rise to an inference of a price-value differential in the market for spring water. Bruno does not allege the price he paid for Arrowhead® brand products, or facts showing lower priced "non-premium" bottled spring water sourced entirely from mountain springs was available. Thus, dismissal of Bruno's claims on this independent ground is also warranted.

G. Alternatively, Bruno's Request For Injunctive Relief And Claims On Behalf Of Consumers Outside Of California Should Be Dismissed For Lack Of Standing

Bruno's prayer for injunctive relief should be dismissed because he lacks standing to pursue it. *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560 (1992). A plaintiff seeking injunctive relief must allege a "real and immediate threat of repeated injury." *Joslin v. Clif Bar & Co*., No. 4:18-CV-04941-JSW, 2019 WL 5690632, at *2 (N.D. Cal. Aug. 26, 2019). Thus, to have standing to seek injunctive relief, a consumer asserting false advertising claims must allege they would want or intend to purchase the product in the future. *See, e.g.*, *Nielsen v. Walt Disney Parks & Resorts U.S., Inc*., No. 821CV02055DOCADS, 2022 WL 2132716, at *6-7 (C.D. Cal. Apr. 6, 2022). Bruno alleges nowhere in his complaint that he wants or intends to purchase Arrowhead® brand bottled spring water again, and therefore he cannot seek injunctive relief on behalf of himself or a putative class.

Bruno similarly lacks standing to represent a nationwide class of Arrowhead® brand bottled spring water purchasers. *See* Compl. ¶ 42. Bruno does not allege where he made his purchase, but given his allegation that he "was at all relevant times residing in Los Angeles, California," *id*. ¶ 5, the plausible inference to be drawn is he made his purchase there. Regardless, Bruno does not allege he made a purchase anywhere other than California. He therefore lacks standing to represent purchasers outside of California. *See Young v. Mophie, Inc*., No. SACV19827JVSDFMX, 2019 WL 5173770, at *5 (C.D. Cal. Oct. 9, 2019).

H. Alternatively, Bruno's Complaint Should Be Dismissed Under the Primary Jurisdiction Doctrine

If the Court does not dismiss Bruno's claims on other grounds, dismissal is also warranted under the primary jurisdiction doctrine to allow FDA to determine whether "spring water" may contain microplastic particles. "The primary jurisdiction doctrine allows courts to stay proceedings or to dismiss a complaint without prejudice pending the resolution of an issue within the special competence of an administrative agency." *Clark v. Time Warner Cable*, 523 F.3d 1110, 1114 (9th Cir. 2008). Courts weigh four factors in determining whether to apply the primary jurisdiction doctrine: "(1) the need to resolve an issue that (2) has been placed by Congress within the jurisdiction of an administrative body having regulatory authority (3) pursuant to a statute that subjects an industry or activity to a comprehensive regulatory authority that (4) requires expertise or uniformity in administration." *Syntek Semiconductor Co. v. Microchip Tech., Inc.*, 307 F.3d 775, 781 (9th Cir. 2002).

Here, FDA clearly has the authority to and in fact does regulate bottled spring water contents and labeling. In a similar case involving "purified water," which FDA also regulates in addition to "spring water," another court in this district held that preemption barred the plaintiff's label claims and also that the case should be dismissed based on FDA's primary jurisdiction. The court held that because "[t]he FDCA establishes a uniform federal scheme of food regulation to ensure that food is labeled in a manner that does not mislead consumers … any claims regarding what concentration of microplastics might violate the FDA's regulations concerning ['spring water'] would implicate technical and policy claims better suited for decision by the FDA." *Baker*, 2019 WL 960204, at *3.

In the event this Court does not dismiss the complaint in its entirety on other grounds, it will be necessary to resolve technical issues best resolved on a uniform, nationwide basis by FDA, the agency with the requisite scientific expertise, such as, for example: (1) whether microplastics at some level are dangerous to human health; (2) if so, what level in bottled spring water is acceptable; (3) whether water FDA expressly requires be labeled as "spring water" may contain microplastics; and (4) whether bottled water manufacturers should be required to test for and disclose on the label the presence of microplastics.

In *Baker*, the court held the primary jurisdiction doctrine applied for this exact reason in the context of the use of "purified water" on the label of bottled water. 2019 WL 960204, at *1-2. There, the plaintiff asserted claims under the FAL and UCL, alleging the use of the claims "pure" and "purified" on the label of bottled water was misleading because of the water's purported microplastics content. *Id*. The court applied the primary jurisdiction doctrine because "Congress has placed the issues raised in Plaintiff's complaint—the labeling of bottled water as pure or purified—squarely within the jurisdiction of the FDA and [they] depend on the FDA's expertise." *Id*.; *see also Tran v. Sioux Honey Ass'n, Coop*., No. 8:17-cv-110-JLS-JCGx, 2017 WL 5587276, at *2-3 (C.D. Cal. Oct. 11, 2017) (holding although the complaint was "ostensibly about the meaning of terms 'Pure' or '100% Pure,'" the complaint was really about what constitutes a safe level of a potential toxin, and therefore the case was better suited for decision by FDA).

The same regulations that govern the labeling of bottled water as "pure" or "purified" also govern the labeling of bottled water as "spring water." Thus, in the event the Court does not dismiss the complaint in its entirety, it should dismiss this action to allow FDA the opportunity to evaluate tolerance levels and labeling requirements relating to microplastics in bottled water, as did the court in *Baker*.

V. CONCLUSION

BTB respectfully requests the Court dismiss the complaint with prejudice.

Dated: March 4, 2024

WHITE & CASE LLP

By: /s/ Bryan A. Merryman
Bryan A. Merryman

Attorneys for Defendant
BLUETRITON BRANDS, INC.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was filed in the Court's CM/ECF System this 4st day of March 2024, and thereby served on all counsel of record.

By: *<u>/s/ Bryan A. Merryman</u>*
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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

PERRY BRUNO, individually, and on behalf of other members of the general public similarly situated,

Plaintiff,

v.

BLUETRITON BRANDS, INC.,

Defendant.

Case No. 2:24-CV-01563-MWF (JPRx)

REQUEST FOR JUDICIAL NOTICE IN SUPPORT OF DEFENDANT BLUETRITON BRANDS, INC.'S MOTION TO DISMISS

Date: April 8, 2024
Time: 10:00 a.m.
Courtroom: 5A
Judge: Hon. Michael W. Fitzgerald

DEFENDANT BLUETRITON BRANDS, INC.'S REQUEST FOR JUDICIAL NOTICE

Pursuant to Federal Rule of Evidence 201, defendant BlueTriton Brands, Inc. ("BTB") respectfully requests the Court take judicial notice of Exhibits 1 to 5 submitted in support of its motion to dismiss Plaintiff's complaint.

For the reasons set forth below, the Court should take judicial notice of the following exhibits:

Exhibit 1: U.S. Food & Drug Admin., *Bottled Water Everywhere: Keeping it Safe* (2022), *available at* https://www.fda.gov/consumers/consumer-updates/bottled-water-everywhere-keeping-it-safe (last visited Mar. 4, 2024).

Exhibit 2: U.S. Environmental Protection Agency, *Microplastics Research*, *available at* https://www.epa.gov/water-research/microplastics-research (last visited Mar. 4, 2024).

Exhibit 3: Chris Tyree & Dan Morrison, *Plus Plastic: Microplastics Found in Global Bottled Water*, Orb Media (2018), *available at* https://orbmedia.org/plus-plastic-text (last visited Mar. 4, 2024).

Exhibit 4: Chris Tyree & Dan Morrison, *Plus Plastic: Microplastics Found in Global Bottled Water* (2018), *available at* https://orbmedia.org/plus-plastic-data (last visited Mar. 4, 2024).

Exhibit 5: Sherri A. Mason, Victoria Welch, Joseph Neratko; *Synthetic Polymer Contamination in Bottled Water*, Dep't of Geology & Environmental Sciences, State Univ. of New York Fredonia (2018), *available at* https://orbmedia.org/s/2018-03-13_FinalBottledWaterReport.pdf (last visited Mar. 4, 2024).

The Court may take judicial notice of all five exhibits because they are "integral to the plaintiff's claims" and their "authenticity … is undisputed," as they are all publicly available documents. *MGIC Indem. Corp. v. Weisman*, 803 F.2d 500, 504 (9th Cir. 1986); *Janda v. T-Mobile USA*, Inc., 378 F. App'x 705, 707 (9th Cir.

2010). The Court may also take judicial notice of Exhibits 1 and 2 under Federal Rule of Evidence 201(b) because they are government websites. *Organic Cannabis Found., LLC v. Commissioner*, 962 F.3d 1082, 1096 (9th Cir. 2020). Additionally, the Court may take judicial notice of Exhibits 3, 4, and 5 because they are referenced in Plaintiff's complaint. *Janda*, 378 F. App'x at 707.

For the foregoing reasons, BTB respectfully requests the Court grant its request for judicial notice of Exhibits 1 to 5 or otherwise consider these exhibits in deciding BTB's motion to dismiss.

