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Analysis of Hydrocarbons from Lubricants used for Oil Processing and in Technical Grade Products

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Lubricants are used for machinery in the whole course of oil processing in order to avoid wear and tear, abrasion, excessive heating or corrosion. Such products often contain mineral oil derived hydrocarbons or synthetic hydrocarbons. Beside these substance groups there are numerous other possible ingredients. Lubricants are to be divided into several grades according to their intended use. There are food grade products for applications, where the lubricant might get into direct contact with food and some are non-food grade lubricants.

However, hydrocarbons from both product groups might find their way into oils and fats and had been detected in the course of mineral oil analyses by LC-GC as there is a focus on this topic during the last years. The contamination of edible oils and fats with mineral oil derived hydrocarbons is of concern, because some mineral oil saturated hydrocarbons (MOSH) may be accumulated in human tissues like liver, mesenteric lymph nodes and others. In addition, mineral oil aromatic hydrocarbons (MOAH) may consist also of some cancerogenic species like PAHs. These later should be excluded from the food chain and should be detected in non-food lubricants, only.

We have analysed samples of lubricants from the above mentioned grades for their composition in order to set up a data base for identification of the source from actual contaminations. While the quantification of MOSH and MOAH can be achieved by LC-GC-FID, the composition of the hydrocarbons can be characterised by comprehensive GCxGC-MS. First results will be shown and discussed.