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# Impact on Human Health of Microplastics in the New Zealand Diet

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## Abstract

Microplastics (MPs) are an emerging area of concern with a growing number of studies reporting their occurrence in different environments and matrices, including food and therefore raises the question as to whether microplastics present a safety risk through dietary exposure.

No information on background dietary levels of microplastic in processed food in New Zealand are currently available. This means having an understanding of what the levels of microplastic are and potential mitigation steps would advance public health in reducing exposure through the diet. Additionally, New Zealand's food-based export industries and economy are particularly vulnerable to microplastic contamination as this could result in a food safety risk, potential yield loss, and could have potential trade implications.

The toxicity of microplastics, plus the ability to leach associated chemical contaminants after oral exposure may result in adverse human health effects. However, much more data is needed to characterise microplastic (MP) contamination of food. In this research the levels of microplastics and its contaminants are being determined in a range of food categories, including mahinga kai (wild food).

The key to establishing whether ingested microplastics present a toxicity concern through food is to determine their properties once consumed and whether there is appreciable systemic uptake and metabolism of plastics. *In vitro* bioavailability studies will assess the absorption rates of microplastics (labelled, virgin and aged-plastics, and pristine particles) and their contaminants through the human gut. Concentrations used in the *in vitro* study will be as close as possible to field levels determined in the food survey.

This research will gain valuable knowledge that will contribute to assessing the risks microplastics in food may pose to human health, taonga, and key export industries for New Zealand, while also making a significant contribution to international microplastic research.

**Keywords:** Microplastics, Human health, Food, Dietary exposure, Bioavailability

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