Dated: March 4, 2024

WHITE & CASE LLP

By: */s/ Bryan A. Merryman*
Bryan A. Merryman

Attorneys for Defendant
BLUETRITON BRANDS, INC.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was filed in the Court's CM/ECF System this 4th day of March 2024, and thereby served on all counsel of record.

/s/ Bryan A. Merryman
Bryan A. Merryman

EXHIBIT 1

Bottled Water Everywhere: Keeping it Safe

Consumers drink billions of gallons of bottled water each year. Here's how the FDA helps keep it safe.

Español (/consumers/articulos-para-el-consumidor-en-espanol/agua-embotellada-por-todas-partes-como-mantener-su-inocuidad)

Seems like almost everyone is carrying a bottle of water these days.

The U.S. Food and Drug Administration regulates bottled water products, working to ensure that they're safe to drink.

The FDA protects consumers of bottled water through the Federal Food, Drug, and Cosmetic Act (FD&C Act), which makes manufacturers responsible for producing safe, wholesome, and truthfully labeled food products.

There are regulations that focus specifically on bottled water, including:

- "standard of identity" regulations that define different types of bottled water
- "standard of quality" regulations that set maximum levels of contaminants—including chemical, physical, microbial, and radiological contaminants—allowed in bottled water
- "current good manufacturing practice" (CGMP) regulations that require bottled water to be safe and produced under sanitary conditions

Types of Bottled Water

The FDA describes bottled water as water that's intended for human consumption and sealed in bottles or other containers with no added ingredients, except that it may contain safe and suitable antimicrobial agents. Fluoride may also be added within the limits set by the FDA.

The agency classifies some bottled water by its origin. Here are four of those classifications:

- **Artesian well water.** This water is collected from a well that taps an aquifer—layers of porous rock, sand, and earth that contain water—which is under pressure from surrounding upper layers of rock or clay. When tapped, the pressure in the aquifer, commonly called artesian pressure, pushes the water above the level of the aquifer, sometimes to the surface. Other means may be used to help bring the water to the surface.
- **Mineral water.** This water comes from an underground source and contains at least 250 parts per million total dissolved solids. Minerals and trace elements must come from the source of the underground water. They cannot be added later.
- **Spring water.** Derived from an underground formation from which water flows naturally to the surface, this water must be collected only at the spring or through a borehole that taps the underground formation feeding the spring. If some external force is used to collect the water through a borehole, the water must have the same composition and quality as the water that naturally flows to the surface.
- **Well water.** This is water from a hole bored or drilled into the ground, which taps into an aquifer.

Bottled water may be used as an ingredient in beverages, such as diluted juices or flavored bottled waters. However, beverages labeled as containing "sparkling water," "seltzer water," "soda water," "tonic water," or "club soda" aren't included as bottled water under the FDA's regulations. These beverages are instead considered to be soft drinks.

It May Be Tap Water

Some bottled water also comes from municipal sources—in other words, public drinking water or tap water. Municipal water is usually treated before it is bottled. Examples of water treatments include:

- **Distillation.** Water is turned into a vapor, leaving minerals behind. Vapors are then condensed into water again.
- **Reverse osmosis.** Water is forced through membranes to remove minerals.
- **Absolute 1 micron filtration.** Water flows through filters that remove particles larger than one micron—.00004 inches—in size. These particles include *Cryptosporidium*, a parasitic pathogen that can cause gastrointestinal illness.
- **Ozonation.** Bottlers of all types of waters typically use ozone gas, an antimicrobial agent, instead of chlorine to disinfect the water. (Chlorine can add residual taste and odor to the water.)

Bottled water that has been treated by distillation, reverse osmosis, or another suitable process may meet standards that allow it to be labeled as "purified water."

Ensuring Quality and Safety

Federal quality standards for bottled water were first adopted in 1973. They were based on U.S. Public Health Service standards for drinking water set in 1962.

The 1974 Safe Drinking Water Act gave regulatory oversight of public drinking water to the U.S. Environmental Protection Agency (EPA). The FDA subsequently took responsibility, under the FD&C Act, for ensuring that the quality standards for bottled water are compatible with EPA standards for public drinking water.

Each time EPA establishes a standard for a contaminant, the FDA either adopts it for bottled water or finds that the standard isn't necessary for bottled water.

In some cases, standards for bottled water and public drinking water differ. For example, because lead can leach from pipes as water travels from water utilities to home faucets, EPA has set its limit for lead in public drinking water water at 15 parts per billion (ppb). For bottled water, for which lead pipes aren't used, the lead limit is set at 5 ppb.

For bottled water production, bottlers must follow the CGMP regulations that are specific to processing and bottling drinking water, put in place and enforced by the FDA. Water must be sampled, analyzed, and found to be safe and sanitary. These regulations also require proper plant and equipment design, bottling procedures, and record keeping.

In addition, bottled water processors are generally required to register with the FDA as food facilities. Domestic and foreign facilities that are required to register as food facilities must comply with the requirements for risk-based preventive controls mandated by the FDA Food Safety Modernization Act (FSMA) as well as the modernized Current Good Manufacturing Practices (CGMPs) of this rule that cover all human food facilities (unless an exemption applies). Please see FDA's Preventive Controls for Human Food webpage (/food/food-safety-modernization-act-fsma/fsma-final-rule-preventive-controls-human-food) for additional details.

Furthermore, the FDA oversees inspections of bottling plants. The agency inspects bottled water plants under its general food safety program and has states perform some plant inspections under contract. (Some states also require bottled water firms to be licensed annually.)

EXHIBIT 2

Microplastics Research

On this page:

Plastics have become ubiquitous in natural and built environments which has caused concern regarding potential harms to human and aquatic life. Microplastics (plastic particles ranging in size from 5 mm to 1 nm) and nanoplastics (plastic particles smaller than 1 µm) have been found in every ecosystem on the planet from the Antarctic tundra to tropical coral reefs. The wide range of particle sizes, densities, and compositions pose a challenge for researchers because there is not a single method that can be used to characterize the wide variety of micro- and nanoplastic particles. There is a pressing need to develop and standardize collection, extraction, quantification, and identification methods for micro/nanoplastics to improve reliability, consistency and comparability across studies.

Characterization and Quantification

EPA researchers have been addressing plastic pollution in the aquatic environment by establishing reliable and reproducible approaches for sampling micro/nanoplastics, separating plastics from organic and inorganic interferences found in environmental samples, and extracting plastics without harsh chemicals or heat that further degrade plastic. Using state-of-the-art analytical chemistry instrumentation, researchers are working to determine appropriate analytical methods to characterize and quantify total microplastics in water and sediment samples, as well as the different types of plastic polymers. This research helps inform recommendations for best practices and standardized methodologies to characterize and assess the extent of micro and nanoplastics pollution in water.

Health Effects Methods

EPA scientists are developing new or adapting existing methods to evaluate the human health and aquatic life impacts of microplastics, particularly nanoplastics.

Human health impacts focus:

- Assessing health impacts from exposure to microplastics in experimental models.
- Developing methods, models, and tools to evaluate cellular uptake and clearance of microplastics using cell cultures.
- Examining National Health and Nutrition Examination Survey (NHANES) data to determine if markers of plastic exposure in people correlate with drinking water sources.

Aquatic life impacts focus:

- Determining the potential toxicological impacts of bio-based plastics on aquatic life.
- Evaluating the cumulative effects on coral growth from exposure to environmentally relevant microplastic concentrations and elevated temperatures.
- Determining the potential toxicological effects of tire wear particles and associated contaminants on marine aquatic life.

Related Research

- Advanced Ambient Water Quality Research <https://epa.gov/water-research/advanced-ambient-water-quality-research>

EXHIBIT 3

Packaged water can be a lifeline for many of the 2.1 billion people worldwide with unsafe drinking water. Some 4,000 children die every day from water-borne diseases, according to the United Nations.

Yet many who do have safe tap water still choose bottled because they think it's cleaner, find it more convenient or prefer the taste. Bottled water output will soon hit 300 billion liters a year.

Scientists and governments are increasingly concerned about the effects of microplastic pollution on wildlife and the environment. Recent studies have found microplastics — particles smaller than 5 millimeters — in the oceans, soil, air, lakes, and rivers.

But plastic's final frontier may be the human body.

Last year, an Orb Media investigation revealed the presence of microscopic plastic fibers in global tap water samples.

Today's study, the first to show plastic contamination of global bottled water, is "a very illuminative example of how intimate our contact with plastic is," said Martin Wagner, a toxicologist at the Norwegian University of Science and Technology.

Microplastics are "probably in our tissues," said Jane Muncke, managing director at the Food Packaging Forum, a research organization in Zurich. "I'm sure they're in mine."

What this means for human health is unknown.

"Based on current knowledge, which is very fragmentary and incomplete, there is little health concern," Wagner said. "The human body is well-adapted to dealing with non-digestible particles."

