Bundesinstitut für Risikobewertung

Communication 012/2024

29 February 2024

Residues of plant protection products with PFAS active ingredients in fruit and vegetables: Is there a health risk?

There are currently some reports in the media about an increase in the use of PFAS pesticides in fruit and vegetables traded in Europe.

The German Federal Institute for Risk Assessment (BfR) comments as follows:

Plant protection active substances are comprehensively tested and evaluated for possible risks at European level before they are authorised. No adverse health effects are to be expected, if they are used as intended. Even when plant protection products are used properly, residues may be detected in the harvested crop and in the food produced from it. This is to be expected and is therefore explicitly taken into account in the process and in the safety assessment of these products by setting maximum residue levels (MRLs).

The media reports do not mention any specific concentrations of pesticide active substances. Exceedances of the MRLs are not reported. Therefore, a risk assessment for consumers cannot be made on the basis of the available data. The simple detection of an active substance does not allow any statement to be made about its risk (see the BfR's frequently asked questions on the difference between hazard and risk https://www.bfr.bund.de/en/why_a_tiger_is_a_hazard__but_not_necessarily_a_risk___the_difference_between_risk_and_hazard-314625.html).

The BfR stands by its assessment that no adverse health effects are to be expected from pesticide active substances when used as intended.

Per- and polyfluorinated alkyl substances as pesticide active ingredients

The group of poly- and perfluorinated alkyl substances (PFAS) comprises at least ten thousand substances with very different properties such as degradability and effects. Some of these substances are also used as active substances in pharmaceuticals, biocides or plant protection products. However, their use in these areas requires approval – in the case of pharmaceuticals, authorisation – by the responsible European risk management authorities.

Authorised active substances are tested

In the authorisation procedure, all pesticide active substances and their metabolites (transformation products), including the so-called PFAS active substances, are comprehensively tested and evaluated for possible health risks at European level before they are authorised. In addition to human health effects, environmental effects and in particular persistence (the ability to degrade and remain in the environment), bioaccumulation (the uptake of a substance from the environment and the accumulation in an organism) and toxicity (harmful effects on organisms) are also examined. Maximum residue levels (MRLs) are also set for each active substance/crop combination as part of the approval procedure and the subsequent authorisation procedure for plant protection products. Based on the comprehensive testing, no adverse health effects are to be expected from authorised plant protection products when used as intended.

Residues are to be expected

Even if plant protection products are used properly, residues of pesticide active substances may be detected in the harvested crop and in the food produced from it. This is to be expected and is therefore explicitly taken into account in the process and in the safety assessment of these products by setting MRLs. In general, therefore, small amounts do not pose a health risk. According to the current state of knowledge, this also applies to residues of several of the so-called PFAS pesticide active substances in one sample.

Results reported in the media do not allow a risk assessment

The results published in the media are not sufficient for a scientific risk assessment. There has been an increase in findings of PFAS pesticide active substances in fruit and vegetables, but there is no quantitative analytical data showing the amounts of the detected active substances in the individual foods and whether the MRLs have been exceeded. There is a complete lack of presentation of the limits of determination and detection and the spectrum of substances analysed over time to classify the findings, including the analytical methodology.

It is not possible to assess the health risk on this basis, as neither the level of consumer exposure via these foods can be calculated, nor can the distance to the health-based guideline values, such as the Acceptable Daily Intake (ADIs) of each individual active substances, can be estimated. Therefore, there is no evidence of a health risk to consumers.

Further information on the BfR website on the subject of perfluorinated and polyfluorinated alkyl substances

Here to stay:
Per- and polyfluorinated alkyl substances (PFAS) in food and in the environment
https://www.bfr.bund.de/en/here_to_stay__per__and_polyfluoroalkyl_substances__pfas__in_food_and_in_the_environment-244188.html

Consumer safety and plant protection product residues:
https://www.bfr.bund.de/en/consumer_safety_and_plant_protection_product_residues-197980.html

Plant protection products:
https://www.bfr.bund.de/en/plant_protection_products-579.html

About the BfR

The German Federal Institute for Risk Assessment (BfR) is a scientifically independent institution within the portfolio of the Federal Ministry of Food and Agriculture (BMEL) in Germany. The BfR advises the Federal Government and the States ('Laender') on questions of food, chemicals and product safety. The BfR conducts independent research on topics that are closely linked to its assessment tasks.

Imprint

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