Bundesinstitut für Risikobewertung

Communication 48/2023

12 October 2023

Residues of plant protection products in cereals - No adverse health effects to be expected

According to an association residues of plant protection products (aka pesticides) are detected in about one third of cereal products in Europe. This result is based on an evaluation of information from the European Food Safety Authority (EFSA). According to this, residues of active substances were detected in 837 of 2,234 samples of unprocessed cereals and cereal products. This corresponds to 37 percent. The maximum residue level (MRL) was exceeded in 14 samples (0.6 percent). In total 65 different active substances were detected. According to the association, the “sheer number” of different active substances poses a health risk to consumers.

The German Federal Institute for Risk Assessment (BfR) would like to point out the following:

Prior to their approval active substances used in plant protection products are comprehensively tested and evaluated for possible health risks. Hence plant protection products are safe when used as intended. Yet 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 during safety assessment by setting maximum residue levels (MRL’s). Small residual quantities therefore usually do not pose a health risk.

According to the current state of scientific knowledge, this also applies to multiple residues in one sample. This is because the low concentration of most of the residual substances together with the fact that the total residue usually is dominated by one active substance. The respective assessments take possible interactions into account.

The BfR therefore holds up its previous assessment that no adverse health effects are to be expected from plant protection products and their active substances when used as intended.

Plant protection products are used to protect plants or parts of plants, including fresh fruit, vegetables and seeds, from pests such as toxic moulds (keyword mycotoxins), weeds or harmful organisms. They are also intended to safeguard the harvest yield, protect the crop during storage and transport and ensure good food quality. In cereal cultivation particularly the contamination with mycotoxins that are harmful to human health must be prevented. Fungicides

contribute to this. This must be taken into account when in the context of demands for a "pesticide-free" agriculture.

Although organic farming uses fewer plant protections products, even organic farmers cannot manage completely without pesticides.

New analytical high-precision detection methods also make it possible to detect traces of plant protection products in food. Residues of plant protection products have to be sufficiently as low as to not endanger the health of consumers. Therefore residues in food are permitted up to the legally defined maximum residue level (MRL). The MRL indicates the maximum amount of a plant protection product active substance allowed for a particular food or foodstuff. The setting of an MRL follows the premise of exposure minimization based on the ALARA principle ("As Low As Reasonably Achievable"). The respective residue levels are well below the relevant health-based reference values. Exceedance of an MRL therefore does not equate to a health risk.

The evaluation of possible health effects of substances in plant protection product mixtures is part of good toxicological practice, be it for formulated products or for cases where co-occurrence is foreseeable. There is a broad knowledge base on the effects of multiple residues of plant protection products. Based on the current state of the art the authorisation criteria hence sufficiently exclude health risks for consumers.

It should also be noted that as published the association's figures on the total amount of plant protection products applied in wheat and barley are not comprehensible to the BfR. They should be presented in a more transparent manner and in accordance with good scientific practice. In Germany, wheat and barley crops account for 24 percent of the agricultural area and 85 percent of the cereal cultivation area in Germany[1]. This form of cultivation is therefore land-intensive, but the treatment index is low[2], which is also reflected by the low residue levels.

Further information on the BfR website on the subject of plant protection products

Questions and answers on plant protection product residues in food:
https://www.bfr.bund.de/en/questions_and_answers_on_residues_of_plant_protection_products_in_food-60852.html
Topic page on plant protections product residues in food:
https://www.bfr.bund.de/de/risikobewertungen_des_bfr_von_nachgewiesenen_pflanzenschutzmittel_rueckstaenden_in_lebensmitteln-53099.html

Interview with Tewes Tralau on the risks of plant protections products:
https://www.bfr.bund.de/cm/429/02_interview_with_dr._tewes_tralau.pdf

[1] https://www.destatis.de/DE/Presse/Pressemitteilungen/2021/05/PD21_234_412.html, 11.10.23
[2] https://papa.julius-kuehn.de/index.php?menuid=43, 11.10.23

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). It advises the Federal Government and the Federal States ("Laender") on questions of food, chemical and product safety. The BfR conducts its own research on topics that are closely linked to its assessment tasks.

Imprint

Publisher:
Federal Institute for Risk Assessment
Max-Dohrn-Strasse 8-10
10589 Berlin
T +49 30 18412 -0
F +49 30 18412-99099
bfr@bfr.bund.de
bfr.bund.de

Institution under public law
Represented by the President Professor Dr Dr Andreas Hensel
Supervisory Authority: Federal Ministry of Food and Agriculture
VAT ID No: DE 165893448
V.i.S.d.P: Dr. Suzan Fiack

BfR | Risiken erkennen –
Gesundheit schützen