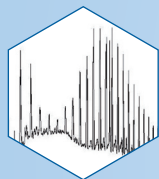


Research Milestones

This project is funded by the BDSI and the Foundation of the German Cocoa and Chocolate Industry. Its goal is to identify factors for potential entry sources of MOSH and MOAH over the entire food chain to allow for their effective minimization and prevention.

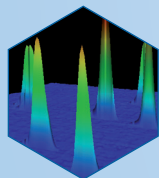
While the so-called BDSI Coordination Committee controls the project and provides the samples, the LCI, as association's own research competence center, will perform the analytical and scientific work and make its findings available to all members of the BDSI.

Research in the LCI is directed toward three major goals – the milestones:



LC-GC-FID

- Quantification of total MOSH and MOAH
- On-line coupled Liquid Chromatography-Gas Chromatography-Flame Ionization Detection



GCxGC-ToF

- Characterization of substance groups and compounds
- Multi-dimensional Gas Chromatography coupled with Time-of-Flight Mass Spectrometry



Database

- Creating a database
- Generation of fingerprint patterns
- Detection and tracking of entry sources

LC-GC-FID Liquid Chromatography-Gas Chromatography-Flame Ionization Detector

GCxGC-ToF Comprehensive Gas Chromatography-Time of Flight Mass Spectrometry

Food Safety in Confectionery

For decades now, all members of the Association of the German Confectionery Industry (BDSI) have had a preferred partner for all scientific issues concerning their products: the modern, confectionery specialized, association's own Food Chemistry Institute (LCI).

Among others, the LCI is an expert contact for the following:

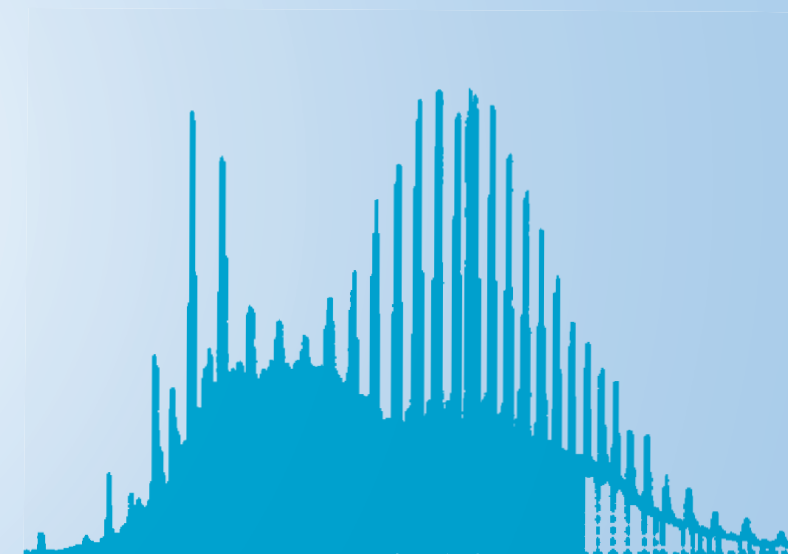
- Quality and food safety
- Research and modern analytics
- Minimization of process contaminants
- Minimization of contaminants, e.g. MOSH/MOAH



RESEARCH PROJECT

Minimization/Prevention of MOSH/MOAH in Confectionery and Savory Products

TOOLBOX CONCEPT



Contact:

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Phone +49221-623061

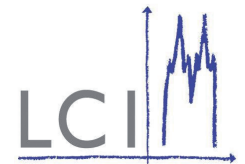
Fax +49221-610477

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BDSI

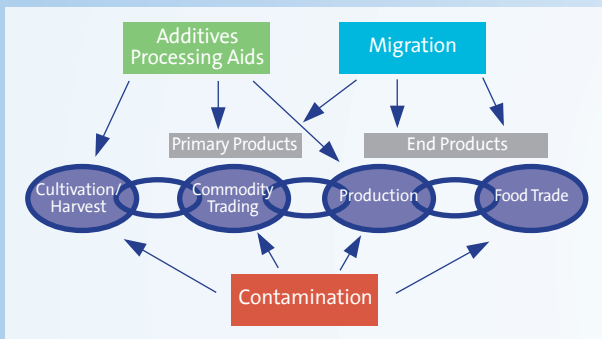


What are MOSH/MOAH?

Mineral oils are highly complex mixtures of myriads of hydrocarbon compounds. MOSH are open chain or cyclic, saturated mineral oil hydrocarbons.

MOAH include aromatic mineral oil hydrocarbons that consist of highly alkylated mono and/or polyaromatic rings.

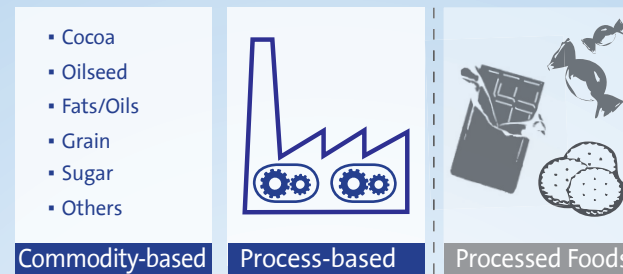
Potential Points of Entry



There are several different points of entry for MOSH/MOAH during the production process:

- Particular relevant is the migration from recycled cartons and/or from mineral oil containing ink on packaging used for processed food. The minimization in this section has already been successfully advanced; however, the potential for entry through migration during transport and storage of the raw material is a lesser known and studied fact.
- The possible entry of mineral oil components by use of certain additives and processing aids in the cultivation, harvest, trading and production process cannot be excluded.
- Another source is accidental contamination, e.g. from machine parts leaking lubricating oil or through environmental influences across the entire process chain.

Scientific Project Approach



The framework of this project will first follow a commodity-based research. This will allow a cross-sector identification of possible entry sources and development of approaches for minimization.

Followed by stage inspections on single product groups in a process-based approach.

Processed foods will not be part of the scope of this research project due to already effective entry avoidance through use of functional barriers or cartons with low mineral oil content.

Toolbox - Assistance for Companies in the BDSI

A toolbox is a collection of data and instructions that allow food manufacturers to minimize contaminant levels. It identifies approaches for optimization along the entire process chain.

The structure of the MOSH/MOAH toolbox is based on the different input pathways:



Migration



Additives Processing Aids



Contamination

Toolbox Examples

The contents of the MOSH/MOAH toolbox will be developed in a joint effort between the scientists of the LCI and the research officers, as well as experts of BDSI. This toolbox is a novel approach and will be made available to all members of the BDSI as soon as possible.

General Tools - Across Products



- Apply functional barriers
- Use suitable packaging for raw materials and intermediates



- Use food grade lubricating oils



Specialized Tools - Customized for the different product groups in the BDSI



- Use of low mineral oil content container liners (dressings made of cardboard)
- Dry cocoa to optimum levels prior to shipping



- Test jute bags to ensure they are food grade



- Finalize FCC Guidelines for cocoa transport
- Finalize IJO standard for batching oils

