



SOCIAL LISTENING

PLASTIC, MICROPLASTIC, NANOPLASTIC: A REVIEW OF CONVERSATIONS

This report explores conversations, perceptions, and public awareness around plastic, microplastic, and nanoplastic. While this report is not definitive, it provides us with a glimpse of public sentiment around these emerging research areas as viewed from social and digital media listening. This document explores themes around overall topics rather than focusing on the lifecycle of one or two specific articles.

Plastics

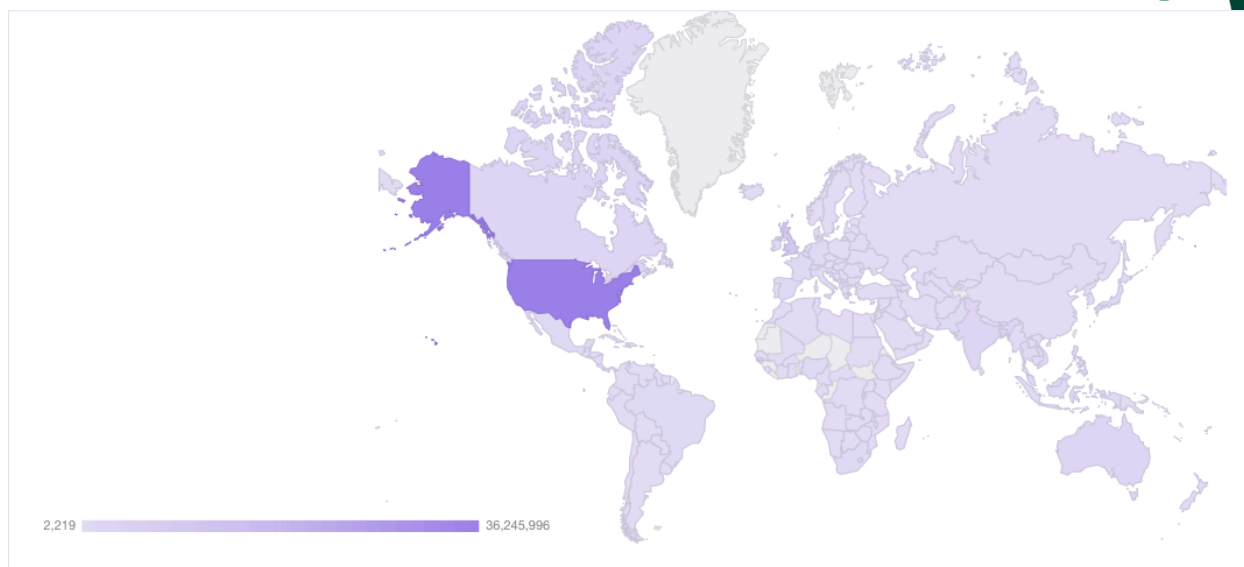
Reach

Before 2013, there were few conversations focusing on the topic of “plastic.” However, in the past 3 years we’ve seen the conversation around plastic explode in the public consciousness.

Prior to 2012, we saw conversations mentioning plastic hover around 200 per year. To present date, there have been at least **135M+** mentions of the plastic, reaching more than **398B+** accounts since 2005. The majority of these conversations taking place after 2012.

These numbers do not include associated words and topics such as “bags” or “straws.” Including related terms would increase the total mentions and reach.

While our social listening tool cannot access all data from all countries (e.g., China, Russia, etc. limit access), the conversation around plastic touches most countries regardless of year with men and women almost equally expressing concerns; women are slightly more vocal (by 1%) about plastics. See *below graphic*.



Net Sentiment

Since 2005 the conversations around plastic have been **negative** with **72.6%** of accounts using some negative language in association with plastic. The negative net sentiment hovers around 70% even when adjusting for 2016 to present date and the current year year-to-date data.

Key Words associated with “plastics”

“Plastic Bags” “Bags” “Children” “Kids” “Fish” “Water” “Water Bottles”
 “Environment” “Health” “ABS” “Straws”

Of note, “BPA” was not associated with these conversations even though ABS (Acrylonitrile Butadiene Styrene) plastic was clearly associated.

Conversations

Negative conversations largely discuss environmental, marine and human health concerns with many linking plastics to climate change (a noteworthy association), animal harm, human harm, and environmental harm.

