

FEDIOL statement

JRC guidance on sampling, analysis and data reporting for the monitoring of mineral oil hydrocarbons in food and food contact materials

At the moment, there is still a high variability of mineral oil hydrocarbon (MOH) results in food between laboratories due to several challenges. The publication of the JRC guidance for sampling, analysis and data reporting for the monitoring of MOH therefore represents an important step to achieve further harmonization and better laboratory practices. FEDIOL members welcome this document which provides interesting background information and recommendations on the analysis of MOH in food. However, further steps are still needed to ensure that data collected on these compounds are fully reliable, especially in vegetable oils-fats and oilseeds which, as recognized by the guidance, represent challenging matrixes in terms of methodology and interpretation.

Participation to proficiency tests

An important objective of the guidance is to support the generation of reliable data by laboratories which are already familiar with the analytical approaches for MOH in food and which have proven their analytical performance in relevant **proficiency testing** schemes. The fact that data are generated by laboratories having participated to such tests is a critical point for FEDIOL. The need for confidence in laboratory performance is essential for its companies. In this context, it is well known that long term and regular participation and evaluation via proficiency testing usually result in consistent and sustained improvements in laboratory performance.

Sampling

FEDIOL welcomes the detailed recommendations given for sampling so to minimize contamination in samples being analysed.

Analysing

FEDIOL appreciates the efforts made in the guidance to clarify what is found under the humps (when undertaking an analysis with GC-FID methods) in comparison to the definition of MOH. While this is a step in the good direction, FEDIOL believes that some of the wording used in the guidance still remains confusing (ex: "*the MOSH fraction may include polyolefin oligomeric hydrocarbons...*"). To avoid any ambiguity, **the terminology « MOSH » and « MOAH » should not be used in connection with "fractions" or to describe what is found under the « humps »** since those may also contain substances which are not considered as MOH. A reference to the fraction/hump of "saturated hydrocarbons » or "aromatic/unsaturated hydrocarbons » should be preferred.

As stated earlier, FEDIOL **notes interesting discussions-elements around the concept of MOH** linked to what current analytical methods are able to quantify (such

as discussions on PAH and PAO). In FEDIOL views, there would be **value in pursuing such discussions** in the future. It is indeed still felt that there is some disconnect between the wording used to describe what is looked for (hydrocarbons of mineral oil origin), the description of the compounds that this definition encompasses (which according to EFSA/the JRC guidance may include waxes as well as hydrocarbons derived from coal, natural gas or biomass origin) and what is relevant for human health.

FEDIOL **welcomes the reference to minimum performance criteria** that analytical methods should fulfil. In view of routine testing and recent proficiency tests, FEDIOL is however **concerned that some of the criteria set in the guidance might not be reachable in practice**. In the case of vegetable oils and fats, FEDIOL understanding is that the targeted and maximum **levels of quantification (LOQs)** set in the guidance for the total MOSH/MOAH are 0,5 and 2 mg/kg respectively. In that context, FEDIOL would like to recall that the limit of application of the CEN method¹, specifically developed for the MOH analysis in vegetable oils and fats, was set at 10 mg/kg based on an interlaboratory basis. Recent proficiency tests² on mineral oil analysis in vegetable oils have also shown a high variation of results below 10 mg/kg (where those are afflicted by a high measurement uncertainty). Based on practical experience, the requirements set for the **intermediate precision** in the case of oilseeds/vegetable oils also represent a challenge for many laboratories at the LOQs targeted in the guidance.

While reference is made to the use of additional clean-up and purification steps for samples with interfering compounds, FEDIOL regrets that the guidance does not go a step further for **vegetable oils and oilseeds** for which such **additional purification and cleaning steps should be performed systematically**. It is well known that those materials contain natural compounds that may overlap with the humps and interfere in the MOH analysis.

FEDIOL welcomes the indications given in the guidance to verify the analytical method performance. In this context, FEDIOL would like to remind that **the blank level** remains a critical parameter to monitor (to ensure that the chemicals and reagents are not contaminated with mineral oil or similar compounds), especially when attempt to achieve low LOQ are made.

Reporting

FEDIOL **welcomes the recommendations to report accompanying information in addition to the analytical values themselves** (description of the method, LOQ, expanded uncertainty, comments on the result) as this is key to interpret MOH results. In this context, FEDIOL also believes that **chromatograms**, which constitute an important piece of information, should be made available upon request for results above the limit of quantification. FEDIOL **welcomes the recommendations on the C ranges** to be analysed both for saturated and aromatic mineral oil hydrocarbons as this will facilitate comparison of results obtained from different laboratories.

To address the issue of high variability of results observed between laboratories, FEDIOL has developed analytical and reporting recommendations for the analysis of MOH in vegetable oils and fats. These are intended for laboratories performing MOH analyses for the vegetable oil and fat sector. FEDIOL is now in the process of revising these recommendations in view of the JRC guidance.

¹ EN 16995:2017 - Vegetable oils and foodstuff on basis of vegetable oils. Determination of mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH) with on-line HPLC-GC-FID analysis

² DRRR proficiency test RVEP 180635 organised (2018), 23th DGF proficiency test (2017)