

Strategy to achieve further reductions in the plasticiser contamination of edible oils and fats

(Update 01/2018)

For over 10 years, the BNN measures for the reduction in plasticiser contamination have successfully contributed to assuring the quality of organic edible oils in the organic food sector. This has led to the high expectations placed on organic edible oils being met.

To further minimise contamination with plasticisers, the oil producers who are members of BNN have agreed on a good manufacturing practice that excludes articles made of soft PVC from the entire processing chain. Excluding soft PVC is the most effective strategy to prevent plasticiser contamination. Some plasticisers may also originate from general environmental contamination, but at significantly lower levels than from contact with soft PVC.

Soft PVC can be used for hoses, seals, in foil, brackets, sieves, glue, bowls or other items that are usually characterised by high elasticity. Soft PVC consists to a large degree of plasticisers. These are not tightly bound in the plastic material and migrate very easily into oils and fatty foods. Furthermore, an additional argument against the use of soft PVC is that the incineration of PVC can release dioxins, a persistent environmental contaminant. There are suitable alternative materials for contact with foods such as silicone or PE; these materials do not require plasticisers and do not contribute to the issues surrounding dioxin. **Excluding soft PVC will therefore reduce contamination from all plasticisers in oil.** This exclusion goes beyond the legal requirements, since the general food law does not provide for a ban of soft PVC.

To check for the exclusion of soft PVC in the processing chain of organic oils a percentile framework is used by BNN. This is done by collecting plasticiser residue data in the general [BNN monitoring of dry goods](#). In this way a continuous process of minimisation is triggered; the highest findings are researched and eliminated before turning to the next highest values as the next step. In this way all common plasticisers used in soft PVC will be considered, not only those subject to the regulated reference values or benchmarks.

The strategy framework for the reduction of plasticiser contamination applies to all plant oils and fats which are intended to be passed on to end consumers:

- **Reference value for DEHP and DBP for EU goods:** per sample **1 mg/kg** oil Analytical variance may be taken into account.
- **Benchmark¹ for DEHP and DBP for products from third countries:** per sample **2 mg/kg** oil Analytical variance may not be taken into account.
BNN recommends that when an analysis result of 1 mg/kg or more occurs, urgency be given to **establishing the cause** in order to stop the contamination.
- For all other **Phthalates und Adipates**, based on the collected data, BNN recommends in addition to the already establish reference value of 5mg/kg that from an analysis result of **1 mg/kg** oil (not taking into account analytical variance) urgency be given to **establishing the cause** in order to stop the contamination.

An analytical variance of +/- 50% for the reference value will be tolerated in the interim². The analytical accuracy of laboratories determining plasticiser contamination varies greatly due to the blank value calibration problematic. For this reason the number of laboratories which have proven their competence in the area of plasticiser analysis in oils, and through this gained accreditation from BNN ([BNN-Laboranerkennung](#)) is currently still small. The BNN laboratory accreditation demands high level of technical competence. Laboratories which have shown this level for plasticiser analysis in oils (Phthalates in oil seeds, oils and fats) are listed [here](#).

The Association expressly recommends obtaining analyses from BNN accredited laboratories in order to get professional analysis results that have validity. This will allow further rational procedures – also in particular will avoid inflated analysis values arising from blank value calibration issues. The BNN will continue to monitor laboratory practice to be able to adapt the present strategy accordingly.

The analyses are risk-based.

¹ **Benchmark:** A value that is generated from a number of analytical data points which communicates that at least 95% of the sample points are less than this figure, so that as a rule it should be possible to keep to this value. This figure should be the aim of all oil producers. **The Benchmark is not a reference value!** The oil can still be traded when the value is exceeded if particular circumstances are taken into account. In the past, in the context of the reduction strategy, sources of contamination in production could already be identified and eliminated, so that only in very rare exceptions would the benchmark be exceeded

² According to the assessment of the [Scientific Advisory Board of the BNN](#) as well as scientific data, an expanded measurement uncertainty of 30% for plasticisers in oils should be achievable in laboratories. Horwitz and Albert (1997) as well as Thompson (2012) found an expanded measurement uncertainty of 32 and 22%, respectively, for numerous analytes in numerous media corresponding to the conditions of plasticisers in oils at concentrations of 1 mg/kg. With higher concentrations, the expanded measurement uncertainty decreases.



For the implementation of the strategy to minimise contamination it is advisable to take the time between harvest and pressing of the respective oils into consideration.

All legal requirements must of course be complied with.

To check materials for soft PVC, the BNN provides its members with a **video guide to the gemstone test**, which can be used to demonstrate the presence of PVC using the simplest tools (paper clip, pliers and lighter). However, it should be noted that hoses can also be made up of several layers of different plastics of which in any case the innermost, but if possible all are to be examined.

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Appendix: History

Reference values³ in the strategy to reduce plasticiser contamination, valid until December 2017:

- 1 mg/kg for DEHP & DBP in EU products
- 3 mg/kg for DEHP in products from third countries
- 5 mg/kg for all other Adipates und Phthalates

Orientation values for plasticisers valid from April 2006 until replaced in March 2016:

- 3 mg/kg for DEHP
- 5 mg/kg for all other adipates and phthalates

Preliminary orientation values for plasticisers up until harvest 2005/2006:

- 6 mg/kg for DEHP
- 10 mg/kg for DIDP, DiNP, BBP and others (in each case)

³ In the revision in 2016 the orientation values for plasticisers were renamed as reference values. With this the importance of the reference values as limits for private sector trade is prescribed compared to the importance of the [BNN-Orientierungswertes für Pestizide](#), which describe a concept using a threshold to trigger research into the origins of the contamination.