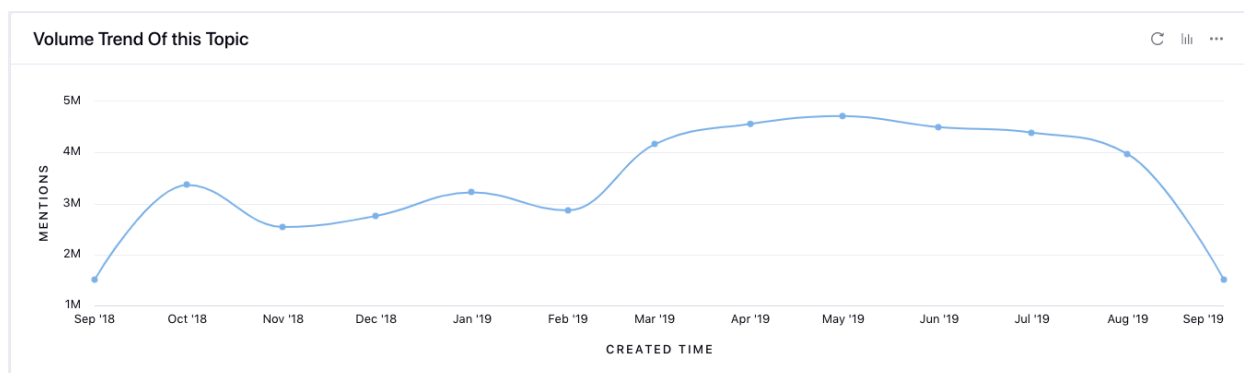
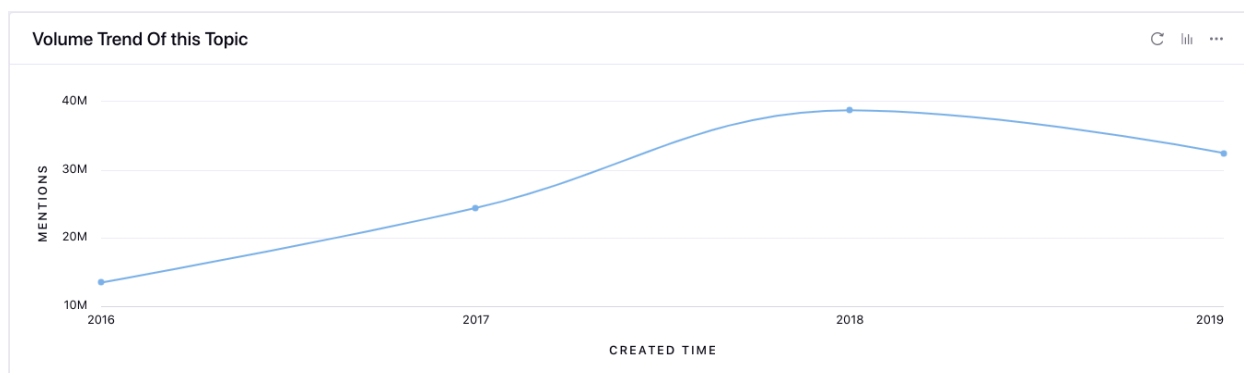
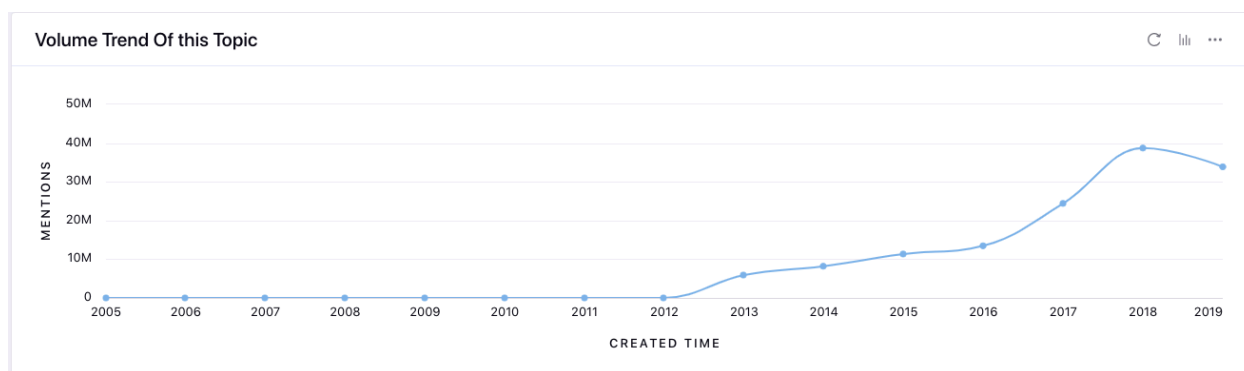
Emotional expressions include anger, frustration, disbelief, and sadness, especially as it pertains to wildlife impacted by plastics. Graphic imagery of marine life harmed by plastics seems to invoke the most intense emotional reactions.



