PESTICIDE USE AND FOOD SAFETY

CropLife EUROPE

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PESTICIDE RESIDUES ARE TRACES OF PESTICIDES THAT MAY OCCUR ON OR IN THE HARVESTED PRODUCT

ENFORCING THE CORRECT USE OF PESTICIDES

Just like medicines, pesticides are subject to regulations.

Farmers must comply with Good Agricultural Practice (GAP), following the basic principle of **using pesticides as little as possible and only when necessary.**

The use of pesticides is authorised only after an independent expert risk assessment has checked that any residues remaining after correct use of the product will not lead to any consumer concern nor harm the environment.

The potential residues on a harvested crop are regulated by a Maximum Residue Level (MRL) which is set based on data and **A**s **L**ow **A**s **R**easonably **A**chievable; the **ALARA** principle.

A Maximum Residue Level (MRL) is the highest level of a pesticide residue that is legally tolerated in or on food or feed when pesticides are applied correctly in accordance with Good Agricultural Practice.

EU-wide MRLs are set for every pesticide and crop combination by the European Commission following a regulatory process involving the European Food Safety Authority (EFSA) and Member States.

Pesticide residues – What are Maximum Residue Levels (MRLs), and is my food safe?
Watch CLE's explanatory video.
This and more at
https://www.youtube.com/croplifeeurope

HOW TO CORRECTLY AND SAFELY USE PESTICIDES

- Observe the crops for timely detection of any problem;
- Carefully read the label instructions of the pesticide and/or
- Consult a technician to know what pesticide are recommended for your crop and the type of weeds and diseases affecting it;
- The pesticides you use must be original, legal, and registered in your country for the particular crop you want to treat.
- If the crop is intended to be exported, check that the residues of the pesticide are covered by suitable MRLs/import tolerances in the potential countries of destination (in case of doubt consult an expert);
- Expired pesticides or chemicals in bad condition should not be used (verify expiration date);
- Apply only the required proportion of pesticides according to the label instructions;
- Respect the waiting time between applications;
- Respect the pre-harvest interval (the date at which you can make the last application before harvesting);
- Do not enter the plantation immediately after application;
- Keep an accurate record of the pesticides you have used.

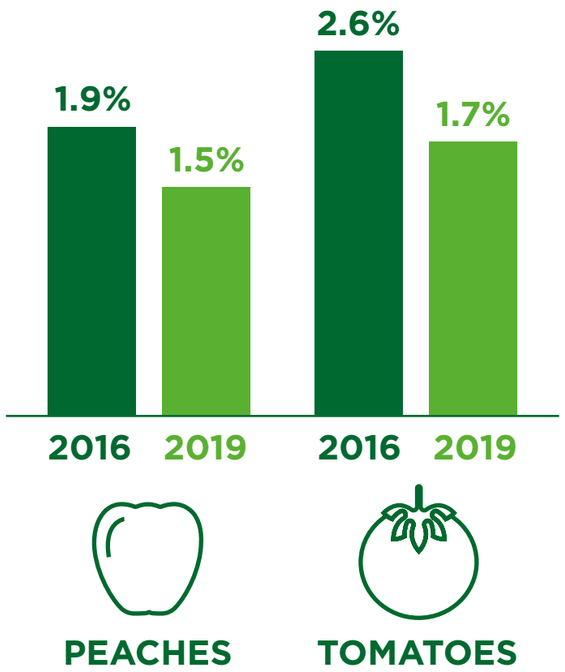
WHAT INFLUENCES RESIDUE LEVELS?

PROPERTIES OF THE ACTIVE INGREDIENT AND FORMULATION	All pesticides degrade with time. Different active ingredients and formulations lead to different degradation rates.
REGIONAL CULTIVATION AND SITE CONDITIONS	Factors like hours of sunlight, temperature and rainfall influence degradation and thus residue levels.
PERIOD OF TIME	More time between the application of a pesticide and the harvest usually means more time for degradation resulting in reduced residue levels.
TYPE OF CROP	The type of crop is also an important factor. For example, the roots of potatoes and carrots are protected from direct spraying as they are below the surface of the soil.
PEST INFESTATION	Pest infestation influences the timing and rate of applications.
PLANT HEALTH	Higher residues are likely to occur if the crop does not develop properly (e.g. due to drought).

