CHE Collaborative for Health & Environment

Webinar Highlights

Do Chemicals in Plastic Products Contribute to Obesity?

In a recent study, Dr. Martin Wagner and co-authors investigated whether everyday plastic products contain chemicals that induce adipogenesis, a key process in the development of obesity. Based on the study results, the authors argue that plastics may represent an underestimated environmental factor contributing to obesity.

Featured Speaker: Martin Wagner, PhD, Associate Professor for environmental toxicology at the Norwegian University for Science and Technology in Trondheim, speaking April 20, 2022.

This fact sheet has been created by CHE based on information presented in an EDC Strategies Partnership webinar. Selected quotes in bold are from the webinar speaker(s). For the full set of resources provided by the webinar presenters, see the webinar page, where you'll also find associated Slides & Resources.

The Problem

Adipogenesis is the process by which fat-storing cells develop and accumulate lipids. Adipogenesis is the key cellular process that leads to obesity.

In the study, researchers extracted and analyzed chemicals from 34 everyday plastic products. In the study's finding:

- 860 chemicals were identified, including 11 known metabolism-disrupting chemicals (MDCs).
- One third of the products tested triggered adipogenesis.
- Many samples that induced adipogenesis did not contain known MDCs. Other, unidentified chemicals in the samples contributed to the metabolism-disrupting effects.
- The main known mechanism for adipogenesis is from chemicals activating a receptor called PPARγ. **"Only two out of the 34 plastic samples actually activated that receptor."** Dr. Wagner stressed that **"this suggests that the plastic chemicals trigger adipogenesis through an unknown mechanism."**

"The vast majority of plastic chemicals remains unidentified, unknown, and has never been looked at or assessed for their health effects."

Recommendations

- Given the large number of unknown chemicals in these products, acknowledge that plastics and other materials cannot be considered safe.
- Enforce transparency about chemical composition. Consumers currently have no way of knowing what is in these products.
- Evaluate safety of the mixture of all chemicals in a product, not individual chemicals.
- Screen plastic products for *in vitro* toxicity.
- Encourage safe-by-design and true green chemistry principles to design out toxic chemicals from plastic products.

Dr. Wagner stressed that chemical simplicity should be the guiding principle in product design.

To Find Out More

- Watch the April 20, 2022 webinar: Do chemicals in plastic consumer products contribute to obesity?
- View the webinar slides: https://www.healthandenvironment.org/assets/images/webinarimages/Wagner_Presentation.pdf
- Read the study: Adipogenic Activity of Chemicals Used in Plastic Consumer Products

About the Speaker

Martin Wagner, PhD, is an Associate Professor for environmental toxicology at the Norwegian University for Science and Technology in Trondheim. His main research interest is in the impacts of plastic pollution and plastic chemicals on nature and human health. To study this, he works at the interface of ecology, toxicology, and chemistry combining in vitro, in vivo, and mass spectrometry approaches. As expert on the societal and environmental impacts of plastics, he is consulting high-level policymakers (United Nations, European Commission) and is frequently featured by international media.

Since 2017, Dr. Wagner has continued his research into endocrine disrupting chemicals and plastic pollution at NTNU Trondheim. More information: www.biotox.de.