Positive conversations around plastics are few and appear to stem from the medical community with support for single use plastics to ensure sanitation and patient safety and comfort. Still, many conversations center around improving the way plastic medical waste is handled going forward.

Trend

Conversation appears to trend **slightly down** at the moment. However, we anticipate increased conversations as more research and media coverage ignites concerns and calls for change. See below graphic: 2005-present date, 2016-present date, year-to-date.





Microplastics

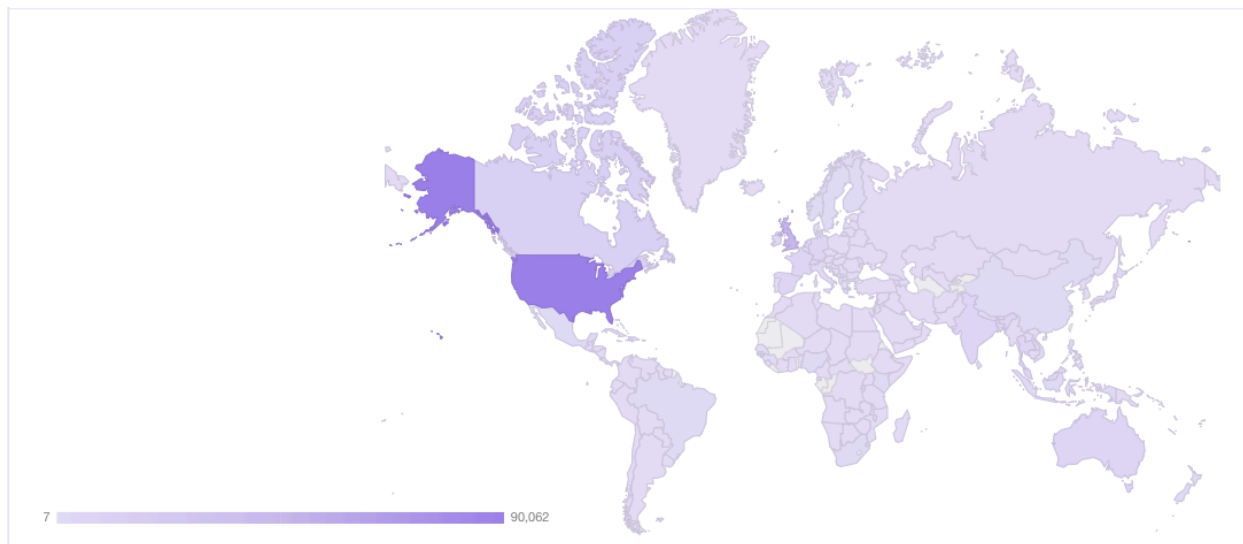
Reach

Conversations around “microplastic” are **trending up** and show signs for continuing to increase in the short and long term.

To present date, there have been at least **442K+** mentions of microplastic, reaching more than **4.6B+** accounts since it became trackable in 2013.

These numbers do not include associated words and topics such as “microbeads” or “plastic.” Including related terms would increase the total mentions and reach.

While our social listening tool cannot access all data from all countries (e.g., China, Russia, etc. limit access), the conversation around microplastic, much like plastic, touches most countries regardless of year with men and women almost equally expressing concerns. *See below graphic.*



Net Sentiment

Since 2013 the conversations around microplastic have been **negative** with **68.5%** of accounts using some negative language in association with microplastic. The negative net sentiment hovers around 65% when adjusting for the current year-to-date data.



Key Words associated with “microplastic”

“Fish” “Research” “Beaches” “Marine Life” “Plastic Pollution” “Marine Debris” “Single-Use Plastic” “Microbeads” “Environment” “Water” “Climate Change”

Of note, human health is not currently an associated word, however, based on observed conversations, we believe it could become associate with “microplastic” in the very near future.

Conversations

Negative conversations largely discuss environmental, water, and marine health.

Emotional expressions include anger, frustration, and hopelessness as many conversations discuss all plastics breaking down into microplastics, thus magnifying the potential negative impacts of microplastic contamination in the future.

