

Screening for emerging chemical risks in the food chain

(Screener project, OC/EFSA/SCER/2020/02)

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The European Food Safety Authority's (EFSA) Founding Regulation (EC) No 178/2002 (Article 34), requires EFSA to establish monitoring procedures to systematically search, collect, collate and analyse information and data with a view to the identification of emerging risks in the fields within its mission. Chemicals produced or imported in the European Union (EU) should be registered under the REACH Regulation¹. The goal is to control the risk of chemicals by addressing the production and use of the chemicals, and their potential impacts on both human health and the environment. Currently (August 2021) over 23,300 unique chemicals/substances are registered.

From the chemicals registered under REACH, EFSA established a systematic framework for identifying emerging chemical risks in the food chain as summarized in project report on REACH 1 (Bitsch, et al., 2016) and scientific publication (Oltmanns, et al., 2018). The developed procedure was applied to 15,021 substances registered in REACH within the scope of REACH 2 project (Oltmanns, et al., 2020). Based on available environmental, chemical and toxicological information on the substances, Oltmanns et al. were able to assess and score 2,336 substances. Prioritisation based on the assigned scores (e.g. high toxicity, high potential for bioaccumulation in food, high release or low biodegradable) and additional data curation steps identified 212 substances that are considered "potential emerging risks" in the food chain.

In the current (2021-2023) EFSA project "Screening for emerging chemical risks in the food chain" WFSR (Wageningen Food Safety Research), UCT Prague (University of Chemistry and

¹ Regulation (EC) No 1907/2006 of the European Parliament and of the Council

Technology, Prague) and Fraunhofer ITEM (Fraunhofer Institute for Toxicology and Experimental Medicine) focus on four objectives:

1. develop analytical methods (HRMS methods) and perform a suspect screening for 212 substances prioritized by EFSA in the previous project
2. develop non-target methods for analysis of halogenated organic compounds in the same matrices as objective 1
3. quantify a selected number of chemicals selected from the objectives 1 and 2 of the project
4. evaluate and characterize their risks

To address the analytical challenges, the available extensive infrastructure of high-end instrumentation for trace analysis of organic chemicals (in particular GC and LC with tandem MS/MS and TOF or Orbitrap HRMS) will be used.

References

Bitsch, A. et al., 2016. *Final report: Testing a procedure for the identification of emerging chemical risks in the food chain. External Scientific Report.*, : EFSA Supporting publication.

Oltmanns, J. et al., 2018. Development of a novel scoring system for identifying emerging chemical risks in the food chain.. *Environmental Science, Processes & Impacts*.

Oltmanns, J. et al., 2020. Potential emerging chemical risks in the food chain associated with substances registered under REACH.. *Environmental Science, Processes & Impacts. Environ. Sci.*, 22(105).