As much as 90 percent of microplastic consumed might pass through the gut without incident, according to a 2016 European Union report on plastic in seafood said.

Of the other ten percent, some plastic under 150 microns (0.15 millimeters) could enter the gut's lymphatic system, or pass from the bloodstream to the kidneys or liver, according to the UN Food and Agriculture Organization. Today's bottled water study found plastic within that range.

But assumptions about how plastic behaves in the gut are drawn from scientific models, not laboratory studies, Muncke said.

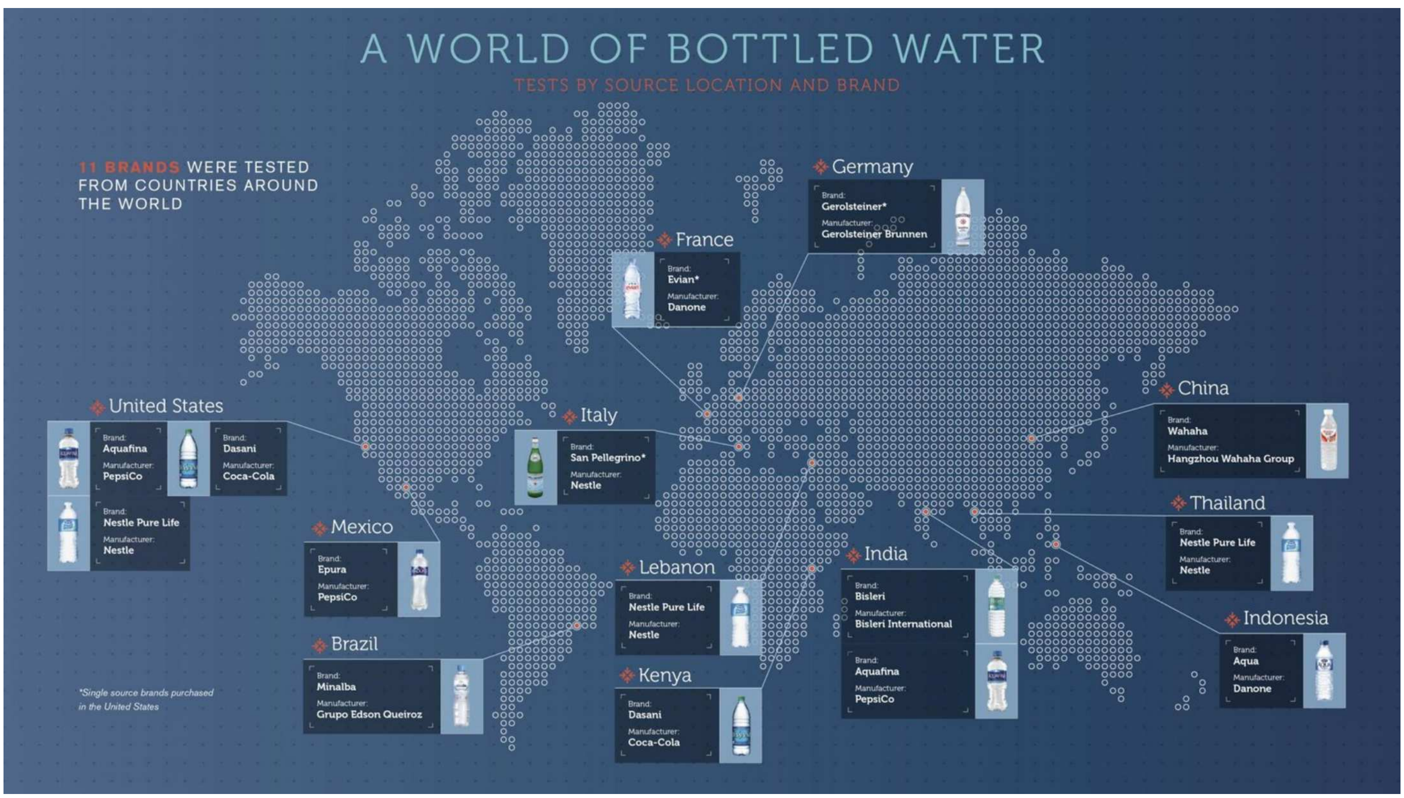
EXHIBIT 4

THE VALUE OF DATA

Orb is committed to producing global stories that are relevant to and resonate across our diverse human community.

In order to achieve that, we are advancing a new kind of journalism, one that brings together the insights gleaned from data analysis, the wisdom of the public, and on-the-ground reporting. For the Pure Plastic story, our data collection involved collecting samples of bottled water from major brands and testing that water in a lab for the presence of tiny pieces of plastics. You can read the full story of how we collected this data here.

You can take a look at our data collection process here. Enjoy.



English

EXHIBIT 5

frontiers in Chemistry

ORIGINAL RESEARCH
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Synthetic Polymer Contamination in Bottled Water

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Eleven globally sourced brands of bottled water, purchased in 19 locations in nine different countries, were tested for microplastic contamination using Nile Red tagging. Of the 259 total bottles processed, 93% showed some sign of microplastic contamination. After accounting for possible background (lab) contamination, an average of 10.4 microplastic particles >100 um in size per liter of bottled water processed were found. Fragments were the most common morphology (66%) followed by fibers. Half of these particles were confirmed to be polymeric in nature using FTIR spectroscopy with polypropylene being the most common polymer type (54%), which matches a common plastic used for the manufacture of bottle caps. A small fraction of particles (4%) showed the presence of industrial lubricants. While spectroscopic analysis of particles smaller than 100 um was not possible, the adsorption of the Nile Red dye indicates that these particles are most probably plastic. Including these smaller particles (6.5–100 um), an average of 325 microplastic particles per liter of bottled water was found. Microplastic contamination range of 0 to over 10,000 microplastic particles per liter with 95% of particles being between 6.5 and 100 um in size. Data suggests the contamination is at least partially coming from the packaging and/or the bottling process itself. Given the prevalence of the consumption of bottled water across the globe, the results of this study support the need for further studies on the impacts of micro- and nano- plastics on human health.

Keywords: plastic pollution, microplastic, consumables, human health, FTIR, Nile Red, drinking water

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INTRODUCTION

Plastic is defined as any synthetic or semi-synthetic polymer with thermo-plastic or thermo-set properties, which may be synthesized from hydrocarbon or biomass raw materials (UNEP, 2016). Plastics production has seen an exponential growth since its entrance on the consumer stage, rising from a million tons in 1945 to over 300 million tons in 2014 (PlasticsEurope, 2015). Some of the features of plastic that make it so attractive from a manufacturing standpoint are of concern when it comes to its environmental impact. It is very light-weight allowing it to be easily transported over long distances, and it is durable being resistant to breakage and biodegradation. Its durability is inherently connected to its chemical structure. Being composed largely, if not entirely, of hydrocarbon chains, the lack of double bonds or other functional groups provides an inherent stability to its molecules, and its synthetic nature means that the vast majority of microorganisms haven't evolved to utilize plastic as a food source. Thus, while plastic will break into smaller and smaller particles via photo-oxidative mechanisms, the fundamental molecular structures of the material change very little throughout that process. Plastics become microplastics become nanoplastics, but they are all plastics, just of increasingly smaller size, allowing them to be more easily ingested and perhaps even cross the gastrointestinal tract to be transported throughout a living organism (Brennecke et al., 2015; Sharma and Chatterjee, 2017).

With the rise in plastics manufacture, there has been an associated rise in plastic pollution of the external environment. The first reports date back to the early 1970's (Carpenter and Smith, 1972) and most famously within the world's oceans (e.g., Moore et al., 2001; Eriksen et al., 2014), but more recently plastic pollution has been found within freshwater lakes, inland seas, rivers, wetlands and organisms from plankton to whales (and nearly every species in between; Eriksen et al., 2013; Baldwin et al., 2016; Horton et al., 2017; Lusher et al., 2017).

As its ubiquity in the external environment has been increasing, this has lead more researchers to investigate various consumables for the presence of plastic. The first such study focused on bivalves intended for human consumption (Van Cauwenberghe and Janssen, 2014). More recent studies have focused on fish (such as anchovies), as well as mussels (Rochman et al., 2015; Tanaka and Takada, 2016; Lusher et al., 2017). Two studies have noted the presence of microplastics within beer (Liebezeit and Liebezeit, 2014; Kosuth et al., 2018). Starting with a 2015 study of Chinese Sea Salt brands, several additional studies have established the presence of microplastics within these human consumables as well (Yang et al., 2015; Iñiguez et al., 2017; Karami et al., 2017; Kosuth et al., 2018). The first-ever investigation of plastic pollution within globally sourced tap water (a total 159 samples from seven geographical regions spanning five continents) was published just earlier this year (Kosuth et al., 2018).