Virtue signaling imagery is common with people sharing plastic alternatives to common plastics such as straws, plastic bags, etc.

While the sentiment score shows positive conversations involving microplastics, most conversations associating positive words with microplastic involve ways to avoid using plastic altogether. Tips and tricks and multiuse products are involved in these positive mentions. This signals the potential for increased sales of “natural” and reusable products.

Climate change is mentioned with some regularity, however, the association between climate change and microplastics appears to be from advocates encouraging vegetarian and vegan diets as a way to limit exposure to microplastics in fish. While microplastics adversely impacting health isn’t outright mentioned in many conversations, the subtext is clear.

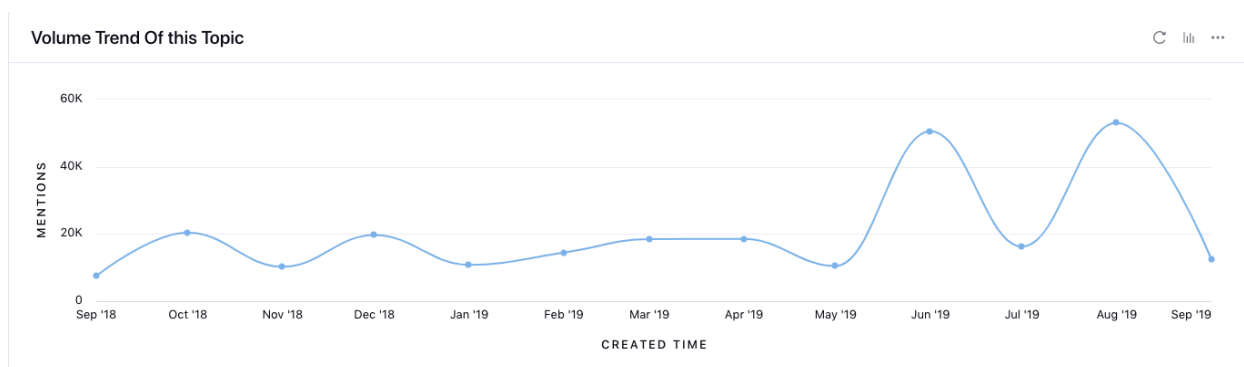
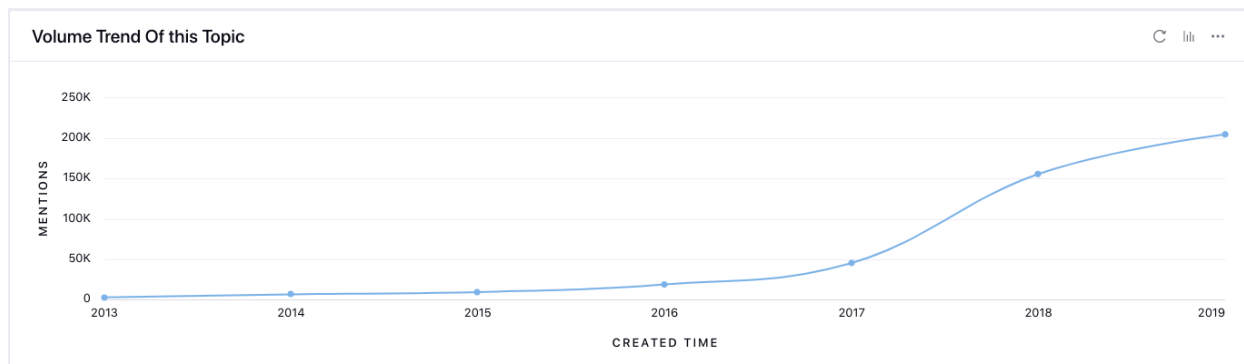
Within the past 12-months, conversations around washing clothing and fashion have become associated with microplastics with some environmentally conscious designers remarking on the need to wash clothing less frequently due to microplastics released from washing synthetic clothing. While these conversations are currently limited, we can anticipate more public discussions about this issue going forward.



Additionally, many conversations are calling on scientists to do more extensive research on microplastics. The public wants solutions to the perceived microplastic problem (e.g., how do we prevent microplastics caused by washing clothes?) and are looking to the scientific community to supply answers as well as actionable steps to reduce microplastics (more on this in *Overall Impressions & Next Steps*).

