

# Microplastics

## PTFE is Non-Toxic

Paper 3: [In Vivo Toxicity and Pharmacokinetics of Polytetrafluoroethylene Microplastics in ICR Mice \(2022\)](#)

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### Abstract

“The increased use of plastics has led to severe environmental pollution, particularly by microplastics—plastic particles 5 mm or less in diameter. These particles are formed by environmental factors such as weathering and ultraviolet irradiation, thereby making environmental pollution worse. This environmental pollution intensifies human exposure to microplastics via food chains. Despite potential negative effects, few toxicity assessments on microplastics are available. In this study, two sizes of polytetrafluoroethylene (PTFE) microplastics, approximately 5 µm and 10–50 µm, were manufactured and used for single and four-week repeated toxicity and pharmacokinetic studies. Toxicological effects were comprehensively evaluated with clinical signs, body weight, food and water consumption, necropsy findings, and histopathological and clinical-pathological examinations. Blood collected at 15, 30 60, and 120 min after a single administration of microplastics were analyzed by Raman spectroscopy. **In the toxicity evaluation of single and four-week repeated oral administration of PTFE microplastics, no toxic changes were observed.** Therefore, the lethal dose 50 (LD<sub>50</sub>) and no-observed-adverse-effect-level (NOAEL) of PTFE microplastics in ICR mice were established as 2000 mg/kg or more. **PTFE microplastics were not detected in blood**, so pharmacokinetic parameters could not be calculated. **This study provides new insight into the long-term toxicity and pharmacokinetics of PTFE microplastics.**” (emphasis added)