Mineral oil hydrocarbons in food

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EU to set maximum levels on mineral oil aromatic hydrocarbons in food

Summary Report of the Standing Committee on Plants, Animals, Food and Feed: Section *Novel Food and Toxicological Safety of the Food Chain*, 21 April 2022

Update

The European Union (EU) is discussing setting maximum permitted limits ("maximum levels") of mineral oil aromatic hydrocarbons (MOAH) in food that will apply from 2027. These maximum levels will generally be set at the limit of quantification (LOQ).

Today, there are no maximum levels in law. However, exporters must pay attention to the presence of MOAH. In order to ensure that food on the market is safe, EU Member States have agreed a common approach to controlling food containing MOAH, as set out in a joint statement in the Summary Report of 21 April 2022: when MOAH are found during official controls of food, Member States should "withdraw and, if necessary, [...] recall products from the market" when LOQs are exceeded. To reinforce these measures, the EU intends to set maximum levels in law.

AGRINFO has published the following resources:

- Guide with further information on MOH, their origins and effects, the EU's regulatory intentions, the sectors most affected, and actions required to prepare for compliance with new rules, available in English, French, Spanish, and Portuguese)
- Video recordings of MOH webinars in English, French, Spanish, and Portuguese
- Questions and answers arising from the webinars in English, French, Spanish, and Portuguese.

Discussions are ongoing, so some aspects of what is reported in these resources may change.

What is changing?

The rules today

EU Member States have agreed that analytical LOQs will be the reference point used during enforcement of official food controls when deciding whether to withdraw or recall products from the market due to the presence of quantifiable concentrations of MOH. This was agreed in June 2020 (specifically for formulae for infants and young children), and then in April 2022.

These LOQs are:

- 0.5 mg/kg for dry foods with a low fat/oil content (≤4% fat/oil)
- 1 mg/kg for foods with a higher fat/oil content (>4% fat/oil, ≤50% fat/oil)
- 2 mg/kg for fats/oils or foods with >50% fat/oil.

These levels are not set in EU law, but they help Member States to ensure that food is safe, as required by EU law (General Food Law Regulation 178/2002, Art. 14).

Setting maximum levels

In 2024 and 2025, the EU discussed the establishment of maximum levels (limits in law, rather than indicative levels for action), based on the previously agreed LOQs. Maximum levels for contaminants will be set, taking into account the maximum levels that can be met according to the best available practices. This is known as the “ALARA” (as low as reasonably achievable) principle. Therefore, for certain products, higher levels are being discussed.

For details on the state of play (as of June 2025), please consult the AGRINFO Guide Mineral Oil Hydrocarbons in Food: An Introduction to Upcoming EU Regulation (also available in French, Spanish, and Portuguese).

Currently no EU limits are in place for mineral oil saturated hydrocarbons (MOSH). There are discussions on establishing indicative levels for MOSH. These levels will not be thresholds for removing products from the market, but values that will trigger investigations of the sources of contamination, and the application of mitigation measures.

In response to questions raised by stakeholders, the European Commission has published Frequently Asked Questions (FAQs) on the draft regulatory measures on MOH in food (European Commission 2024).

Why?

In 2023 the European Food Safety Authority updated its risk assessment on mineral oil hydrocarbons in food (EFSA 2023). The regulatory focus is mainly on MOAH, which have potential genotoxic and carcinogenic activity.

There is also discussion about MOSH, which bioaccumulate in various organs. EFSA considers that, according to present knowledge, the current exposure to MOSH does not raise concerns for human health. However, the consequences of long-term accumulation of MOSH have not yet been investigated and remain uncertain.

Timeline

Discussions on MOAH maximum levels will continue, and the European Commission aims to adopt levels in 2026 which will apply from 2027. Until maximum levels are set, Member States may continue to apply the agreed LOQs in food safety controls.

What are the major implications for exporting countries?

There are numerous potential sources of MOAH, and testing for them is complex. Although controls for mineral oils are already in place in the EU, setting maximum levels is likely to mean buyers will request suppliers to demonstrate compliance with the new levels. In the short term, there may be significant work required in many value chains to identify sources of MOAH and strategies to prevent their presence. This in turn may require an increase in analytical capacity to test for MOAH.

Recommended Actions

Suppliers of food in all sectors should increase monitoring of MOAH to identify any presence of these substances in their products. When MOAH or MOSH are identified in food, suppliers should check all steps of the supply process, identify the sources of contamination, and develop measures to avoid further contamination of their production. Guidance is available on preventing the transfer of undesired MOAH into food (FoodDrink Europe 2018).

In many non-EU countries, the capacity for analysing MOAH may be limited. The European Commission's Joint Research Centre has published Guidance on sampling, analysis, and data reporting for monitoring MOH in food and food contact materials (JRC 2023).

Currently no EU limits are in place for MOSH in food. However, some Member States have established national benchmark levels, and food business operators are recommended to also

monitor foods for MOSH and develop measures to prevent contamination.

Background

Mineral oil hydrocarbons

Mineral oil hydrocarbons fall into two main classes:

- mineral oil saturated hydrocarbons (MOSH)
- mineral oil aromatic hydrocarbons (MOAH).

Mineral oil hydrocarbons enter the food chain at various points: through environmental contamination during harvesting; through accidental contact with lubricants during processing; or as a result of migration from food contact materials. Recycled paperboard may contain residues of printing ink solvents that can easily migrate to food.

For more information see the European Commission webpage Mineral Oil Hydrocarbons.

Analysis of MOAH

The analyses for MOAH in food are typically carried out by coupling liquid and gas chromatography with subsequent flame ionisation detection (LC-GC-FID). However, in cases where naturally occurring/ biogenic substances interfere with the analysis, a confirmatory analysis with two-dimensional gas chromatography (GCxGC) is needed to confirm the concentration of MOAH (JRC 2023).

Resources

EFSA (2023) Update of the risk assessment of mineral oil hydrocarbons in food. EFSA Journal, 21(9): 1–143.

European Commission (2024) FAQ document on the draft regulatory measures on mineral oil hydrocarbons (MOHs) in food.

FoodDrink Europe (2018) Toolbox on reducing the transfer of mineral oils into food.

JRC (2023) Guidance on sampling, analysis and data reporting for the monitoring of mineral oil hydrocarbons in food and food contact materials. European Commission, Joint Research Centre.

Sources

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