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Public statement on the application of the BNN orientation value for biphenyl and anthraquinone detected in organic herbs, spices, herbal teas and tea (*Camellia sinensis*)

The BNN orientation value

Organic products are defined through the processes by which they are produced and processed, e.g. by the non-use of chemical synthetic plant protection agents and mineral fertilisers. The legal regulations for organic agriculture also refer to the production processes and their inspection/certification. Organic products are therefore not defined as pesticide free and the organic regulations consequently do not have maximum allowable residue limits for them.

Evidence of the presence of substances in organic products that are not permitted in organic agriculture could be proof that they have been used and so proof of illegal labelling as an organic product. Since organic agriculture is not practiced under an impervious glass dome, pesticide contamination may also be tracked back to unavoidable or accidental contamination or background environmental pollution. Furthermore, substances may have differing areas in which they are used and besides being an active ingredient in a pesticide, may also be an ingredient in completely different products such as packaging materials, printing inks or disinfection agents.

BNN Herstellung und Handel e.V (BNN) has published an orientation value for pesticides in order to provide a practical and flexible means to differentiate cases of fraud and unintentional errors in the process of production and processing from accidental and unavoidable contamination.

The BNN orientation value is therefore not a maximum residue limit, but rather describes a **case by case assessment**, in cooperation with the competent certification body, whenever a pesticide level in the unprocessed raw material exceeding 0.01ppm has been found on. It shall decide whether the provisions of organic agriculture have been observed. If this is the case, BNN is of the opinion that the product can be traded.

Biphenyl and anthraquinone in organic herbs, spices, herbal teas and tea (*Camellia sinensis*)

Biphenyl and anthraquinone are not permitted in organic agriculture. Therefore, if detected, research into the cause of contamination has to be initiated – as described above (as a rule by the competent certification body).

On the basis of the opinions and publications listed in the appendix, the Scientific Advisory Board of BNN has come to the conclusion that even if all regulations for organic agriculture are complied with,

traces of biphenyl and/or anthraquinone in herbs, spices, herbal teas and tea (*Camellia sinensis*) from organic production may accidentally occur and be technically unavoidable.

In the opinion of the Scientific Advisory Board levels of up to 0.05 mg biphenyl and 0.02 mg anthraquinone per kg of product can be considered as accidental or unavoidable in terms of this public statement.

The following restrictions apply to this determination:

1. Product category: herbs, spices, herbal teas and tea (*Camellia sinensis*) from organic agriculture
2. The values given in the laboratory report are basis for a decision. Adjustment factors for processing must not be applied. Analytical variances due to the expanded measurement uncertainty can be considered.

Justification:

1. Since January 2009 there has been an increasing prevalence – at first occasionally, later with greater frequency – of laboratory results showing detections of biphenyl in fresh herbs, spice herbs, herb teas, other tea infusions, hops, tea and mate.
2. Since 2011 laboratories have reported anthraquinone initially in tea, but later also in herbs and spices.
3. Assessment of these analyses for biphenyl showed that 70% of the cases exceeded the maximum residue level of 0.01mg/kg.
4. Germany has declared a maximum residue limit of 0.1mg/kg for Biphenyl in fresh herbs (Regulation for exceptions concerning the trading and use as fodder of particular products with pesticide residues (EU-RHG-Ausnahmereverordnung – EURHGAusnahmV) (14.04.2010)).
5. In a reasoned opinion the European Food Safety Authority (EFSA) published an extensive survey concerning the occurrence of biphenyl in plants and plant products and made a recommendation for raising the maximum residue limit (2010).
6. In all the analytical evidence concerning biphenyl and/or anthraquinone in herbs, spices, herbal teas and tea (*Camellia sinensis*) from organic agriculture to date there have been no indications that biphenyl or anthraquinone could have come from an active substance or additive in inputs not permitted in the positive list in appendix II of (EC) No. 889/2008.
7. There is equally no proof that the rules for organic agriculture – in terms of general exclusion of non-permitted materials in the value added chain from producer to consumer - have not been followed.
8. The permitted use of biphenyl until 2005 for surface treatment of citrus fruit is no explanation for the presence of traces in herbs, spices, herbal teas and tea (*Camellia sinensis*).

