No. 2016

Microplastics in Commercial Salts Collected from Japan and its Risk Evaluation in Human

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Summary

In recent years, there has been increasing public concerns in microplastic pollution and their impact on marine ecosystem. The huge number of microplastics are detected in seawater, thus microplastics are also identified in commercial salts produced by seawater at the highest concentration of 31,680 pieces/kg in Croatia. The ubiquitous detection of microplastic in table salts have been reported in many countries, but little information is available on the occurrence and abundance in Japanese salts. In this study, 48 commercial salts obtained from 15 prefectures in Japan were analyzed for microplastic to understand the status of pollution and estimate the amount of dairy intake in human. Approximately 100 grams of salts dissolved in 1 L of ultra-pure water was sieved by a 100 mm mesh nylon filter. Solid particle, fragment and fiber on the filter were collected individually and analyzed for polymers using FT-IR. As the results, 6 microplastics were identified in 6 of the 48 commercial salts analyzed. The polymer types were polyethylene, polyurethane, and polypropylene. These microplastics may be either obtained in original seawater or was inserted in salts accidentally during the manufacturing process. The average abundance of microplastics was 1.3 pieces/kg in Japanese commercial salts, which are apparently lower than those in other countries. It was estimated that 4.7 microplastics were ingested by salt annually in Japanese. This value was 3 to 6 orders of magnitude lower than those from indoor dusts, inhalation, and seafood consumption, suggesting less pollution and adverse effects of microplastics in Japanese salts.