EFSA'S ANNUAL MONITORING RESULTS

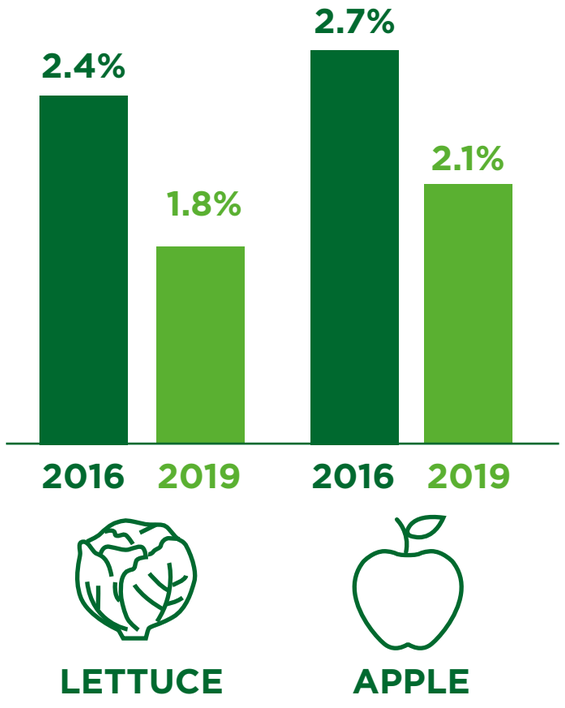
Under European Union legislation (Article 32, Regulation (EC) No 396/2005), the European Food Safety Authority provides an annual report that examines pesticide residue levels in foods on the European market. This report is based on data from the official national control activities carried out by EU Member States, Iceland and Norway and includes a subset of data from the EU-coordinated control programme (EUCP), which uses a randomised sampling strategy. Each year, the number of food samples tested for pesticide residues increases.

National authorities analyse pesticide residues and send the results to EFSA. **Since 2010, on average 97% of food samples tested for pesticide residues in the EU have been found to be either residue-free or containing levels within the legal limits, showing that pesticides are applied correctly.** In fact, residues found in food usually contain no residues or at very low percentages of the MRL.



In 2019, 96.1% of the overall 96,302 samples analysed fell below the maximum residue level (MRL). This figure is similar in comparison to the three previous years (95.5% in 2018; 95.9% in 2017; 96.2% in 2016).

The EU-coordinated control programme (EUCP) specifies the foodstuffs that constitute the major components of the diet in the EU. To assess consumer exposure from these relevant foodstuffs, pesticide residues are monitored over a series of three-year cycles. Compared to 2016, the exceedance rate in 2019 fell for peaches (from 1.9% to 1.5%), lettuce (2.4% to 1.8%), apples (2.7% to 2.1%) and tomatoes (2.6% to 1.7%).



MEASURING SAFETY: ADI AND ARFD

As required by EU law, the ADI and ARfD are obtained through animal testing and are based on the highest dose where no adverse effects are observed; the **No Observable Adverse Effect Level (NOAEL)**. In accordance with international practice, the NOAEL is divided by a safety factor of at least 100 to compensate for potential differences between animals and humans – and for differences between individuals (intraspecies). Further safety factors can be added if deemed necessary. Since the NOAEL is usually derived from different studies, it may differ for chronic (long-term) and acute (short-term) effects. Thus, the ADI and ARfD may be set at different levels.

Before a product is authorised, a dietary risk assessment is conducted in order to ensure that the potential chronic and acute exposure of consumers to residues remains below the ADI and ARfD, respectively.

Authorisation of a product is granted only if the remaining residue levels are proven to be safe under a set of "worst case" assumptions.

Consumer protection is ensured through toxicologically based safety limits:

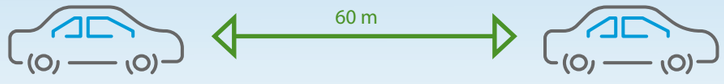
✓ THE ADI

(Acceptable Daily Intake) refers to a toxicological safety limit specifying the amount of a substance which can be ingested every day over an entire lifetime without any recognisable risks to the health of the consumer.

✓ THE ARFD

(Acute Reference Dose) refers to a toxicological safety limit specifying the amount of a substance which can be ingested on a single day without any effects on the health of the consumer.