9. The use of anthraquinone as a bird repellent for cereal seed production cannot be considered as an explanation for the presence of traces in herbs, spices, herbal teas and tea (*Camellia sinensis*).
10. Evaluation of several thousand analyses shows that in particular smoked products have appreciably elevated levels of anthraquinone and/or biphenyl, and furthermore no differences between organic and conventional products exist.
11. The statement presented here on the presence of anthraquinone and biphenyl in organic products in the product categories listed above is in line with the regulations on maximum residue levels of pesticides since 0,05 mg/kg for biphenyl and 0,02 mg/kg for anthraquinone represent the lowest maximum permitted levels according to the EU regulation 396/2005 for these product groups.

The cause is attributed to the general environmental pollution with biphenyl and anthraquinone from natural and manmade processes of combustion (e.g. mineral oils, wood and charcoal, and their products of combustion). In addition, contamination can occur through drying or roasting processes (in this case as process contaminants) since the production of heat in a drying facility commonly occurs by burning. In addition, but less commonly, technical sources such as colours, preservatives, the petrochemical industry (biphenyl) or paper packaging (anthraquinone) play a role.

Taking into consideration biphenyl and/or anthraquinone findings in products labelled as organic/ecological only in isolation, does not cast doubt (as defined in article 91 of (EC) No. 889/2008) on their organic quality.

Products with residue levels up to 0.05 mg/kg biphenyl and/or 0.02mg/kg anthraquinone can be traded according to this BNN opinion. The competent certification body has to be informed and in the case of findings according to general food legislation on the minimization of contaminants investigations have to initiated whether the contamination can be reduced in future by means of appropriate protective actions.

Additional recommendations:

In order to reduce biphenyl and anthraquinone contamination in the longer term, measures should be discussed and if possible introduced in cooperation with the competent certification body. They include:

For potted herbs from the glasshouse: ventilation, improvement in the seals in the exhaust gas extraction system in glasshouse heating, airflow management in glasshouses and procedures in critical weather conditions (e.g. temperature inversions in winter).

Drying facilities are to be checked to see if, for example, improvement in the seals in the exhaust gas extraction system and air flow management can achieve a reduction in contamination. Possibly changing the material being burnt can also help to minimize the problem.

A review of this statement must be undertaken by the 1st September 2020 at the latest.



Meinrad Schmitt, Chairman of the Board

Literature

Verordnung über Ausnahmen hinsichtlich des Inverkehrbringens und der Verfütterung von bestimmten Erzeugnissen mit Pestizidrückständen (EU-RHG-Ausnahmereverordnung – EURHGAusnahmV), 14.04.2010

Modification of the existing MRLs for biphenyl in various commodities, Reasoned Opinion, European Food Safety Authority (EFSA), EFSA Journal 2010;8(10):1855

(http://www.efsa.europa.eu/sites/default/files/scientific_output/files/main_documents/1855.pdf)

Draft Commission: Regulation of amending Annex III to Regulation (EC) No. 396/2005 of the European Parliament and of the Council as regards maximum residue levels for chlorantraniliprole in or on carrots and biphenyl in certain crops, Brussels, C2010

European Food Safety Authority (EFSA): REASONED OPINION “Modification of the existing MRLs for biphenyl in nutmegs and mace”, EFSA Journal 2011;9(5):2160 (<http://www.efsa.europa.eu/de/efsajournal/doc/2160.pdf>)

Stiftung Warentest, Kräuter im Test, Mai 2012 (<https://www.test.de/Pestizide-in-Kraeutern-Im-gruenen-Bereich-4368822-0/>)

Stiftung Warentest, Schwarzer Tee im Test, November 2014 (<https://www.test.de/Schwarzer-Tee-im-Test-Darjeeling-und-Ceylon-Assam-schadstoffbelastet-4767560-0/>)

Further laboratory results and statements are held by the BNN (*can be made available on request if necessary*).