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Editorial

Food Safety and Contaminants: A Global Challenge for Public Health

Ángel A. Carbonell-Barrachina * and Marina Cano-Lamadrid *

Research Group "Food Quality and Safety", Centro de Investigación e Innovación Agroalimentaria y Agroambiental (CIAGRO-UMH), Universidad Miguel Hernández de Elche, Carretera de Beniel, km 3.2, 03312 Alicante, Spain

* Correspondence: angel.carbonell@umh.es (Á.A.C.-B.); marina.canol@umh.es (M.C.-L.)

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1. Introduction

Food is the foundation of human health, development, and survival. It sustains life, supports growth, and connects cultures across the world. Yet, paradoxically, food is also one of the most pervasive routes of human exposure to potentially harmful substances. From the earliest stages of life to old age, individuals are continuously exposed—often unknowingly—to a complex mixture of chemical, biological, and physical contaminants present throughout the food chain.

According to the FAO, a food contaminant is defined as "any substance not intentionally added to food, which is present in such food as a result of the production, manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food, or as a result of environmental contamination". This definition highlights not only the diversity of potential contaminants, but also the multiplicity of entry points through which they can reach food, emphasizing the systemic nature of the problem.

Over recent decades, food production systems have undergone profound transformations. Industrialization, agricultural intensification, globalization of trade, and rapid technological innovation have greatly improved food availability and diversity. However, these advances have also introduced new vulnerabilities and unintended consequences. Contaminants may arise at multiple stages of the food chain—from environmental pollution and agricultural inputs to food processing, packaging materials, and even novel technologies designed to enhance preservation and distribution.

The implications of food contamination extend far beyond individual exposure. When contaminated food enters the market, its effects propagate across households, communities, and entire populations. Vulnerable groups—including infants, pregnant women, and the elderly—are disproportionately affected, often facing long-term health consequences associated with chronic, low-level exposure. At the same time, contamination incidents can erode consumer trust, disrupt food systems, and place significant pressure on regulatory frameworks and public health institutions worldwide.

Food safety is therefore not confined to a single discipline but represents a uniquely multidisciplinary field. Ensuring safe food requires the integration of analytical chemistry, toxicology, epidemiology, nutrition, environmental sciences, and risk assessment, together with effective risk communication strategies. A failure at any point along this continuum can compromise the integrity of the entire system.

Increasingly, it is evident that traditional approaches to food safety are no longer sufficient to address the complexity of modern food systems. While well-known contaminants such as heavy metals, pesticide residues, and persistent organic pollutants remain relevant, new challenges are rapidly emerging. These include process-induced contaminants, micro- and nanoplastics, and substances migrating from food contact materials. In parallel, global pressures such as climate change and environmental degradation are reshaping contamination pathways, adding further uncertainty to exposure assessment and risk characterization.

Despite substantial scientific and regulatory progress, significant disparities persist across regions. High-income countries have achieved notable reductions in certain contaminants, often through stricter regulations and technological advances. In contrast, low- and middle-income countries frequently face higher exposure levels due to limited monitoring capacity and less stringent regulatory frameworks. In an increasingly interconnected global food system, these inequalities are not isolated—they have far-reaching implications for food safety worldwide

2. Aim and Scope

As a new international journal, the *International Journal of Food Safety and Contaminants* (*IJFSC*) aims to provide a comprehensive platform for high-quality scientific research and critical discussion in the field of food safety.

The journal reflects the complexity and interdisciplinarity of food contamination, welcoming contributions that advance understanding of the sources, occurrence, detection, and health impacts of contaminants in food.

The *International Journal of Food Safety and Contaminants* (*IJFSC*) aims to provide an international forum for high-quality research, reviews, and critical perspectives on food safety, with a particular focus on the occurrence, detection, and impact of environmental, process-related, packaging-derived, and emerging contaminants in foods. The journal promotes interdisciplinary dialogue between scientists, regulators, and stakeholders to safeguard consumer health and strengthen evidence-based food safety policies across the global food chain.

The journal publishes contributions including, but not limited to:

- Environmental contaminants: heavy metals, metalloids, pesticides, veterinary drug residues, persistent organic pollutants (POPs), pharmaceuticals, and other pollutants entering the food chain through environmental pathways.
- Process-related contaminants: acrylamide, furans, chloropropanols, polycyclic aromatic hydrocarbons (PAHs), advanced glycation end-products, and compounds formed or transferred during cooking, processing, packaging, or storage.
- Packaging-derived contaminants: migration of substances from food contact materials, additives, printing inks, recycled materials, nanomaterials, and other components associated with innovative or traditional packaging.
- Emerging contaminants: novel chemical residues, endocrine-disrupting compounds, contaminants from innovative processing or packaging technologies, and newly identified pollutants detected through advanced analytical approaches.
- Biological contaminants: pathogenic microorganisms, antimicrobial resistance, viruses, and parasites relevant to food safety.
- Analytical methods: development, validation, and application of state-of-the-art techniques for detection and monitoring of known and emerging contaminants.
- Risk assessment and management: exposure assessment, toxicological evaluation, mitigation strategies, predictive modelling, and control measures.

The journal welcomes original research articles, reviews, short communications, case studies, and etc., encouraging multidisciplinary perspectives from food science, toxicology, analytical chemistry, microbiology, regulatory science, and public health.

3. Conclusions or Outlook

The *International Journal of Food Safety and Contaminants* (*IJFSC*) is not intended to be just another scientific journal; the Editor-in-Chief and Associate Editor, together with the Editorial Board, are firmly committed to establishing it as a leading platform that connects cutting-edge scientific advances with the practical challenges of ensuring food safety worldwide. Particular attention will be given to the evolving needs of fast-growing economies and developing countries, where the burden of food contamination is often greatest and resources for monitoring and mitigation remain limited.

The strength of the journal will rely on the quality, diversity, and international composition of its editorial leadership and board, whose multidisciplinary expertise and generational balance will ensure continuity in the editorial vision while fostering innovation. These elements are essential to attract high-quality, high-impact research and to build the scientific reputation necessary to support progress in reducing foodborne risks, minimizing exposure to contaminants, and protecting public health at a global scale.

We also look forward to a continuous exchange of knowledge, perspectives, and critical insights from authors, reviewers, and the broader food safety community. By engaging actively with scientists, practitioners, and policymakers, the journal aims not only to contribute to their scientific advancement but also to evolve alongside the field, responding to emerging challenges and helping shape the future of food safety.

Acknowledgments

A special thanks to all the Editorial Board Members who accepted to be engaged in this effort and all readers and stakeholders who will support the journal to achieve its goals.

Conflicts of Interest

The authors declare no conflict of interest.

Use of AI and AI-Assisted Technologies

AI has been used to help with the editorial structure and to improve the English, not for the content itself.