MINISTERIO DE CONSUMO

agencia española de seguridad alimentaria y nutrición

The role of Food Safety Agencies in the evaluation, communication and management of risks associated with microplastics in food

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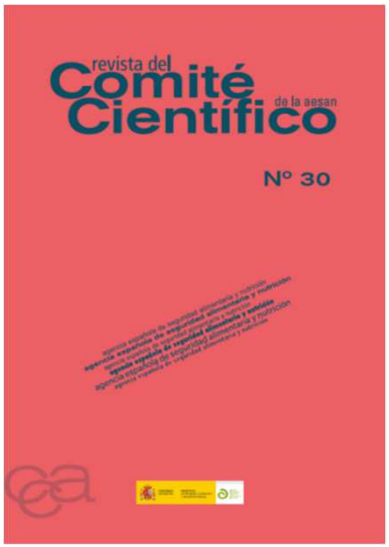
Scientific Commitee of the Spanish Agency for Food Safety and Nutrition (AESAN)



MINISTERIO DE SANIDAD Y CONSUMO

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The environmental impact of micro and nanoplastics has been of concern for many years but their potential to be transferred between trophic levels has only been recently identified as a global challenge even when the risks derived from the dietary exposure may be minimal compared to those from other routes like inhalation

Methods are available for identification and quantification of microplastics in food but occurrence data are limited and there is a **lack of accurate experimental data** to perform a risk analysis in humans

Seafood has been identified as the main source of dietary exposure

Identified challenges to be faced by food safety evaluators, managers and communicators :

- ***Standardization of methods for analysis***
- ***Qualitative and/or quantitative assessment of the nature of the adverse health effects.***
- ***Generation of accurate data on the occurrence in foods and drinking water***
- ***Performance of total dietary exposure studies in different communities***

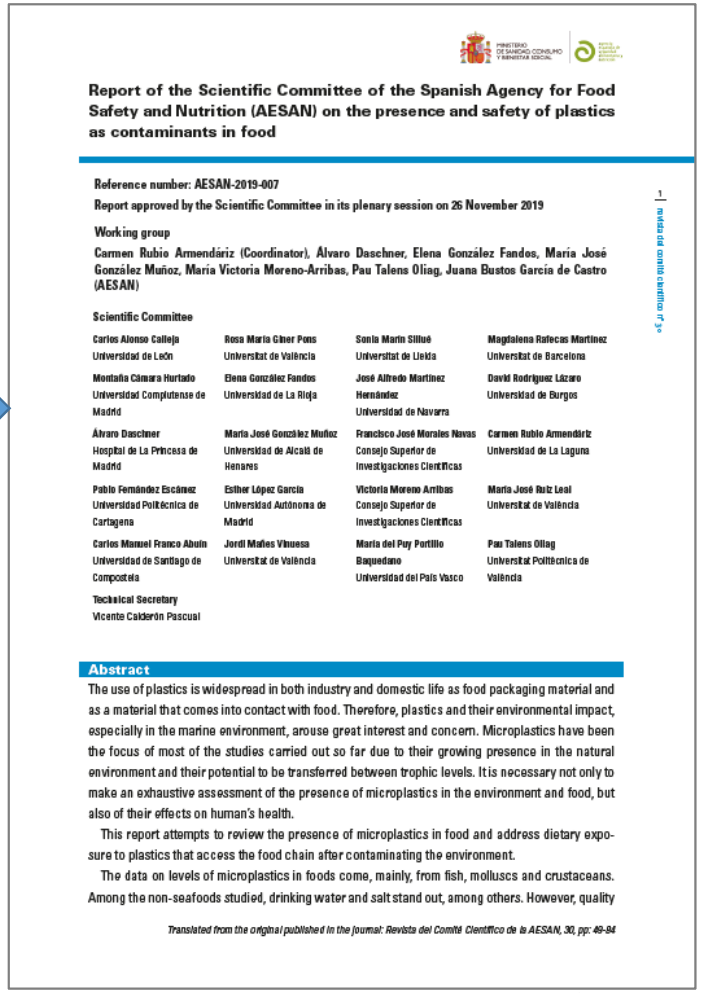
The Spanish Agency for Food Safety and Nutrition (AESAN) noted a growing public and scientific concern

Method: in order to provide an overview of actual knowledge, research challenges & initiatives and future opportunities, a total of 147 scientific references were reviewed by the Scientific Committee of AESAN.