THE SAFETY FACTOR OF 100 APPLIED TO ROAD TRAFFIC

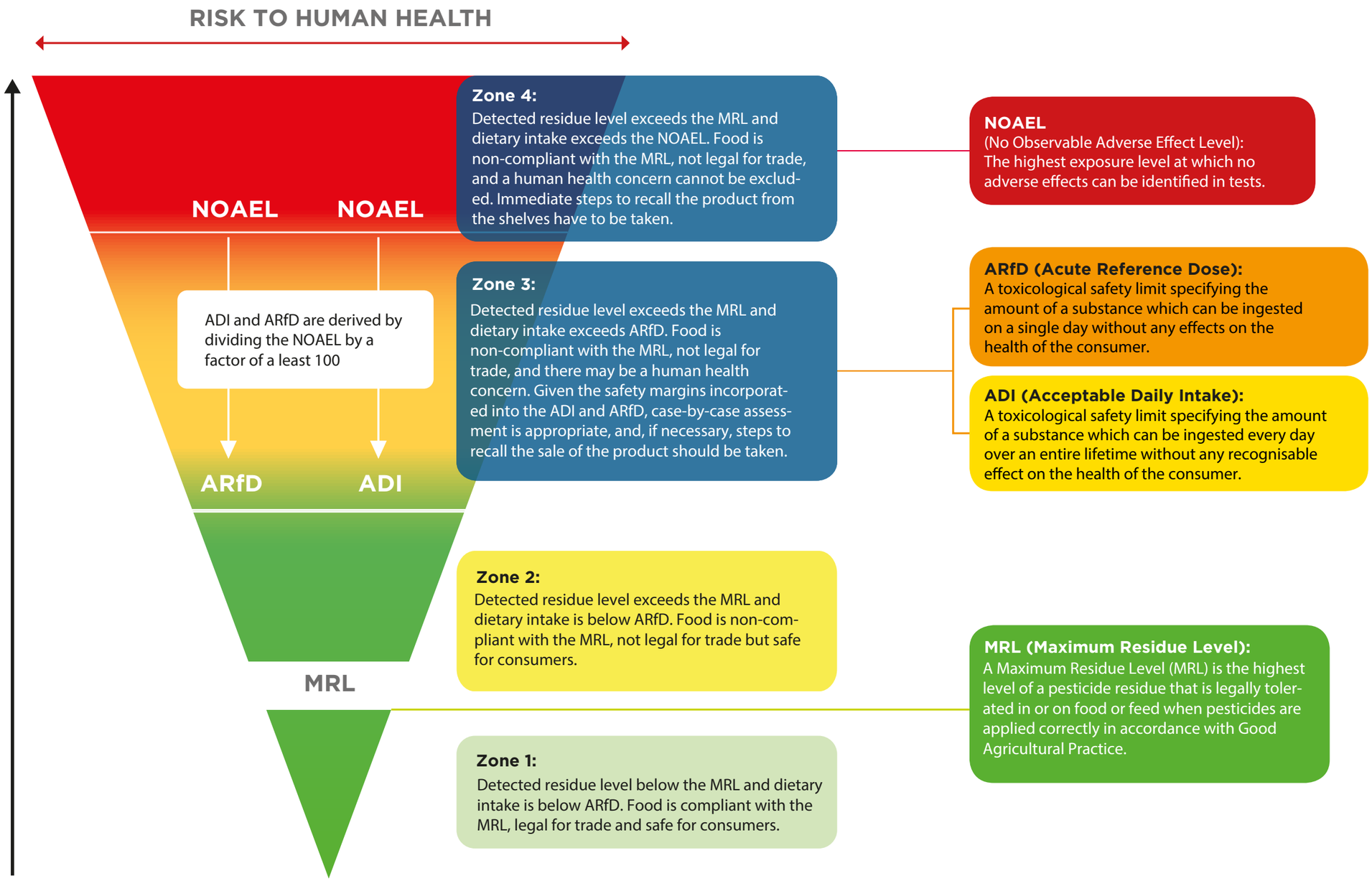


At a speed of 120 km/h (75 mph) a distance of 60 metres (200 feet) to the car in front is required to avoid a rear-end collision.

A safety factor of 100 would require at 120 km/h (75 mph) a distance of 6,000 metres (20,000 feet) to the car in front.

Source: IVA, 2008

RESIDUE LEVELS, COMPLIANCE AND HUMAN HEALTH



Zone 4:
Detected residue level exceeds the MRL and dietary intake exceeds the NOAEL. Food is non-compliant with the MRL, not legal for trade, and a human health concern cannot be excluded. Immediate steps to recall the product from the shelves have to be taken.

Zone 3:
Detected residue level exceeds the MRL and dietary intake exceeds ARfD. Food is non-compliant with the MRL, not legal for trade, and there may be a human health concern. Given the safety margins incorporated into the ADI and ARfD, case-by-case assessment is appropriate, and, if necessary, steps to recall the sale of the product should be taken.

Zone 2:
Detected residue level exceeds the MRL and dietary intake is below ARfD. Food is non-compliant with the MRL, not legal for trade but safe for consumers.

Zone 1:
Detected residue level below the MRL and dietary intake is below ARfD. Food is compliant with the MRL, legal for trade and safe for consumers.

NOAEL
(No Observable Adverse Effect Level):
The highest exposure level at which no adverse effects can be identified in tests.

ARfD (Acute Reference Dose):
A toxicological safety limit specifying the amount of a substance which can be ingested on a single day without any effects on the health of the consumer.