As research into the occurrence of plastic pollution has increased, sampling and analysis methods are continually evolving as well. Within the aqueous environment, volume-reduced (using neuston nets) or bulk sampling followed by density separation, filtration/sieving and visual identification have been the most commonly employed methods (Hidalgo-Ruz et al., 2012). Given the time-consuming nature of these methods of sample processing, as well as the potential for misidentification using visual cues alone, one focus area for plastics pollution research (especially at the micro- and nano- scale) is development of methods for high-throughput with increased polymeric confirmation. Several recent studies have supported the use of Nile Red (NR) as an accurate stain for the rapid detection and quantification of microplastics given its selectivity adsorption and fluorescent properties. Maes et al. (2017) specifically tested the preferential adsorption of NR for polymeric materials relative to common organic (algae, seaweeds, wood and feathers) and inorganic (shells) environmental contaminants. Like Maes et al. (2017) and Erni-Cassola et al. (2017) validated the use of this stain with analysis using FTIR to verify the polymeric content of fluorescing particles. Both of these studies concluded from their efforts that NR can be used for the rapid detection of microplastics without the need for additional spectroscopic analysis (thereby reducing the time needed to analyze an environmental sample). These studies suggest that the adsorption of NR alone is sufficient to identify a particle as polymeric in nature. A conclusion further supported by the inclusion of this method within the recent review of analytical methodologies for microplastic monitoring by Renner et al. (2018).

Here we present a study utilizing Nile Red for the detection of microplastic within 11 globally- sourced brands of bottled water. In total 259 bottles of water from 11 brands were processed across 27 different lots (an identification number assigned by a manufacturer to a particular production unit) purchased from 19 locations in nine countries. For 10 brands we tested 2–3 lots each, while for one brand only one lot was tested. Within each lot, we generally tested 10 bottles (bottle volume 500–600 mL each) from the case. However, for one lot, several bottles from the case were seized by customs allowing only nine bottles to be tested, while for two other lots the volume of water per bottle was significantly greater (0.750–2 L) and thus only four (2 L bottles) or six bottles (750 mL bottles) were processed. One of the bottled water lots was packaged in glass (Gerolsteiner, 750 mL, six glass bottles processed); all other samples were packaged in plastic. All bottles had plastic bottle caps.

MATERIALS AND METHODS

Sample Collection

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 captia consumption of packaged drinking water (Lebanon, Mexico, Thailand, USA; **Table 1**). Leading international brands in this study included Aquafina, Dasani, Evian, Nestle Pure Life, and San Pellegrino. Leading national brands included Aqua (Indonesia), Bisleri (India), Epura (Mexico), Gerolsteiner (Germany), Minalba (Brazil), and Wahaha (China).

As many bottled water brands are simply filtered municipal tap water, sample lots were purchased from a number of locations to increase the likelihood of diverse bottling sources. For example, cases of the Mexican brand Epura were purchased from Tijuana in Baja California state, Reynosa on the Texas border (1,200 miles east of Tijuana), and Mexico City (1,400 miles south of Tijuana). This pattern is repeated with the other brands.

Sample Processing

The bottles within most (9 out of 11 brands) lots came in containers of 500–600 mL per bottle, while two of the brands contained 0.75–2 L per bottle. For those samples with 500–600 mL per bottle, 10 bottles were randomly chosen from the lot, while for the 750 mL samples, six bottles were chosen, and for the 2 L sample, four bottles were randomly chosen, and placed under a laminar flow fume hood. While under the fume hood, each bottle was opened and injected with a specific volume of Nile Red solution (prepared in acetone to 1 mg mL−1) to yield a working concentration of 10 ug mL−1 (Maes et al., 2017) and re-capped. Nile Red adsorbs to the surface of plastics, but not most naturally occurring materials, and fluoresces under specific wavelengths of light (Erni-Cassola et al., 2017). Bottles were allowed to incubate with the injected dye for at least 30 min. The bottled water was then vacuum filtered through a glass fiber filter (Whatman grade 934-AH, 55 mm diameter, 1.5 um pore).

Filters were examined under an optical microscope (Leica EZ4HD, 8–40× zoom, integrated 3 Mpixel camera) using a blue crime light (Crime-Lite 2, 445–510 nm, Foster & Freeman) to elicit fluorescence, which was visualized through orange filter

TABLE 1 | Selected market assessment data utilized to determine the countries of origin and brands tested within this study.

Brand	Parent company	Country	Brand sales ranking		Country sales ranking in world
			In country	In world	
Aqua	Danone (France)	Indonesia	1	3	4 (by volume)
Aquafina	Pepsico	USA	2	7	2 (by volume)
Bisleri	Bisleri (Indian)	India	1	10	6 (in sales)
Dasani	Coca-Cola	USA	1	4	2 (by volume)
Epura	Proprietary brand of GEPP	Mexico	1	—	1 (per capita)
Evian	Danone	USA United Kingdom France	1 (UK) 2 (France)	3	1 (in sales)
Gerolsteiner	GmbH & Co. KG	GERMANY	1	—	4 (per capita) 8 (in sales)
Minalba	Edson Queiroz Group	Brazil	—	—	5 (in sales)
Nestle Pure Life	Nestle	Lebanon	1	1 (parent company)	—
San Pellegrino	Nestle	Italy	—	1 (parent company)	3 (per capita) 9 (in sales)
Wahaha	Hangzhou Wahaha Group	China	1	1	1 (by volume)

Dashes (—) indicate missing information.

viewing googles (Foster & Freeman, 529 nm). All particles larger than ∼100 um (which are large enough to be visible to the naked eye and manipulated with tweezers) were photographed, enumerated and typed with respect to morphology (Fragment, Fiber, Pellet, Film, or Foam). Additionally the first 3–5 particles were analyzed via FTIR (PerkinElmer Spectrum Two ATR; 450 cm−1 to 4,000 cm−1, 64 scans, 4 cm−1 resolution; ATR correction) to confirm polymeric identity (Spectrum 10 software suite).

After removal of all particles >100 um, the filter with fluorescing particles was photographed (8× zoom) through an orange camera filter (Foster & Freeman, 62 mm diameter, 529 nm) in four separate quadrants. To ensure no overlap of the quadrant photographs identification marks were made on the filters prior to turning the filter 90 degrees to take the subsequent photo. In fact, given the zoom factor of the microscope, quadrant photos did not obtain full (100%) coverage of the filter. Each photographed quadrant was analyzed using a software program entitled "Galaxy Count" developed by a former astrophysicist for this specific purpose and briefly described here. Given the fluorescing particles relative to the non-fluorescing background, "Galaxy Count" is able to enumerate the number of particles (as bright spots) in order to quantifying the number of smaller microplastics. To do this, the operator of the software sets a threshold value which is used to convert the quadrant images to black (background filter) and white (fluorescing particles). The software then digitally counts the number of white spots ("stars") against the dark background ("the night sky"). At the 8× magnification in which the quadrant photos were taken, 1 pixel was equal to 6.5 um. Thus, while the filter pore size was 1.5 um, the smallest size particle visualized through the use of the combination of photography and software was 6.5 um. There could certainly be particles smaller than 6.5 um, but the method employed here would not be able to assess their presence. Due to the programmatic setting of the threshold value, all digital counts were conducted by two different researchers working independently of one another to account for possible variability.

Microplastic counts for particles >100 um (referred to as "NR + FTIR confirmed particles") are reported for each bottle. These particles are the ones that were further analyzed by FTIR and thus the types of polymers are also reported. Smaller microplastic particles (6.5–100 um; referred to as "NR tagged particles"), counted using the "Galaxy Count" software, are similarly reported for each bottle by summing over the four quadrants (each quadrant being reported as the average of the two researchers).

Quality Assurance and Quality Control

As the "Galaxy Count" software was created specifically for this project in order to verify its accuracy four solutions were created using DI water containing 0, 20, 50 or 100 polyethylene microspheres (Cospheric, PE micropheres, $D = 1.25$ g mL−1, 75–90 um diameter). These solutions were created by one researcher, but processed "blind" by another researcher in a manner identical to the samples themselves (NR injection, incubation, filtering, quadrant photographing and analysis by the "Galaxy Count" software). Additionally the analysis of all filter quadrants by the "Galaxy Count" software for all samples were conducted "blindly" by two separate researchers. These two counts were compared to one another for accuracy, in addition to being averaged for reported numbers.

In order to prevent/reduce potential contamination throughout the sample processing from external sources, such as airborne fibers, work occurred in a laminar airflow cabinet (Mott manufacturing, Phoenix Controls, serviced annually in September) and the workspace was wiped down every week. All glassware was covered with a watch glass when not in use and washed thoroughly between trials. Filters were inspected under a microscope prior to use, and a cotton lab coat and sterling nitrile powder free exam gloves were worn throughout the experimental procedure.

To account for possible lab contamination that could be coming from atmospheric deposition, the chemicals used, the glassware or other aspects of the testing environment, lab blanks containing deionized water (used to wash all glassware) or acetone (used to prepare the Nile Red solution) were processed in a manner identical to the samples themselves. Particle densities within samples were reduced based upon the average densities across all lab blanks.