Results

A scientific report based on solid scientific data has been published with the objective of:

- Communicating the actual knowledge on Micro and Nano plastics and its additives in foods.
- Contributing to a better understanding of the dietary sources and the levels of dietary exposure.
- Sharing the current knowledge on their toxicity and highlighting the gaps for the risk analysis.
- Improving the scientific community and the consumer's perceptions on dietary Microplastics.



Report of the Scientific Committee of the Spanish Agency for Food Safety and Nutrition (AESAN) on the presence and safety of plastics as contaminants in food

Reference number: AESAN-2019-007

Report approved by the Scientific Committee in its plenary session on 26 November 2019

Working group

Carmen Rubio Armendáriz (Coordinator), Álvaro Daschner, Elena González Fandos, María José González Muñoz, María Victoria Moreno-Arribas, Pau Talens Oliag, Juana Bustos García de Castro (AESAN)

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Technical Secretary
Vicente Calderón Pascual

Abstract

The use of plastics is widespread in both industry and domestic life as food packaging material and as a material that comes into contact with food. Therefore, plastics and their environmental impact, especially in the marine environment, arouse great interest and concern. Microplastics have been the focus of most of the studies carried out so far due to their growing presence in the natural environment and their potential to be transferred between trophic levels. It is necessary not only to make an exhaustive assessment of the presence of microplastics in the environment and food, but also of their effects on human's health.

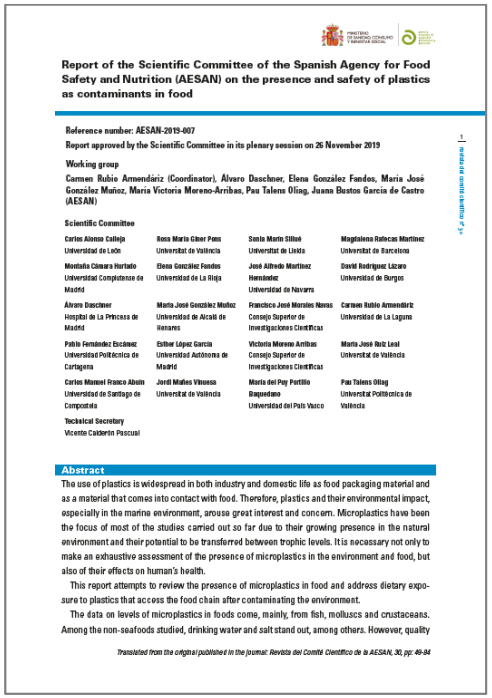
This report attempts to review the presence of microplastics in food and address dietary exposure to plastics that access the food chain after contaminating the environment.

The data on levels of microplastics in foods come, mainly, from fish, molluscs and crustaceans. Among the non-seafoods studied, drinking water and salt stand out, among others. However, quality

Translated from the original published in the journal: Revista del Comité Científico de la AESAN, 30, pp: 49-94

Discussion

- Identifying the most relevant dietary sources of microplastics, knowing the occurrence of the different molecules and polymers and their relevance in terms of exposure will contribute to focus future research projects, regulatory initiatives and monitoring programs.
- It is the interest of AESAN to promote research on MP and NP in the food supply and contribute to fill the identified knowledge gaps.
    - Toxicokinetic; biomarkers of exposure; toxicity in experimental animals/models like acute toxicity, repeat dose and chronic toxicity; mode of action of the different MP and the observations in humans (Acute and Chronic effects); health based guidance values (dose response models and selection of critical reference points)
- Assessing the Spanish population dietary exposure to MP should be a challenge for our Food Safety experts and networking among the research groups should be promoted through our national food agencies and EFSA.
- A cross-nation diffusion of this report will be strategically designed.



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Conclusions

A consensus on the Micro and Nano plastics definitions and descriptions and a standardisation of methods of analysis is needed for a better and global comparison and monitoring.

Evaluating the risks of dietary Micro and Nano plastics requires a solid hazard characterization along with the assessment of exposure levels in different communities.

The knowledge gaps on the toxic kinetics and toxic dynamics of these pollutants and their potential health effects prevents a solid risk characterisation and risk analysis.

It is necessary to implement solutions to mitigate/minimise humans' dietary exposure while regulating maximum levels of their main molecules or particles in different food sources.

The global commitment to reduce, reuse or recycle plastic materials keeps on being the best tool to minimise the environmental and health impact of these pollutants.

For a better understanding of the current situation and ongoing research on this topic and to improve the knowledge and perceptions of consumers on micro-nanoplastics in food, global communication campaigns and informative materials should be designed considering multicultural perspectives.