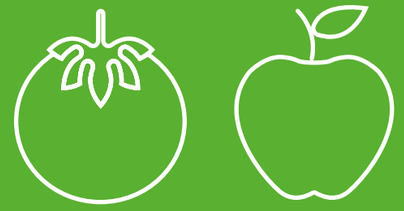
ADI (Acceptable Daily Intake):
A toxicological safety limit specifying the amount of a substance which can be ingested every day over an entire lifetime without any recognisable effect on the health of the consumer.

MRL (Maximum Residue Level):
A Maximum Residue Level (MRL) is the highest level of a pesticide residue that is legally tolerated in or on food or feed when pesticides are applied correctly in accordance with Good Agricultural Practice.

EXCEEDING MAXIMUM RESIDUE LEVELS

Exceeding the Maximum Residue Levels does not necessarily imply a risk to health. It usually indicates that **a pesticide has been incorrectly used or no appropriate Import Tolerance was set.** Food products that have residues exceeding MRL must not be placed on the market or mixed with other foods.

When a farmer uses a pesticide according to the label instructions and Good Agricultural Practice (GAP), the residues in crop at harvest do normally not exceed the Maximum Residue Level established in the country of use.



Since MRLs are not harmonised worldwide, MRL exceedances can occur when products are exported to a country with a lower MRL for the specific pesticide and crop combination. To overcome the problem of non-harmonised MRLs, import tolerances can be established.

WHY DO MRL EXCEEDANCES OCCUR?

MRL exceedances can occur due to the following reasons:

- Authorised pesticides were used on unauthorised crops;
- The pesticide was not used according to label instructions:
  - a) The minimum waiting period between application of the pesticide and harvest was not respected;
  - b) Incorrect pesticide dosing was used;
  - c) The pesticide safety instructions regarding the storage, use and cleaning of material were not respected;
- The pesticide was not registered for the respective country and was used illegally.
- Recent changes in a large number of agricultural practices due to the withdrawal of many pesticides from the market;
- The food product was imported from a country outside the EU and the residue was not covered by a suitable MRLs/import tolerance in the EU;
- Environmental contamination;
- Change of EU MRLs from growing season to marketing of food.

Other exceptional cases include:

- Spray drift from neighbouring treated fields;
- Unfavourable weather conditions resulting in reduced residue decline rates;
- Presence of naturally occurring substances which mimic the occurrence of pesticides or metabolites on food (e.g. carbon disulfide in brassica vegetables).

IMPORT TOLERANCES

To overcome the problem of non-harmonised MRLs, import tolerances can be established.

An import tolerance is a Maximum Residue Level that is set based on uses registered in foreign countries in order to allow the import of treated commodities from abroad and facilitate international trade.

Import tolerances can be requested, provided specific criteria are met, if a trader wishes to import a product:

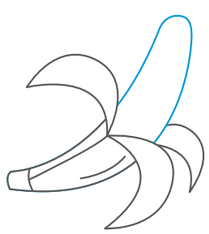
- Containing residues of a substance used in the EU but where the product is not or barely produced in the EU (e.g. bananas)
- Treated with a substance no longer or not yet used in the EU but needed for protecting crops in those countries; or
- Treated with a substance in use in the EU but where the GAP registered in the exporting country is likely to result in higher residues due to different pest pressure.

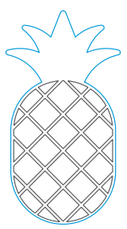
MRLS IN INTERNATIONAL TRADE WITH NON-EU COUNTRIES

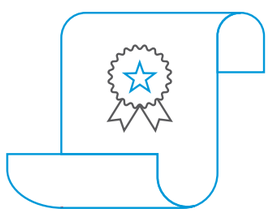
In the EU, every pesticide and crop combination has a defined MRL. Such an MRL is set when local farmers need pesticides to control weeds, pests and diseases. Otherwise, MRLs are set on a general default level. An example for setting a default level, the EU has hardly any pesticides authorised for bananas as there are only a few EU countries in which they are grown.

MRLs may become a trade barrier when higher residues occur due to local conditions in countries outside the EU. For example, a wetter climate may result in heavier fungal infestation, requiring different levels of fungicide application.

In such cases, existing MRLs can be changed to specific MRLs reflecting the use in the country outside the EU. These MRLs are called “import tolerances” and have to fulfil the same high safety standards. Import tolerances facilitate international trade and diversify our diets.







CropLife Europe promotes modern farming practices and champions the use of innovation and technology for a more sustainable model of agriculture. CropLife Europe represents all major companies and national associations across Europe in the area of digital and precision farming, plant biotech innovation, pesticides and biopesticides.

CropLife Europe represents sustainable crop protection solutions: innovative and science-based, our solutions keep crops healthy and contribute to providing Europeans with a safe, affordable, healthy, and sustainable food supply.

CropLife Europe members support fair, science-based regulation as a guarantee to the consumer, and to the crop protection user, of high standards and safe products.

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