RESULTS

Overview

A total of 259 individual bottles from across 11 different brands and 27 different lots were analyzed for microplastic particulate, subdivided into two size fractions: so-called "NR + FTIR confirmed particles," which are >100 um, and "NR tagged particles," which are 6.5–100 um. As quadrant photos did not provide full (100%) coverage of the filter, it is likely that "NR tagged particles" are underestimated. Since individual bottles contained varied water volumes, from 500 mL to 2 L, absolute counts for each bottle and size fraction were divided by sample volume to calculate (raw) densities of microplastic per liter (microplastic particles/L or MPP/L).

Thirteen lab blanks using laboratory deionized water or acetone were processed using methods identical to those for the bottled water samples. For "NR + FTIR particles" (>100 um) the average density was found to be 4.15 MPP/L, with a range of 0–14 MPP/L, while within the smaller "NR tagged particles" (6.5–100 um) the average density was 23.5 MPP/L, with a range of 7–47 MPP/L. Reported microplastic densities for the bottled water samples are calculated (by size fraction) from raw densities less the average from laboratory blanks (**Table 1**). If raw densities had less than or equal quantities relative to the laboratory blanks, their values were set to zero. Given that quadrant photos did not obtain full (100%) coverage of the filter and that raw densities were reduced by lab blanks, reported densities are expected to be reasonable but conservative accounting of microplastic contamination. Total densities were calculated by summing across the size fractions (**Table 2**).

Seventeen bottles out of the 259 bottles analyzed (∼7%) showed no microplastic contamination in excess of possible laboratory influence indicating that 93% of the bottled water tested showed some sign of microplastic contamination. The densities of microplastic contamination are quite variable ranging from the 17 bottles with no contamination to one bottle that showed an excess of 10,000 microplastic particles per liter (**Table 2**). The variabilities seen in the individual bottles, even among the same lot and brand, is similar to what is seen in sampling open bodies of water (Yonkos et al., 2014). Patterns in such sampling can be rather stochastic due to the large number of factors that can affect the occurrence of plastic particles (especially at the microscale), like particle-fluid dynamics, as well as variabilities within the manufacturing process itself, leading to the large variabilities seen within the samples. This erraticism highlights the need for large sample sizes, such as that employed here, in order to average across the variabilities to produce a realistic depiction.

Table 3 provides the mean (by size fraction and total), as well as the minimum and maximum, microplastic densities (in MPP/L) for each lot averaged across all the bottles tested. When averaging across the individual bottles, all 27 lots tested showed some quantity of microplastic contamination (**Table 2**). Within brands there is significant variability between different lots, which could be owing to a number of factors, such as water source, different bottling facilities, or the conditions and/or length of time involved in shipping from bottling facilities to purchase location. The 17 individual bottles that showed no microplastic contamination in excess of possible laboratory background (**Table 1**) originated from seven lots (∼25%) of the 27 tested. Thus, microplastic contamination was found within all bottles in 75% of the lots analyzed.

When averaged across all lots and all brands, 325 MPP/L were found within the bottled water tested [broken down as an average of 10.4 MPP/L occurring within the larger size range (>100 um) and an average 315 MPP/L within the smaller size range (6.5–100 um)]. While all bottled water lots tested showed some sign of microplastic contamination (**Table 2**), there was significant variation among the brands (**Figure 1**). Averaging across lots by brand, Nestle Pure Life and Gerolsteiner showed the highest average densities at 930 and 807 MPP/L, respectively, while San Pellegrino and Minalba showed the lowest microplastic contamination with 30.0 and 63.1 MPP/L, respectively (**Figure 1**). Error bars in **Figure 1** represent one standard deviation and are quite large given the large variability among the individual bottles for each lot (**Table 2**), as well as the variation among lots of the same brand (**Table 3**).

Of all the lots tested, only one was packaged in glass rather than plastic: Gerolsteiner (NV No. AC-51-07269). While these samples revealed microplastic contamination, they did so at lower level as compared to the other lots (**Tables 2**, **3**). Further, the same brand of water but packaged in plastic instead of glass was also tested (Gerolsteiner, 07.142018 2). While both of these packaged waters have the same water source, there was considerably less microplastic contamination within the water bottled in glass as compared to that packaged in plastic (204 vs. 1,410 MPP/L, respectively). This indicates that some of the microplastic contamination is likely coming from the water source, but a larger contribution might be originating from the packaging itself.

NR + FTIR Confirmed Particles (>100 um)

In total nearly 2,000 microplastic particles >100 um were extracted from all of the filters, with nearly 1,000 (∼50%) being further analyzed by FTIR. Obtained FTIR spectra (after applied ATR correction) were compared to libraries of known spectra using the included PerkinElmer Spectrum 10 software suite in order to confirm and identify the polymeric content of the particles. All particles analyzed were either best matched to a polymer, plastic additive or known plastic binder providing additional supporting evidence that Nile Red selectively adsorbed to microplastic particles within the bottled water. With this spectroscopic confirmation, it can be concluded that on average each bottle of water contains at least 10.4 MPP/L (**Table 3**). While this analysis confirmed the polymeric nature of these particles, a match of 70% or greater was required in order to assign polymer identity. In total over 400 particles (20% of all extracted plastic particles >100 um and 40% of those analyzed by FTIR) met this

TABLE 2 | Microplastic particle densities by bottle and size fraction for each brand and lot number.

			Microplastics densities (MPP/L) by bottle																													
			NR + FTIR confirmed particles (>100 um)										NR tagged particles (6.5–100 um)										Reported total densities (MPP/L)									
Brand	Lot number	Purchase location	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Aqua	IB 101119	Jakarta, Indonesia	6	8	8	4	11	9	4	9	3	6	127	52	55	57	12	0	0	0	0	0	133	60	62	62	23	9	4	9	3	6
Aqua	BB 311019 08:11 PSRL6	Bali, Indonesia	3	9	1	9	8	8	3	19	26	21	2	37	0	142	0	0	7	602	1,466	4,692	4	47	1	152	8	8	10	621	1,492	4,713
Aqua	BB 311019 09:50 STB1	Medan, Indonesia	0	1	3	9	8	0	6	36	8	0	36	94	30	43	41	0	25	3,687	12	5	36	95	32	52	48	0	31	3,722	20	5
Aquafina	Oct0719 0121PF100375	Amazon.com	10	8	14	8	24	14	20	28	10	14	87	37	74	35	132	313	139	1,268	137	153	96	44	87	42	155	326	158	1,295	146	166
Aquafina	BN7141A04117	Chennai, India	22	22	10	16	4	2	10	10	6	16	127	171	71	94	180	1	253	131	212	389	148	192	80	109	183	2	262	140	217	404
Bisleri	HE.B.No.229 (BM/AS)	Chennai, India	38	28	18	8	8	8	14	10	26	24	76	75	144	37	98	32	50	206	2,163	5,207	113	102	161	44	105	39	63	215	2,188	5,230
Bisleri	MU.B.No.298 (MS/AD)	Mumbai, India	14	8	12	6	8	12	2	12	6	10	66	8	17	125	6	20	0	1,799	0	0	79	15	28	130	13	31	2	1,810	6	10
Bisleri	SO.B.No.087 (AS/LB)	New Delhi, India	0	0	0	0	0	2	4	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	32	0	2	4	0	0	0
Dasani	Oct 0118NHBRB	Amazon.com	22	18	12	4	12	20	8	16	22	14	169	99	292	116	74	130	186	99	168	173	190	116	303	119	85	149	193	114	189	186
Dasani	P18NOV17CG3	Nairobi, Kenya	26	0	8	14	2	0	6	2	2	4	0	7	226	56	8	16	28	1	13	332	26	7	233	69	9	16	33	2	14	335
E-Pura	17.11.18	Mexico City, Mexico	9	11	38	26	31	38	36	4	4	28	2	0	946	1,292	1,167	667	2,232	7	56	268	11	11	983	1,318	1,198	704	2,267	11	60	296
E-Pura	14.10.18	Tijuana, Mexico	18	14	21	9	3	3	0	6	4	1	0	78	12	2	0	12	6	6	6	2	18	92	32	11	3	14	6	12	10	3
E-Pura	09.08.18	Reynosa, Mexico	0	0	0	1	–	–	–	–	–	–	0	0	0	148	–	–	–	–	–	–	0	0	0	149	–	–	–	–	–	–
Evian	PRD 03 21 2017 14:02	Amazon.com	18	18	26	10	38	24	22	20	40	46	239	207	156	176	98	222	105	212	153	148	256	224	181	185	135	245	126	231	192	193
Evian	PRD 05 24 17 11:29	Fredonia, NY, USA	4	0	2	0	0	2	2	2	4	0	253	0	77	29	3	50	1	47	96	15	256	0	78	29	3	51	2	48	99	15
Gerolsteiner	07.142018 2 07.07.2017	Fredonia, NY, USA	10	8	2	10	10	10	20	24	20	36	180	35	45	2	13	56	154	3,431	4,974	5,071	189	42	46	11	22	65	173	3,454	4,993	5,106
Gerolsteiner	NV No. AC-51-07269	Amazon.com	8	11	5	8	12	11	–	–	–	–	3	11	4	173	504	479	–	–	–	–	10	21	9	180	516	490	–	–	–	–
Minalba	FAB: 211017 09:06SP	Sao Paulo, Brazil	4	4	4	0	4	4	2	4	2	0	5	0	14	6	7	17	48	0	79	199	9	4	17	6	11	20	50	4	81	199
Minalba	FAB: 160817 15:05SP	Aparecida de Goiania, Brazil	4	0	8	4	0	6	10	2	15	6	0	0	3	43	0	10	11	5	0	0	4	0	11	47	0	16	20	7	15	6
Minalba	FAB: 091217 16:53SP	Rio de Janeiro, Brazil	2	0	4	0	6	0	0	0	0	39	37	0	2	0	54	0	32	25	479	824	39	0	6	0	60	0	32	25	479	863
Nestle Pure Life	100517 278WF246	Amazon.com	24	38	22	22	28	28	32	28	38	40	101	1,074	30	106	110	1,249	622	1,511	7,322	10,351	124	1,111	51	127	137	1,276	653	1,538	7,359	10,390
Nestle Pure Life	P: 4/11/17 01:34 AZ	Beirut, Lebanon	12	18	18	6	12	12	12	8	6	8	64	136	27	0	27	21	40	57	14	0	75	153	44	6	38	32	51	64	19	8
Nestle Pure Life	730805210A 23:28	Bangkok, Thailand	2	28	8	4	28	8	66	12	18	8	140	147	83	23	398	4	3,461	87	105	60	141	174	90	26	425	11	3,526	98	122	67
San Pellegrino	BBE 11.2018 10	Amazon.com	1	4	4	0	2	2	0	2	2	1	74	29	38	0	27	15	30	6	34	35	74	33	41	0	28	17	30	7	35	36
Wahaha	20171102 1214JN	Jinan, China	9	11	4	26	18	4	1	11	4	3	225	198	65	705	54	26	61	62	34	37	234	209	69	731	71	30	62	73	39	39
Wahaha	20171021 3214GH	Beijing, China	0	0	9	4	4	4	3	21	4	–	178	101	39	9	106	55	42	0	21	–	178	101	48	13	110	60	45	21	25	–
Wahaha	20171103 2106WF	Qingdao, China	4	8	4	1	1	8	4	3	11	1	86	108	44	0	0	158	39	0	87	104	91	116	48	1	1	165	44	3	98	105