Trend

Conversations are increasing as a whole and we believe conversations will **continue to increase** as more research and media coverage ignites concerns and calls for change regarding the use of plastic materials, especially if emerging research shows adverse human health impacts from microplastics. *See below graphic: 2013-present date, year-to-date.*





Nanoplastics

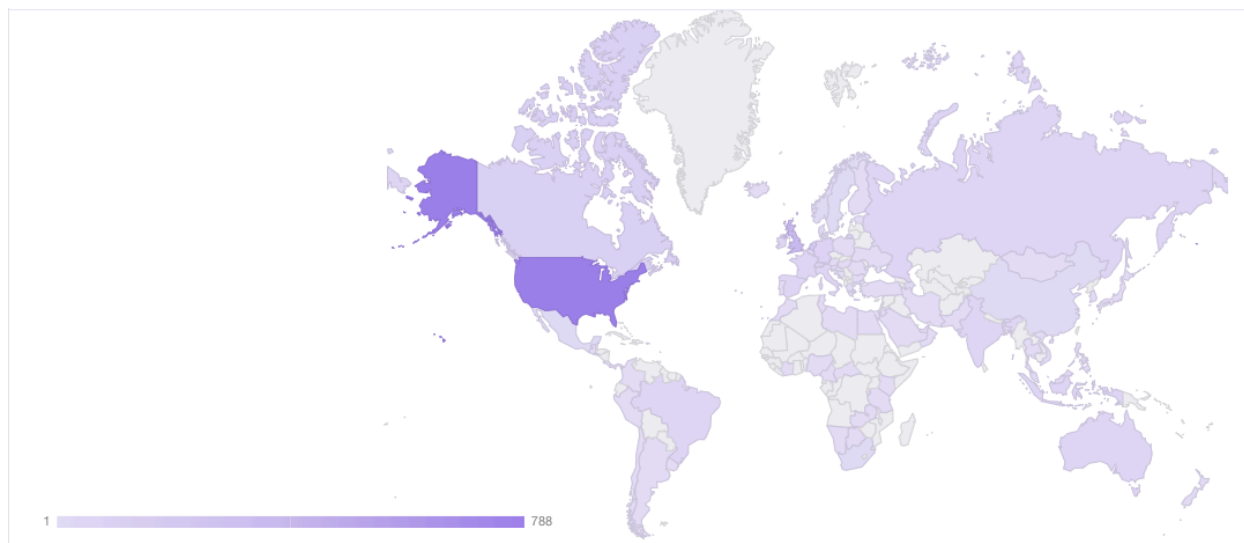
Reach

Conversations around “nanoplastic” are **flat** as a whole but show signs of increasing in the long term. Of note, these conversations are limited and are mostly isolated to scientists and researchers active in digital, science-focused communities.

To present date, there have been only **3,770** mentions of the nanoplastic, reaching slightly more than **19M** accounts since it became trackable in 2013.

These numbers do not include associated words and topics such as “microplastic” or “microparticles.” Including related terms would increase the total mentions and reach.

While our social listening tool cannot access all data from all countries (e.g., China, Russia, etc. limit access), we can see the conversation around nanoplastic, are concentrated in the United State of America, United Kingdom, Netherlands, and Canada with more women (by 5%) driving nanoplastic discussions. *See below graphic.*





Net Sentiment

Since 2013 the conversations around nanoplastic have been **negative** with **73%** of accounts using some negative language in association with nanoplastic.

Key Words associated with “nanoplastic”

“Fish” “Research” “Human Health” “Food Chain” “Microplastic”
“Microparticles” “Single-Use Plastic” “Marine Life” “Environment” “Water”
“Ecosystem”

Conversations

Negative conversations largely discuss the potential for negative human health impacts, UV degradation, and bioaccumulation.

There are no notable emotional responses related to nanoplastics as most of the conversations are academic and research focused.

