

# Fruits



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# of fear

**Many people are suspicious of plant protection products. Is there cause for concern? Let's take stock.**

Plant protection products (PPP) hardly enjoy a good reputation. But it's not just that: many people fear they are harmful to health. They worry about 'chemicals' in food that is supposed to be as 'natural' as possible. This attitude is encouraged by, at times, unbalanced media reporting. In 2016, for example, the news that the PPP active substance glyphosate had been detected in the 14 best-selling types of beer caused quite a commotion. Yet the level of glyphosate was so low that you would have to drink 1,000 litres of beer every day to consume enough of the active substance for it to pose a health risk.

Reports such as these contribute to further unsettling the public. But what is the state doing to protect its citizens? What real health risks do people face? How are PPP authorised and how is their use monitored? Is there cause for concern?\*

## **Approval and authorisation: what's the difference?**

The authorisation of PPP and the approval of the active substances they contain are strictly regulated in the European Union (EU). Active substances are approved throughout the EU after prior assessment by one or more member states. Plant protection products on the other hand – they often contain several active substances and co-formulants – are authorised nationally by indi-

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There is great uncertainty among the population. At protests like this, people call for a ban on glyphosate.



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## A hazard is possible, a risk is real

A 'hazard' describes a potential harm to health, a theoretical possibility. 'Risk' on the other hand describes the probability of this hazard occurring – so the real situation in which we face the hazard (exposure). Here's an example: a tiger is a hazard. But what determines the risk is the extent to which we are at the tiger's mercy. A caged tiger is hazardous, but a low risk. Conversely, a hungry tiger running free ten metres away is an extremely high risk. Likewise, a PPP active substance can also pose a hazard as it is potentially toxic. No health risk is to be expected when PPP are used as intended, however, since they are investigated and evaluated prior to being authorised, and conditions for safe use are determined.

vidual member states. This is usually preceded by a zonal evaluation. For this purpose, the EU is divided into three zones – with Germany in the central zone. A national authority evaluates the application for authorisation on behalf of the other member states in the zone.

A key aspect during the approval of active substances is the assessment of their health risks. In Germany, this assessment is done independently by the German Federal Institute for Risk Assessment (BfR). Fundamental to this is the distinction between hazard and risk (see box).

“We comprehensively examine, from the farmer and wheat field resident to the consumer, what potential hazards an active substance poses to different groups of people,” says Dr. Jens Schubert of the BfR. The focus is on the real risk, not the theoretical hazard.

### Thorough assessment

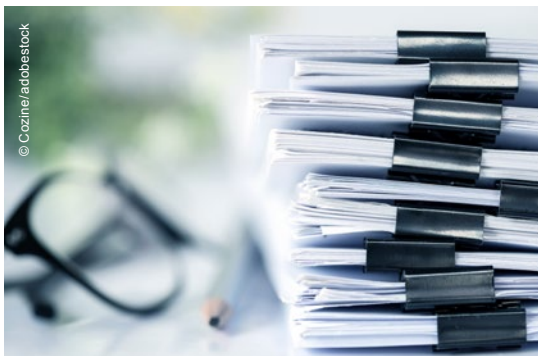
The BfR assesses how an active substance is absorbed and metabolised and what toxic (poisonous) effects may occur. The assessment also looks at whether a substance triggers genetic mutations (mutagenicity), whether it causes cancer (carcinogenicity) or damages genetic information (genotoxicity). A PPP active substance is approved, and a PPP authorised, only if no risk to health is to be expected when used as intended.

Based on the information on an active substance, the BfR together with experts from the other member states and the European Food Safety Authority (EFSA) estab-



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**The BfR comprehensively assesses the real risk posed by an active substance.**



lishes standard EU limit values that must be complied with. It is important to note that the dose of a substance determines its toxicity. PPP residues can be tolerated at low levels in food – far below a harmful dose. The limit of what is permitted is marked by the so-called maximum residue level of an active substance and its degradation products.

When determining (‘deriving’) the limit values, a safety margin is taken into account. A dose that produces an effect in animals is reduced by a factor of ten when transferred to humans, and then again by a factor of ten to take account of different people’s varying sensitivities.

### The limit value and the toxin

Limit values are like crash barriers on our roads. Just as they help to prevent traffic accidents, limit values are designed to guarantee the safe use of an active substance. However, it is a misconception that they represent a boundary between ‘harmful’ or ‘toxic’ and between ‘harmless’ or ‘non-toxic’.

