

Food Packaging made from Recycled Paper and Board

Monitoring in Europe of packaging and foods has identified mineral oil contamination in a range of packaged foods. Mineral oils are widely used, and end up in foodstuffs by various routes. Since then, almost all sectors of the food industry as well as laboratories and supply industry have been concerned with the presence of mineral hydrocarbons and investigated into their origin. As a result, industry has gained a comprehensive understanding of the different sources of mineral oil contaminations.¹ Many measures for the reduction of the transfer and occurrence of undesired mineral oils that have already been taken show objectively measurable success.

There are many different routes by which contamination of foodstuffs with mineral oils can occur. Food packaging has been identified as one of these sources. EuPIA members have long offered mineral oil-free inks to be applied to the non-food side of packaging, and recommend that only these inks are used for these applications. Mineral oils can, however, migrate from recycled paper and board used for food packaging.

In several EU member states the food packaging chain was called to take measures such that levels of mineral oil in foodstuffs are reduced. The European Commission has issued a recommendation² on the monitoring of mineral oil hydrocarbons in food and in materials and articles intended to come into contact with food in 2017. In Germany the BMEL has drafted a legislation aimed at restricting mineral oil in food contact materials made from recycled paper and board.

In this respect, the European trade associations representing the paper industry (CEPI) and the paper converting industries (CITPA) have recommended to their members to only use mineral oil-free printing inks on paper and board packaging. Additionally, the German Federation for Food Law and Food Science (BLL) has recommended to the food industry - besides other measures - the use of specific printing inks:

- **for food packaging:** printing ink systems, which have been optimized for low migration
- **for all other packaging:** mineral oil free printing inks

To enable printers and converters to meet their respective industry association's commitment, EuPIA identified appropriate packaging ink options in the information note "Printing ink industry contribution to the paper, paper converting and food industry initiatives to reduce mineral oil in paper and board packaging" (www.eupia.org).

The recycled paper or board itself must be considered as a main source of mineral oil: the waste paper from which it is made currently contains a significant proportion of used newspapers. Inks for printing newspaper (news inks) contain mineral oils as an important part of the formulation, which upon printing are absorbed by the paper (this is how printed news inks dry). Thus mineral oils may come into direct contact with foodstuffs as substances contained

¹ BLL (German Federation of Food Law and Food Science) "Toolbox for Preventing the Transfer of Undesired Mineral Oil Hydrocarbons into Food" 2017

² Commission recommendation (EU) 2017/84

within the recycled paper and board, unless the packaging is designed such that transfer of the mineral oil is avoided.

This observation is not new, and therefore the ink industry has long advised caution when using recycled paper and board as food packaging (see EuPIA information note: “Recyclability of printed paper and board articles for use in food packaging”).

In this context, the European Food Safety Agency EFSA has stated in its Scientific Opinion on Mineral Oil Hydrocarbons in Food³:

“MOH [Mineral Oil Hydrocarbons] contamination of food by the use of recycled paperboard as packaging material may be a significant source of dietary exposure. It can be effectively prevented by the inclusion of functional barriers into the packaging assembly. Other measures may include segregation of recovery fibre sources intended for recycling and the increasing of the recyclability of food packages by avoiding the use of materials and substances with MOH in the production of food packages.”

A cross industry platform has been established (called “MOCRINIS”) to bring together representatives from several industry sectors to address all aspects that have arisen following the publication of results demonstrating the presence of saturated and aromatic hydrocarbons in some food. The topics of measurement and characterization, exposure to and toxicity of hydrocarbons were discussed in two workshops in September 2013 and October 2017, the presentations and other materials of the workshop were published as on the CONCAWE website (www.concawe.eu).

News inks, as any other publication inks, are safe for their intended purpose. However, they are not designed to come into contact with food, whether direct or indirect. Therefore appropriate measures must be taken by the paper recycling industry and the packaging industry that avoid the transfer of mineral oils or other components of the packaging into food beyond acceptable limits.

Nonetheless, some expert audiences and media demand that the mineral oils contained in news inks should be substituted by vegetable oils or vegetable oil esters.

Mineral oil free news inks are feasible in principle, but not currently available due to lack of market demand. Historically, some alternatives based on vegetable oils were placed on the market, but they were deemed to be economically unsatisfactory and were not fully qualified technically. Before such replacements become viable, a number of print characteristics will have to be optimised during ink development and press trials. Within a research project of the German Environment Agency the possibility of mineral oil-free inks is currently investigated together with industry experts.

However, such potential investments which would in any case involve higher costs are only justified when reliable regulatory conditions are set by the legislators. These conditions relate to accepted limit values for the migration of substances from paper and board packaging into food, and must be determined not only for mineral oils but for any other migratable substances which have not been evaluated according to food safety standards, but which are likely to be present

³ EFSA Panel on Contaminants in the Food Chain (CONTAM); Scientific Opinion on Mineral Oil Hydrocarbons in Food. EFSA Journal 2012;10(6):2704. [185 pp.] doi:10.2903/j.efsa.2012.2704. Available online: www.efsa.europa.eu/efsajournal

in recycled paper and board. Due to the fact that the paper recycling stream is highly international, national measures can be expected to have only a very limited effect.

EuPIA, 2011-03-03
1st amendment 2012-10-16
2nd amendment 2015-03-11
3rd amendment 2015-12-01
4th amendment 2018-08-02