Dashes (—) indicate lots in which <10 bottles were processed. NR, Nile Red.

TABLE 3 | Microplastic densities (MPP/L), by size fractions and total, averaged across all bottles within the same lot.

			Average microplastic densities (MPP/L)				
			NR + FTIR confirmed particles	NR tagged particles	Total		
Brand	Lot	Purchase location	(>100 um)	(6.5–100 um)	Average	Minimum	Maximum
Aqua	IB 101119	Jakarta, Indonesia	6.68	30.4	37.1	3	133
Aqua	BB 311019 08:11 PSRL6	Bali, Indonesia	10.5	695	705	1	4,713
Aqua	BB 311019 09:50 STB1	Medan, Indonesia	6.93	397	404	0	3,722
Aquafina	Oct0719 0121PF100375	Amazon.com	14.8	237	252	42	1,295
Aquafina	BN7141A04117	Chennai, India	11.6	162	174	2	404
Bisleri	HE.B.No.229 (BM/AS)	Chennai, India	18.0	808	826	39	5,230
Bisleri	MU.B.No.298 (MS/AD)	Mumbai, India	8.85	204	213	2	1,810
Bisleri	SO.B.No.087 (AS/LB)	New Delhi, India	0.57	3.15	3.72	0	32
Dasani	Oct 0118NHBRB	Amazon.com	14.6	150	165	85	303
Dasani	P18NOV17CG3	Nairobi, Kenya	6.28	68.3	74.6	2	335
E-Pura	17.11.18	Mexico City, Mexico	22.3	664	686	11	2,267
E-Pura	14.10.18	Tijuana, Mexico	7.76	12.2	20.0	3	92
E-Pura	09.08.18	Reynosa, Mexico	0.21	37.1	37.3	0	149
Evian	PRD 03 21 2017 14:02	Amazon.com	26.0	171	197	126	256
Evian	PRD 05 24 17 11:29	Fredonia, NY, USA	1.51	56.7	58.2	0	256
Gerolsteiner	07.142018 2 07.07.2017	Fredonia, NY, USA	14.8	1,396	1,410	11	5,106
Gerolsteiner	NV No. AC-51-07269	Amazon.com	8.96	195	204	9	516
Minalba	FAB: 211017 09:06SP	Sao Paulo, Brazil	2.56	37.5	40.1	4	199
Minalba	FAB: 160817 15:05SP	Aparecida de Goiania, Brazil	5.30	7.19	12.5	0	47
Minalba	FAB: 091217 16:53SP	Rio de Janeiro, Brazil	5.01	145	150	0	863
Nestle Pure Life	100517 278WF246	Amazon.com	29.8	2,247	2,277	51	10,390
Nestle Pure Life	P: 4/11/17 01:34 AZ	Beirut, Lebanon	11.0	38.2	49.3	6	153
Nestle Pure Life	730805210A 23:28	Bangkok, Thailand	18.0	450	468	11	3,526
San Pellegrino	BBE 11.2018 10	Amazon.com	1.68	28.6	30.3	0	74
Wahaha	20171102 1214JN	Jinan, China	9.10	147	156	30	731
Wahaha	20171021 3214GH	Beijing, China	5.53	61.2	66.7	13	178
Wahaha	20171103 2106WF	Qingdao, China	4.40	62.7	67.1	1	165

Minimum and maximum densities within the lot are also provided. NR, Nile Red.

threshold for identity confirmation and only those results are presented here

Polypropylene was found to be the most common polymeric material (54%) with Nylon being the second most abundant (16%; **Figure 2**). Polypropylene is a polymer often used to make plastic bottle caps, along with polyethylene, which corresponded to 10% of the particles analyzed. Interestingly, 4% of retrieved particles were found to have signatures of industrial lubricants coating the polymer (not shown).

As is common practice in plastic pollution research, all microplastics >100 um were visually characterized according to their morphology: Fragment, Fiber, Pellet, Film, or Foam. Fragments were found to be the most common type of particle (66%), followed by fibers (13%) and films (12%; **Figure 3**). The 13% of particles described as fibers (**Figure 3**) compares well with the 17% of particles that were confirmed by FTIR to be composed of fiberous polymers, most notably Nylon (**Figure 2**).

NR Tagged Particles (6.5–100 um)

In order to verify the effectiveness of the "Galaxy Count" software to count microplastics smaller than ∼100 um, the software was tested using solutions with known quantities (0,20, 50 or 100) of microspheres (diameters 75–90 um) processed in a manner identical to all samples and lab blanks. The "Galaxy Count" of fluorescing particles on the filter quadrant photos agreed very well with the actual count of particles included within the solutions (**Figure 4**). The excellent agreement with these test solutions supports the use of this tool for quantifying the numbers of smaller particles within the bottled waters analyzed, while the y-intercept of the least-squares fit further supports that the study is likely undercounting particles, especially within this smallest size range.

All counts using the "Galaxy Count" software were conducted independently by two different researchers owing to possible variabilities in software settings. As shown in **Figure 5**, the agreement in counts between the two researchers is excellent providing additional support to the effectiveness and validity

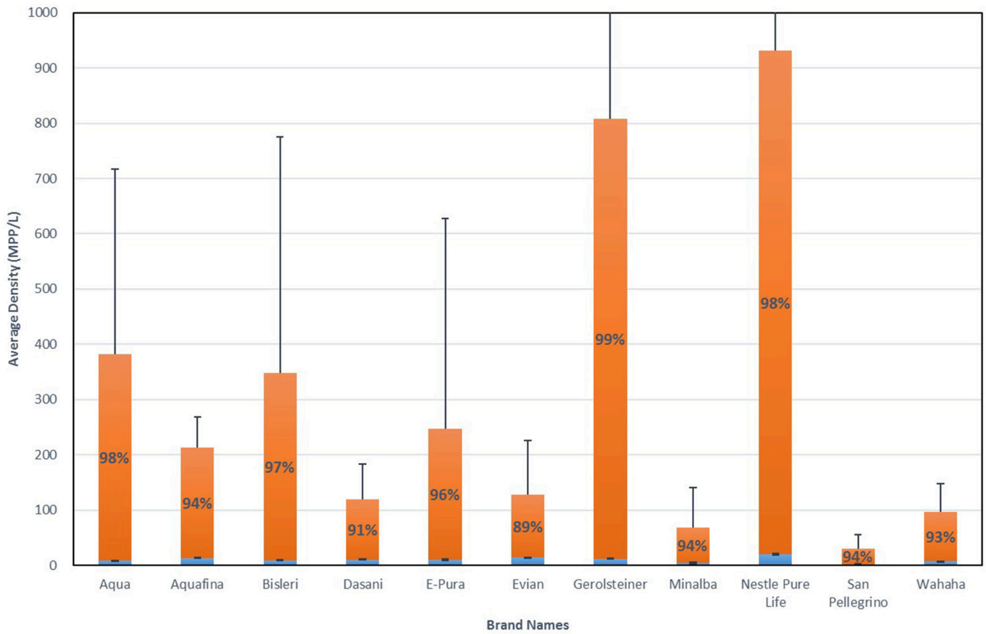

FIGURE 1 | Microplastic density averaged across individual bottles and lots by brand. Blue bars are densities for "NR + FTIR confirmed particles" (>100 um); Orange bars are for "NR tagged particles" (6.5–100 um). Error bars are one standard deviation. Percentages are for the contribution to the total for "NR tagged particles" (6.5–100 um); Contribution of larger particles can be inferred.

