

Microplastics in the environment: much ado about nothing? A debate

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Abstract

This paper documents a debate between the two authors on the issue of microplastics in the environment. It was sparked by a recent viewpoint article published by G. A. Burton in *Environmental Science and Technology* (<http://doi.org/10.1021/acs.est.7b05463>). Currently, the text contains only the introduction, which sets the scene for the article. Martin is currently writing the first commentary, which we plan to have online on the 26th of February 2018.

Introduction

The idea for this slightly unusual article was born from a debate on Twitter. Both of us read the recent viewpoint article by G. Allen Burton, the editor-in-chief of *Environmental Toxicology and Chemistry* (Burton, 2017). In his opinion piece, Burton argues that exposures to microplastics are too low, so they do not represent an environmental risk. As a result, Burton concludes that their investigation could be safely abandoned. We both found Alan's text thought provoking but came to different conclusions.

Basically, Martin perceived Burton's viewpoint as "too simplistic", while Thomas agreed with Burton that the risk of microplastics is overstated. Martin pointed out that our lack of knowledge on the environmental impacts of microplastics warrants further investigation. Thomas argued that – keeping limited resources in mind – other environmental risks are more pressing than microplastics and deserve our attention. We both agreed that our disciplines are not really good at prioritizing risks and that scientists are too often hunting for the "next big thing" are a result of perverse incentives in academia. The complete Twitter conversation is provided in the supporting information.

However, Twitter quickly proved to be too clumsy for a decent debate. So, we decided to continue the conversation in a format that is more suitable for an exchange of real arguments and viewpoints. This paper documents our conversation, statement by statement.

Our setup for the debate was as follows:

- 1) An initial statement from Martin.
- 2) Comment/rebuttal from Thomas.
- 3) Re-rebuttal by Martin.
- 4) Re-rebuttal by Thomas.
- 5) Final statement by Martin and Thomas, written independently and in parallel by each author.

Each statement is allowed a maximum length of 500 words and 5 references. A figure counts as 200 words. We will amend/have amended this debate article successively with each new piece of text, making use of the fact that a preprint can be updated. The final comments will be written in parallel by both authors, on the basis of the first four statements.

This paper is, therefore, certainly not a classical peer-reviewed scientific article or review paper. Instead, it is a debate that reflects our individual perspectives, value judgements and scientific backgrounds. The text is initially published as a PeerJ preprint, which allows readers to post comments. We welcome any and all feedback and hope our conversation adds to a broader discourse on the environmental relevance of microplastics.

References (introduction)

Burton Jr, G.A., 2017. Stressor Exposures Determine Risk: So, Why Do Fellow Scientists Continue To Focus on Superficial Microplastics Risk? *Environ. Sci. Technol.* 51, 13515–13516
<http://dx.doi.org/10.1021/acs.est.7b05463>