

Title of Research: 24-5-08

Study on Risk-Based Grading of Recycled Plastic and its Application for Enhancing Plastic Recycling

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Summary of Research:

Promoting plastic recycling is an increasingly important issue from the perspective of resource recycling and the prevention of plastic pollution. Determining the risk of chemicals contained in recycled plastic is difficult because 'recycled plastic' is made from a variety of plastic waste, such as used plastics and residue from the production of plastic products. This study aims to develop an approach to risk-based grading of recycled plastics, which will contribute to the implementation of risk assessment and management of plastic recycling in the supply chain. We organized the conceptual framework for establishing grades of recycled plastics and clarified the information required for such classification. We collected and organized information on exposure factors related to plastic products used in various applications. As a case study for setting a separator of each grade, the exposure potential to a plastic chemical by use of five plastic products. The results confirmed that exposure potential vary across their use, suggesting that, by appropriately selecting uses that differ in use patterns and contact frequency, it may be possible to establish meaningful separator of the grades.

Timeline:

March 2025 – February 2026

Topics:

Presented at the LRI annual research meeting of JCIA. August 29, 2025.

Publications:

Kyoko Ono, Masashi Gamo, Isamu Ogura, Naohide Shinohara, Naoya Kojima
"An attempt to establish risk-based recycled plastic grades to enable appropriate plastic recycling", SETAC Europe 35th Annual Meeting, Wien, Austria (2025/05), Poster presentation

Kyoko Ono, Masashi Gamo, Isamu Ogura, Naohide Shinohara, Naoya Kojima
"Establishing risk-based grading of recycled plastics focusing on plastic additives to enable appropriate recycling", SafePlastChem Conference, Ascona, Switzerland (2026/01), Oral presentation