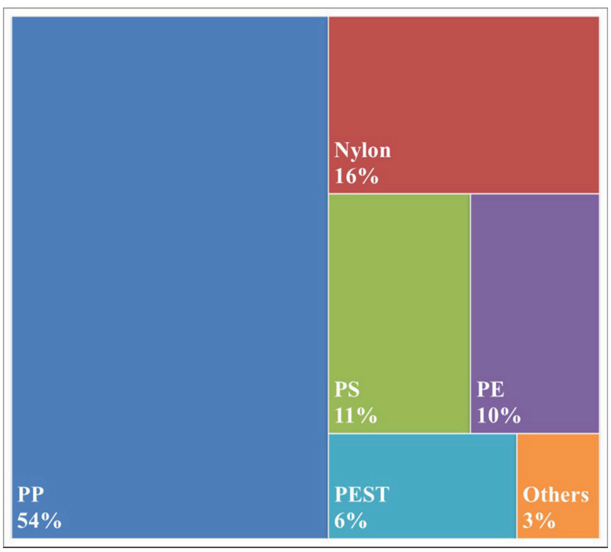

FIGURE 2 | Polymeric content of microplastic particles >100 um found within bottled water. PP, polypropylene; PS, polystyrene; PE, polyethylene; PEST, polyester + polyethylene terephthalate; Others includes Azlon, polyacrylates and copolymers.

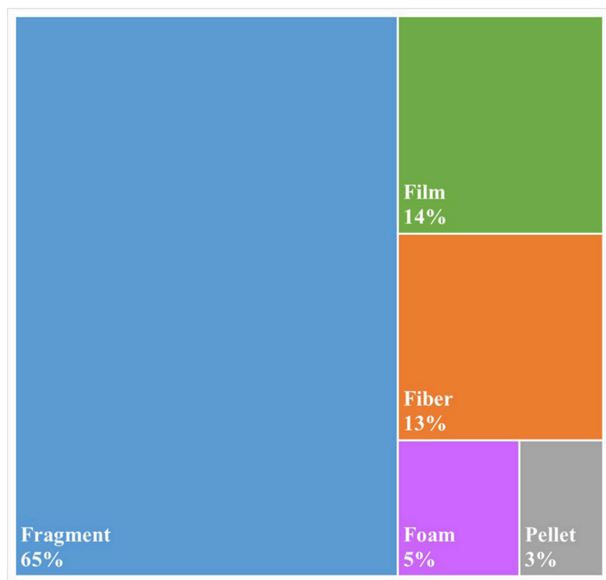

FIGURE 3 | Morphologies of microplastics >100 um found within bottled water.

in using the software to count the smaller particles within the bottled water.

Given the limitations of the lab, particles <100 um (the so-called "NR tagged particles") were not able to be confirmed as polymeric through spectroscopic analyses (FTIR and/or Raman spectroscopy). However, in testing of various stains and dyes that could be employed for microplastic detection and analysis within environmental samples with a greater potential for misidentification and false positives (i.e., sediments and open-water environmental samples) both Maes et al. (2017) and

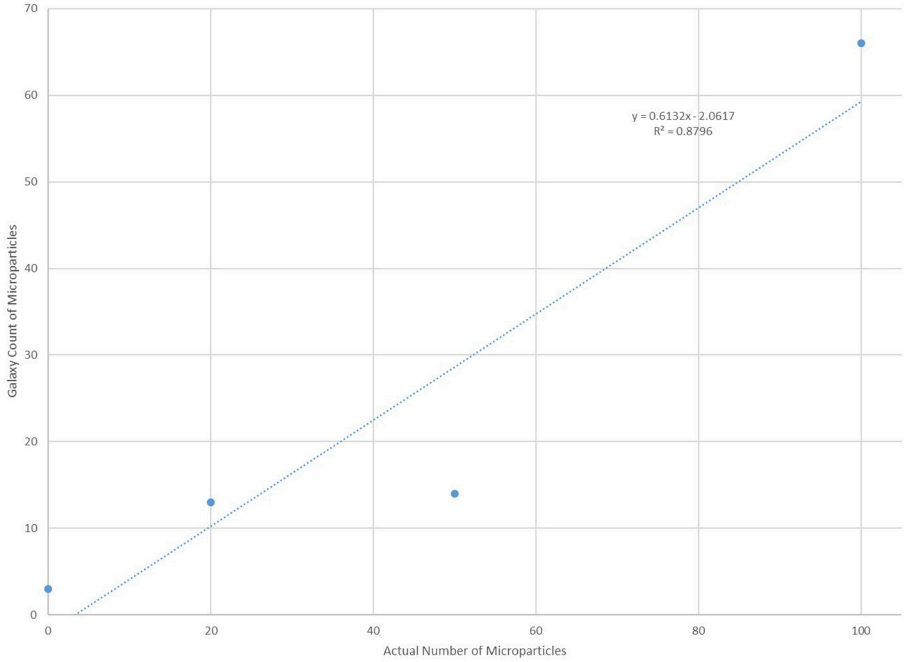

FIGURE 4 | Comparison of counts using the "Galaxy Count" software relative to the known number of microplastic particles within four test solutions.

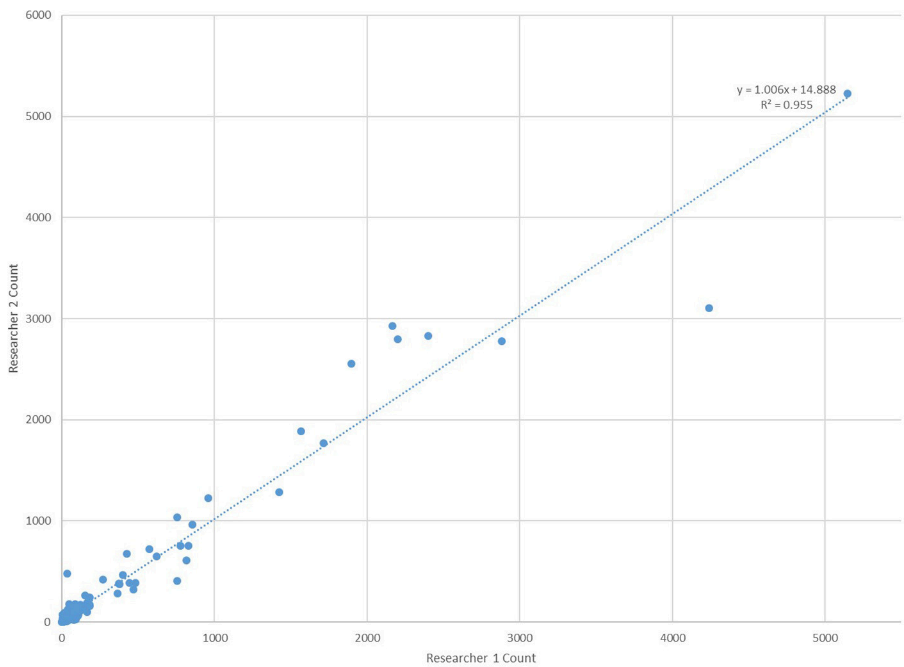

FIGURE 5 | Comparison of microplastic counts by the "Galaxy Count" software for particles <100 um within all 259 bottles tested by two researchers working independently of one another.

Erni-Cassola et al. (2017) concluded that Nile Red (NR) was very selective, especially within the time scales of incubation employed, and could be used for the rapid detection of microplastics without the need for additional spectroscopic analysis. To be sure that is why this stain was employed for this study. Additionally FTIR analysis was done on fluorescing particles >100 um and every particle analyzed was confirmed to be polymeric. Even further, NR is well-established to selectively adsorb to hydrophobic ("water-fearing") materials and, as such, will not adsorb to the only contents reasonably expected to be within bottled water, water and/or its mineral components. In addition, Schymanski et al. (2018) reported Raman confirmed densities of particles within a similar size range and even smaller (5–500 um) in bottles of German bottled mineral water. Thus, at a minimum while particles <100 um were not spectroscopically confirmed to be microplastics, particles are rationally expected to be plastic or of some other anthropogenic origin.

