Off the field

Sprayed, evaporated and blown away: Do "drifted" plant protection products pose a health problem?

Critics say they are everywhere. Plant protection products (PPP) plague people on land, at sea and in the air. One of the main causes is spray drift: PPP evaporate when they are sprayed; they evaporate from the treated plants and soil or are blown away with the dust. Subsequently, the active substances are also found far away from the field and can be detected in tree bark or the atmosphere. Organisations that reject chemical plant protection products claim that the result can be "PPP poisoning", which includes headaches, nausea, rashes and respiratory problems.

But is this really true? Can "drifting" PPP actually lead to poisoning? "It is almost impossible to avoid that some of the PPP does not go where it is supposed to," says Dr. Bernd Stein from the BfR. "However, the relevant question is how high the dose is – this is crucial for assessing any potential health hazard."

Strict regulation, high level of protection

Chemist and agricultural scientist Bernd Stein and his team at the BfR are responsible for assessing the human health risk of active substances prior to their European approval and authorisation of PPP. Strict regulations ensure a high level of protection. A PPP is only authorised if it is not a hazard to the health of people who come into contact with it. In line with this remit, experts also take into account processes such as the drifting and evaporation of substances.

Sprayed PPP or their active substances can come into contact with the skin and can be subsequently absorbed or farm workers or other people nearby can inhale them. Depending on the scenario in question the respective risk assessments will always assume the worst case. Models based on data from field measurements are used to assess whether human health risks may occur. Absorption via the skin and the lungs (inhalation) is taken into account to assess the risk for bystanders and residents near treated areas. A PPP is only authorised if under these circumstances harmful effects are not expected.

Fewer unnecessary studies, more animal welfare

Possible long-term health effects of inhalation of active substances are also assessed. This is done based on results from animal experiments in which absorption via the airways is examined. Data from studies on short-

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Plant protection product can evaporate. However, based on current information, there is no reason to worry about the health of local residents.

term (acute) and long-term toxicity (chronic) effects by oral intake are also included in the overall evaluation. If there is reason to assume that the repeated inhalation of a substance is more critical than its oral intake, further studies and assessments must be carried out to verify that the risk is acceptable. The tiered approach also helps animal welfare since it avoids unnecessary animal studies.

Concerns are frequently raised that PPP active substances spread over long distances, also via particle drift of soil dust. "The possible risks of this kind of 'long-distance transport' are usually covered by the scientific assessment's on worst-case assumptions," says Bernd Stein. "This is because the concentrations of an active substance in the immediate vicinity of treated areas, on which our assessment is based, are much higher than those occurring at greater distances."

In this context it has to be noted that not all studies and publications on the "evaporation of plant protection products" are suitable for health risk assessment. Simply detecting active substances in tree bark does not allow any conclusions on possible health effects. It does not say anything about where the respective substances come from nor how often they were released into the air. In consequence it is therefore not possible to assess if and to which extent people were exposed to the product when it was applied.

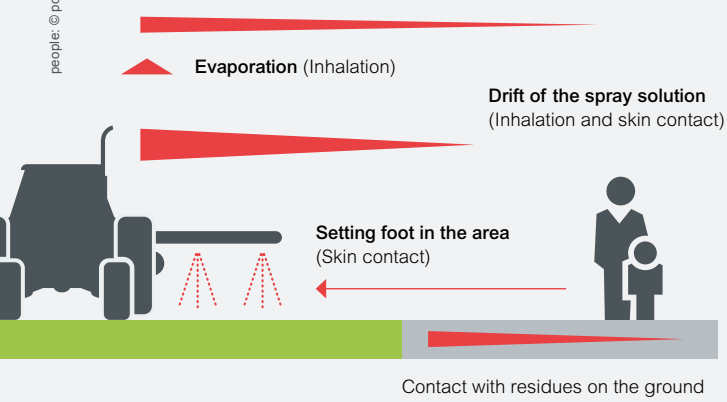
Detectable in the air

The picture is different with measurements such as those published by the Province of Bolzano's Environment Agency (South Tyrol). There air concentrations of PPP active substances were reported in the areas of Auer and Bolzano, an intensively used fruit and wine-growing region. The results show that many of the PPP active substances used in the region evaporate and can also be detected at some distance from the areas treated with PPP. However, the concentrations detected are so low that any resulting health impairment is very unlikely.

"According to the current knowledge, there is no reason for any health concerns due to possible PPP drifts", says Bernd Stein. That is, provided that the products are used properly and in accordance to regulations. "That being said, we take concerns seriously and regularly evaluate any reports on suspected case of poisoning." However, any relevant evidence of real cases of poisoning and, therefore, of hidden, previously undiscovered and underestimated human health risks do not exist yet. This doesn't exclude the fact that PPP in the might cause unpleasant smells upon application. This surely is not nice, but not harmful for health. ◘

More information:
BfR Communication No. 054/2020 of 23 November 2020

How local residents and bystanders come into contact with plant protection products



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