

Mineral Oil Contamination in Food and Food Contact Material

What is the issue?

Mineral Oils, as expressed by MOSH (Mineral Oil Saturated Hydrocarbons) and MOAH (Mineral Oil Aromatic Hydrocarbons), have been identified as a potential source of food contamination and can unintentionally enter food at various points in the supply chain. As an example, a potential source of mineral oil contamination in food is recycled paperboard used in food packaging.

What is happening?

Some MOSH/MOAH species may bioaccumulate or are considered carcinogenic or potentially mutagenic. As such, **EU regulations limiting the MOSH/MOAH content of food packaging materials might be pursued.**

What are resins?

HARRPA members are producers of hydrocarbon, rosin and terpene resins which are based on natural (bio based) and petrochemical raw materials. These resins represent a distinct class of amorphous products that are characterized by a high glass transition temperature in relation to their molecular weight. As such, they are different from oils, waxes or plasticizers.

Rosin, terpene and hydrocarbon resins have been safely used for decades including in food contact materials. A number of resins are also listed on the Plastics Regulation (EC 10/2011 and amendments) and/or have been approved for food contact use by regulating bodies across the globe.

What is the concern for the resin manufacturers?

The LC-GC-FID or 1D-GC analytical approach for MOSH/MOAH analysis as prescribed by the JRC does not sufficiently distinguish between mineral oils and other hydrocarbons in a similar molecular weight range, such as polymer oligomers, waxes and resins. This method creates false positive test results that leads to an undue negative impact on the use, for example, of resins in packaging hotmelt adhesives.

HARRPA has therefore worked with the Laboratory Lommatzsch & Säger to develop an improved analytical method (2D-GC) that can better distinguish between resin oligomers and MOSH/MOAH. Our findings have been shared in a transparent manner with industry, and EU & national authorities.

What does HARRPA propose?

As recommended by the JRC in their recently published [guidance](#)¹, HARRPA proposes that in cases of difficult samples and matrices, **additional analytical techniques such as 2D-GC could be used.**

¹ JRC guidance, page 12

What would this mean in practice?

2D-GC is more sophisticated in analyzing resins in food contact materials compared to the EU method. Because 2D-GC shows clusters of resins species that can be distinguished from mineral oil, these interferences can be subtracted from the reported test results. Because resins are not MOSH/MOAH, using the 2D-GC testing method to correctly identify them in food and food contact materials would ensure greater transparency for industry and final consumer.

What are our aims?

We are looking to improve stakeholder awareness of the difference between MOSH/MOAH and resins and how the distinction can be measured. HARRPA will continue to promote to EU national authorities and relevant laboratories that in addition to the 1D-GC method, the 2D-GC technique should be **utilized** to help ensure a correction for resin oligomers when analytical results are over a specific threshold.

Manufacturers commitment to safe use

HARRPA members are committed to meeting stringent regulatory safety expectations on their resin products and are committed to contribute to **food** safety. HARRPA has issued several guidance documents on the use of resins in the supply chain. HARRPA members can provide further information regarding safety of their respective resins.