DISCUSSION

Part of the impetus for this study was as a follow-up to a tap water study released (in part) in September 2017 (Kosuth et al., 2018). The methods used in this study differed slightly in comparison to this earlier study, most notably in the use of a different stain. Rose Bengal was used in the earlier study, while Nile Red was used here. The two dyes have opposite affinities. While plastics adsorb Nile Red (allowing their easy detection via fluorescence), they do not adsorb Rose Bengal. The affinity of plastics to adsorb Nile Red allows smaller particles to be detected as compared to the Rose Bengal method, as noted by a recent study by Erni-Cassola et al. (2017). Thus, only our data on particles >100 um is comparable to the data in this previous tap water study.

We found roughly twice as many plastic particles (>100 um) within bottled water as compared to tap water on average (10.4 vs. 5.45 particles/L). While fibers made of 97% of the microplastics within the tap water study, they only composed 13% of the particles within bottled water. Instead fragments were the most common particle morphology (65%) within bottled water. These results indicate that the main source of the microplastic particulate is different. Given the fragment morphology combined with the fact that 4% of the particles were found to have signatures of industrial lubricants, the data seems to suggest that at least some of the plastic contamination may be coming from the industrial process of bottling the water itself. As polypropylene was the most common polymer found, the fragments could also be breaking off the cap, even entering the water through the simple act of opening the bottle.

More recently Schymanski et al. (2018) published their study on microplastic contamination of packaged mineral water. They tested a wider variety of packaging media from returnable and single-use plastic bottles to cartons to glass, while this study almost exclusively focused on single-use plastic bottles (having only one lot packaged in glass as an alternative). They did test fewer bottles overall as compared to this study. In order to compare these two studies, then, only their data for single-use, plastic beverage bottles is utilized. Within those confines, they tested a total of 11 bottles in comparison to our 259. While they do not specify how many different brands, for one brand they tested two different lots (purchased 6 weeks apart), but only tested one lot for the others.

The average microplastic density across all brands, lot numbers and bottles analyzed (325 MPP/L) is significantly higher in this study as compared to that reported by Schymanski et al. (2018) (14 MPP/L). This difference could be owing to a number of factors. First, as they report they only counted particles for which they could fully confirm the polymeric nature using Raman spectroscopy. We used the adsorption of Nile Red as our frontline confirmation of microplastic identity, using FTIR on particles simply to provide more information as to the specific polymer. As the authors note, while Raman can analyze smaller particles than FTIR, the laser intensity can cause the particle to decompose before an adequate spectra can be obtained. Schymanski et al. (2018) did not include these particles in their counts leading to a reduction in their calculated densities. Further, as our data shows there can be substantial variability between brands and between lots. Our significantly larger sample set provides a greater accounting of that variability.

Another difference between our studies is distribution of polymer types. Schymanski et al. (2018) found PEST (the combination of polyester and polyethylene terephthalate) to be the dominant polymeric material of their particulate contaminants, while that same categorization only accounted for 6% of our analyzed particles. Here polypropylene was found to be the dominant plastic (54%), which only accounted for 1% of their particles. However, our two studies are not fully comparable with regard to this analysis. Schymanski et al. (2018) analyzed and determined polymeric identity for all particles counted, while we only did so for particles >100 um. It is quite possible that the smaller particles we were unable to analyze were mainly composed of the polymers within the PEST category, which would very much alter our percentages. Nevertheless, we both do reason from our data that the packaging of the water itself is a likely source of contamination, though for us it appears to be the caps, while for Schymanski et al. (2018) it appeared to be the bottle.

Despite the differences between our studies some similarities do exist. We both found polyethylene accounting for ∼10% of the polymeric contaminants. Additionally, we both found smaller particles provided a larger contribution to the total number of particles as compared to the larger particles (>100 um). Across all samples, 95% of our particles were <100 um, while Schymanski et al. (2018) found they accounted for 98% of their counts. Even further, taken together, these two studies do support the very basic point that there are microplastics within bottled water and at least some of this contamination may arise from the industrial process of bottling the water, as well as from the packing material itself.

CONCLUSIONS

Twenty-seven different lots of bottled water from 11 different brands purchased in 19 locations across nine different countries were analyzed for microplastic contamination using a Nile Red stain, which adsorbs to polymeric material and fluoresces under specific wavelengths of incident light. The use of the fluorescent dye allowed for smaller particles to be detected as compared to a similar study of tap water using a Rose Bengal stain, though the analytical methods employed for their enumeration restricted the lower size limit to 6.5 mm.

Of the 259 total bottles analyzed, 93% showed signs of microplastics. There was significant variation even among bottles of the same brand and lot, which is consistent with environmental sampling and likely resulting from the complexities of microplastic sources, the manufacturing process and particle-fluid dynamics, among others. As bottle volume varied across brands, absolute particle counts were divided by bottle volume in order to produce microplastic particle densities that were comparable across all brands, lots and bottles. These densities were reduced by lab blanks in order to account for any possible contamination. Given our use of lab blanks, the inability to photograph the full filter, the lower limit of one pixel being equivalent to 6.5 mm, and control runs of the software employed to digitally count particles <100 mm, the numbers reported here are very conservative and likely undercounting, especially with regard to smaller microplastics (<100 mm), which were found to be more prominent (on average 95%) as compared to particles >100 mm (on average 5%).

Infrared analysis of particles >100 mm in size confirmed microplastic identity and found polypropylene to be the most common (54%) polymeric material (at least with regard to these larger microplastics), consistent with a common plastic employed to manufacture bottle caps. Smaller particles (6.5–100 mm) could not be analyzed for polymer identification given the analytical limits of the lab. While these smaller particles could not be spectroscopically confirmed as plastic, Nile Red adsorbs to hydrophobic ("water-fearing") materials, which are not reasonably expected to be naturally found within bottled water. Our FTIR analysis of larger (>100 um particles) fluorescing particles, all of which were confirmed to be polymeric, provides additional support of the selective binding of NR to microplastic particles within the samples. Even further, Schymanski et al. (2018) did spectroscopically confirm (via Raman) particles within this smaller size range in German bottled water as being polymeric in nature provide additional support for their presence. Given this and following the conclusions of prior studies (Erni-Cassola et al., 2017; e.g., Maes et al., 2017) the adsorption of Nile Red alone was used to confer microplastic identity to these smaller particles. As the specific polymer content could not be determined, they could very well show a different compositional pattern as compared to the larger particles analyzed. This could explain the difference in our polymeric compositional analysis relative to a very recent and similar analysis of bottled mineral waters by Schymanski et al. (2018), which found PEST (polyester+polyethylene terephthalate) to be the most common polymeric material, consistent with a common plastic employed to manufacture the bottle itself. Either way both studies indicate that at least part of the microplastic contamination is arising from the packaging material and/or the bottling process itself.

Beyond the polymeric identity of the microplastics, the morphology of the particles also provides an indication as to a different source of contamination relative to an earlier study on globally sourced tap water. In this prior study 83% of the 159 samples were show to contain anthropogenic debris and 98% of those particles were microfibers. In comparison, this study found microplastic contamination within 93% of the individual bottles (and in all of the brands and lots tested) with only 13% of the particles being categorized as microfibers. The vast majority (65%) of the microplastics were identified as fragments indicating a different source of the contamination relative to the tap water. Even further, the bottled water contained on average nearly twice as much microplastic contamination (within the same size range, i.e., >100 um) as compared to tap water (10.4 vs. 5.45 particles/L). While the impacts of microplastic contamination on human health are still unknown, these results strongly support a reduction in the bottling of water and in the consumption of bottled water, especially within locations in which clean, safe tap water exists.

DATA AVAILABILITY

The raw data supporting the conclusions of this manuscript will be made available by the authors, without undue reservation, to any qualified researcher.

AUTHOR CONTRIBUTIONS

SM designed the study, supervised the work, ensured quality control and wrote the manuscript. VW was the lead laboratory research assistant and conducted all aspects of the laboratory analysis. JN assisted in and conducted laboratory analyses.

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Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

PERRY BRUNO, individually, and on behalf of other members of the general public similarly situated, Plaintiff, v. BLUETRITON BRANDS, INC., Defendant.	Case No. 2:24-cv-01563 MWF(JPRx) **[PROPOSED] ORDER GRANTING DEFENDANT BLUETRITON BRANDS, INC.'S MOTION TO DISMISS**

PROPOSED ORDER

The Court, having considered BlueTriton Brands, Inc.'s Motion to Dismiss Plaintiff's Complaint, hereby GRANTS the Motion to Dismiss Plaintiff's Complaint and dismisses the Complaint with prejudice.

IT IS SO ORDERED.

Dated: ________________

____
Hon. Michael W. Fitzgerald
United States District Judge