



2 February, 2026

PAGE 1/4

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SUBMISSION TO PARLIAMENT

## **Inquiry into the Impact of Microplastics, Toxins, and Forever Chemicals on Human Health**

Submitted by:  
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### **Summary**

**No More Plastic Packaging, established in 2018, is a leading Australian-based online supplier of plastic-free packaging committed to eliminating plastic packaging and making viable alternatives available to Australians and overseas businesses and consumers.**

This submission addresses the health impacts of microplastics, toxins, and forever chemicals, with evidence from peer-reviewed studies. We propose actionable recommendations aligned with international standards and public health priorities.

### **Introduction**

**Our mission is to promote safe, sustainable packaging alternatives and raise awareness of the health risks posed by microplastics and persistent chemicals. We welcome this inquiry and offer evidence-based recommendations.**

### **Key Issues and Scientific Evidence**

**Microplastics pose significant hazards to human health and are pervasive within key organ systems in the human body, including the digestive, respiratory circulatory, reproductive, nervous, immune, endocrine, urinary, and locomotor systems<sup>1</sup>.**

- 1. Reference: Feng Y, Tu C, Li R, Wu D, Yang J, Xia Y, et al (2023). "A systematic review of the impacts of exposure to micro- and nano-plastics on human tissue accumulation and health. *Eco Environ Heal.* 2, 195–207.



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### **a. Infertility Impacts Across Populations**

Microplastics and associated endocrine-disrupting chemicals (EDCs) such as phthalates and bisphenol A (BPA) have been linked to reduced sperm quality, hormonal imbalance, and infertility in both men and women<sup>2</sup>.

- 2. Reference: Wang, Y. et al. (2023). "Microplastics and male reproductive toxicity: A review." *Environmental Pollution*, 316, 120583.
- 2. Reference: Liu, L. et al. (2022). "Phthalates and BPA exposure and reproductive outcomes." *Reproductive Toxicology*, 108, 1–12.

### **b. Disruption of Developmental Pathways in the First 1,000 Days**

Microplastics have been found in placental tissue, raising concerns about fetal exposure. Early-life contact with EDCs is associated with neurodevelopmental delays, metabolic disorders, and immune dysfunction<sup>3</sup>.

- 3. Reference: Ragusa, A. et al. (2021). "Plasticenta: First evidence of microplastics in human placenta." *Environment International*, 146, 106274. <https://doi.org/10.1016/j.envint.2020.106274>
- 3. Reference: Braun, J. M. (2017). "Early-life exposure to EDCs and child development." *Nature Reviews Endocrinology*, 13, 161–173.

### **c. Cardiovascular Disease**

Microplastics contribute to cardiovascular risk through inflammation, oxidative stress, and endothelial dysfunction. Studies show their presence in blood and arterial tissue<sup>4</sup>.

- 4. Reference: Leslie, H. A. et al. (2022). "Discovery and quantification of plastic particle pollution in human blood." *Environment International*, 163, 107199. <https://doi.org/10.1016/j.envint.2022.107199>
- 4. Reference: Yong, C. Q. Y. et al. (2020). "Toxicity of microplastics and nanoplastics in mammalian systems." *International Journal of Environmental Research and Public Health*, 17(5), 1509.

### **d. Diseases of Aging and Lifespan**

Chronic exposure to microplastics and forever chemicals is linked to accelerated aging, neurodegeneration and reduced lifespan<sup>5</sup>.

- 5. Reference: Prata, J. C. et al. (2020). "Environmental exposure to microplastics: An overview on possible human health effects." *Science of the Total Environment*, 702, 134455. <https://doi.org/10.1016/j.scitotenv.2019.134455>
- 5. Reference: Wright, S. L., & Kelly, F. J. (2017). "Plastic and human health: A micro issue?" *Environmental Science & Technology*, 51(12), 6634–6647.



2 February, 2026

PAGE 3/4

*Plant based packaging...  
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### **e. Benefits of New Product Standards**

Adopting standards for non-toxic, biodegradable packaging can reduce exposure and improve public health outcomes<sup>6</sup>.

- 6. Reference: ISO 24187:2023 (2025) – “Principles for the analysis of microplastics present in the environment.”
- 6. Reference: UNEP (2021). “From Pollution to Solution: A global assessment of marine litter and plastic pollution.”

### **f. Effectiveness of Action in Consumer Products**

Countries implementing bans on single-use plastics and toxic additives are expected to see measurable reductions in contamination<sup>7</sup>.

- 7. Reference: European Chemicals Agency (ECHA) (2020). “Restriction proposal for intentionally added microplastics.”

### **g. Protocols and Principles from Other Countries**

The EU and Japan have adopted harmonised protocols for microplastic detection and regulation, including ISO 4484-2:2023 for textiles<sup>8</sup>.

- 8. Reference: ISO 4484-2:2023 – “Textiles – Environmental aspects – Part 2: Microplastics determination.”
- 8. Reference: European Commission (2025): Regulation on preventing plastic pellet losses to reduce microplastic pollution.

### **h. Adequacy of Current Research and Monitoring Standards**

Historically, varying methods have been used for sampling, extraction and analysis of microplastics, with the result that it has been difficult to obtain a clear national picture of microplastic pollution. Standards Australia has recently published AS ISO 24187: Principles for the analysis of microplastics present in the environment, which provides a framework for future assessment. However, there is currently no regulatory framework in place in Australia covering microplastic testing in water and organic waste or for environmental monitoring. International frameworks offer robust methodologies for potential adoption<sup>9</sup>.

- 9. Reference: NIST (2023). Reference materials for microplastic analysis.
- 9. Reference: UNEP (2021). “Monitoring Plastics in Rivers and Lakes: Guidelines for the Harmonization of Methodologies”.



2 February, 2026

PAGE 4/4

*Plant based packaging...  
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### i. Other Related Matters

Microplastics have been detected in human lungs, blood, and faeces, indicating widespread exposure. Their persistence and bioaccumulation demand urgent regulatory action<sup>10</sup>.

- 10. Reference: Jenner, L. C. et al. (2022). "Detection of microplastics in human lung tissue." Science of the Total Environment, 831, 154907.

### Suggested Recommendations

- **Mandate the elimination of ALL plastic** packaging across **ALL** consumer sectors.
- **Reduce the high fees** charged by the **ABA (Australian Bioplastics Association)** and other regulatory bodies to packaging suppliers to certify current and new alternatives to plastic packaging, as they become available. This is a **huge road block to making plastic-free alternatives mainstream**, adding unnecessary cost to these products and business owners, which ultimately the consumer has to pay for, and **should be reviewed** by Parliament.
- **Ban plastic packaging** in products for **infants** and **pregnant** women.
- **Fund** longitudinal health studies on **microplastic** exposure.
- Establish a consistent national regulatory framework to address requirements for sampling, extraction, analysis and monitoring of microplastic pollution.
- Make **mandatory** that **all certified home and commercial compostable** packaging be allowed to be collected and processed with council green waste streams, **such as Fogo Schemes** to avoid going into landfills, ensuring proper breaking down into biomass, avoiding **landfill greenhouse gas emissions**.
- Launch **public education** campaigns on **plastic health risks**.
- Collaborate **globally** with regulatory bodies such as **DIN CERTCO**, to align with proven protocols in EU and USA for waste management strategies.

END OF REPORT

For more information or to get in contact with us,  
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