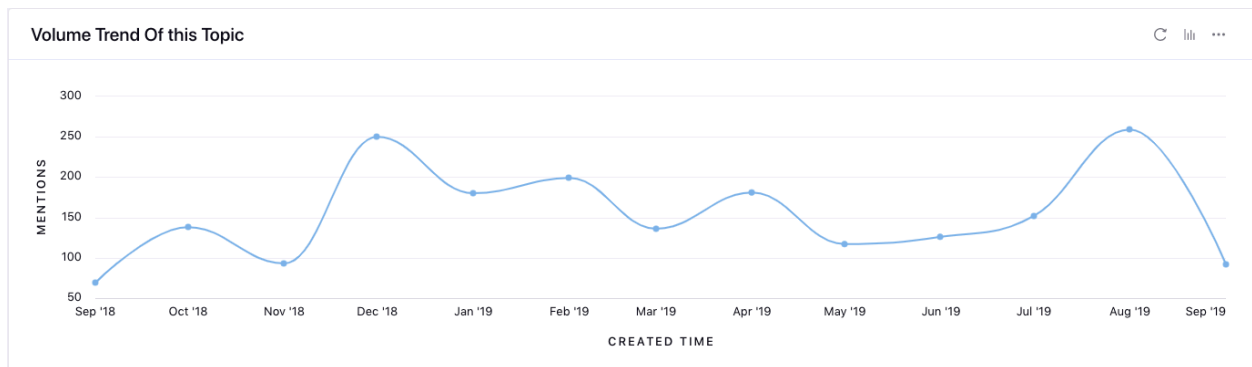
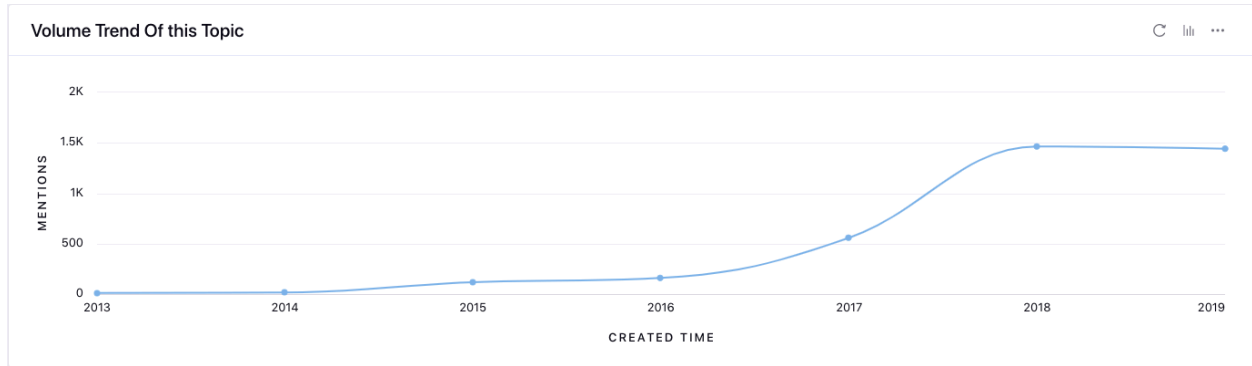
While the sentiment score shows some positive conversations involving nanoplastics, most conversations associating positive words with nanoplastics involve the need for further research or for upcoming research.

Discussions around nanoplastics show intense curiosity and desire to learn more about the impact of nanoplastics. However, researchers do not appear to be overly optimistic that there will be little to no negative impacts from nanoplastic exposure.



Trend

Conversations are currently flat on a whole, however we believe conversations will **increase** as more research emerges and is shared by the media. See *below graphic: 2013-present date, year-to-date.*





OVERALL IMPRESSIONS

Based on the observed conversations, the general public desires more research into plastic, especially microplastics. The public appears to be looking to scientists to provide a plan of action to remove or reduce plastic and microplastic waste. Additionally, they would like recommended plans to include actionable steps the public and governments can take to help limit and remediate the harm caused by plastics, especially as it relates to marine life.

Themes the public expressed they want researchers to explore related to all plastics include, “human health,” “human development,” “marine health,” “cancer,” and “hormone disruption.” They are seeking to know the long-term health impacts plastic and microplastic may cause humans as well as marine life.

Of note, the public appears to closely associate plastic exposure and single-use plastic waste with climate change. This association is important because there are political factors surrounding the climate change conversation that could have a direct impact on any plastic remediation (if this action is recommended by the scientific community).

With the public wanting more research, the scientific community has an engaged audience to share outcomes. However, that means research needs to be shared in a responsible and easy-to-understand format as any research in this area could gain substantial media coverage.

There are also educational opportunities that the scientific community can lay the foundation for now in anticipation of future research outcomes. For example, explaining the differences between micro- and nano- plastics, explaining the basics of bioaccumulation and UV light degradation, so on and so forth.

The plastic conversations is far from over and we will continue to monitor public perceptions and update our information as research is released around this topic.

The Center for Research on Ingredient Safety at Michigan State University is a collaborative initiative between academia, government, non-governmental organizations, and industry to provide research-based information to the global community.

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