Here’s an example: The ADI value (the acceptable daily intake) indicates the amount of a substance that can be ingested daily over a lifetime with no health risk. Occasionally exceeding the amount is not significant as it will be offset by lower intake on other days.

### Ensuring high quality food

While the BfR carries out the risk assessment as an independent authority, the German Federal Office of Consumer Protection and Food Safety (BVL) is tasked with the risk management further down the line. As well as granting authorisation, the BVL’s duties include determining the application areas and monitoring the use of plant protection products.

When authorising PPP, in addition to the health risks (assessed by the BfR), the BVL also considers the issue of efficacy (assessed by the Julius Kühn Institute) and environmental compatibility (assessed by the German Federal Environment Agency). The BVL sets out in detail how, where and by whom the PPP may be used.

“Plant protection products ensure the availability of high quality food for everyone,” says Dr. Martin Strelke, Head of Department at BVL. He sees plant protection confronted by some difficult problems. Strelke is concerned that the total number of PPP active substances has remained unchanged for years, even though around 20 per cent more PPP have been authorised since 2016. However, there was a shift between the areas of effectiveness at the expense of insecticides. As



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**Plant protection products are no cause for concern if they are used as intended.**



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a result, around 20 per cent more emergency authorisations, which are available for only a short time, have had to be granted since 2016, and the trend is rising. “The loss of important PPP active substances is resulting in bigger gaps in protecting several crops,” he laments.

### Food: 20,000 controls per year

The food control office of each respective federal state in Germany is responsible for checking PPP residues. Every year, around 20,000 food samples are tested for pesticide residues by 19 investigation offices.

“Overall, no pesticide residues were found in about 40 per cent of food samples in 2019,” reports Anne Katrin Pietrzyk from the BVL. “Tolerable residues below the maximum residue level were found in just under 60 per cent, and in just over two per cent it was exceeded.”

If the maximum residue level in a product is exceeded, the first thing to look at is the uncertainty of the measurement. If this has been deducted and the measured value is still above the limit, the product is no longer considered ‘marketable’. This does not mean that it already poses a risk, however. As a rule, to reach the limit values that are significant in terms of health much higher concentrations are needed.

### ‘Organic’ with fewer synthetic traces

For anyone who still wants to eat as few ‘synthetic’ PPP residues as possible, organic food is an option. Such foods are almost 80 per cent free from traces of ‘synthetic’ pesticides. However, this does not take into account the ‘non-synthetic’ pesticides permitted (and not calculated) in organic agriculture.

Criticism of the existing PPP risk assessment comes from non-governmental organisations like the German Federation for the Environment and Nature Conservation (BUND). In the view of Corinna Hölzel from the Biodiversity Department of BUND, the risk assessment is outdated because it underestimates multiple exposures and hormonally active pesticides.

## Under debate: glyphosate

Glyphosate is the most commonly used active substance in weed killers (herbicides) in the world. The substance is highly effective – and highly controversial. Environmental organisations have been campaigning for a ban for decades due to ecological and health concerns. Glyphosate is approved in the EU for use in plant protection products until 15 December 2022. The renewal of approval is currently under discussion. The final decision will be made by the EU Commission together with the member states on the basis of a report by the European Food Safety Authority (EFSA). This is expected to come in the second half of 2022.

### Controls criticised as inadequate

Controls on PPP residues are inadequate as infringements are not sufficiently penalised, and pesticides no longer authorised in the EU enter the market via imported food. Furthermore, the precautionary principle needs to be applied consistently. The authorisation for a PPP active substance such as glyphosate should not be extended because, according to the International Agency for Research on Cancer, it is probably carcinogenic and as a total herbicide it has a highly damaging effect on biodiversity.

“Every substance is dangerous,” counters Dr. Tewes Tralau, Head of the ‘Pesticides Safety’ department at the BfR. The key aspect is always the dose you are exposed to. That’s true of every substance and every plant protection product, regardless of whether it’s ‘synthetic’ or ‘organic’.

Tralau doesn’t agree that the PPP risk assessment is ‘outdated’ and doesn’t take sufficient account of the hazards. Scientific studies are the basis for rational action. Mere suspicion or speculation are not a sufficient basis – not even for the precautionary principle. “As far as I am concerned, plant protection products are no cause for concern – as long as they are used as intended,” concludes Tralau as a scientist. ■

#### More information:

[www.bfr-akademie.de](http://www.bfr-akademie.de) > English > Archive: 2021 > 21st BfR Consumer Protection Forum “Plant protection products – a cause for concern?”