



WORLD ASSOCIATION OF MANUFACTURERS OF BOTTLES AND TEATS

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WBT update to the Trinity College Dublin study on high levels of microplastics in infant-feeding bottles released during formula preparation.

Since the publication of the study by a team of researchers at Trinity College Dublin [1] in the journal *Nature Food* in 2020, interest in and knowledge of microplastics has developed significantly. Numerous studies have been published since then addressing the formation, quantity, and size distribution of microplastics, analytical methods to study them, and the potential health risks to humans associated with exposure to microplastics.

In the study by the Trinity research team, it was reported that the common use of PP baby bottles degrades the bottle material, releasing unexpected amounts of microplastics and allowing them to enter the food being fed. It was also reported that the use of bottles with water at high temperature (95 °C) leads to significantly higher release rates of microplastics.

The study was disseminated by the media and caused concern among parents, consumers, scientists as well as manufacturers. This spurred further research projects and studies by manufacturers, industry associations and independent research institutes with the aim of quickly gaining a better understanding of the Trinity researcher's observations.

The results of the various studies did not support the conclusions of the Trinity research group. It was clearly shown that there is no risk of microplastic release from the PP infant bottles tested.

The relevant study by German scientists published in the journal *Food Additives and Contaminants* [2] shows that the conclusions of the Trinity research team are based on artifacts. This study repeated the methodology used by the Trinity researchers on seven different types of infant bottles but used more advanced techniques to analyze microparticles. The number of microparticles found in this way was many times lower than reported by the Trinity researchers. They also did not consist of the plastic of the bottles tested (PP and PA), but apparently of additives from the plastic manufacturing process. The latter can migrate out of the plastic, especially at higher preparation temperatures (95 °C), and deposit on cooling. In parts of their infrared spectra they mimic polyolefins. These additives are in fact approved plastic additives such as fatty acids and esters, and the calculated release levels are far below the permitted limits.

It can be assumed that the artifacts presented above are the reasons for the misinterpretation of the Trinity researchers, and in particular for the false claim that the bottles release microplastic particles into the food in unexpectedly high amounts.

Based on the evidence available today, it is clear that PP infant bottles do not release microplastics and are completely safe.

We are publishing this update to our earlier statement because consumers, and specifically our customers, are still being confused by various media or market participants about alleged microplastic release from plastic baby bottles.

[1] Li et al. 2020. Microplastic release from the degradation of polypropylene feeding bottles during infant formula preparation. *Nature Food* (1) 746–754.
<https://doi.org/10.1038/s43016-020-00171-y>

[2] Maria Nadine Gerhard, Darena Schymanski, Ingo Ebner, Melanie Esselen, Thorsten Stahl & Hans-Ulrich Humpf (2021) in *Food Additives & Contaminants: Can the presence of additives result in false positive errors for microplastics in infant feeding bottles?*”