Pesticide use and food safety

European
Crop Protection

Contents

Ensuring the correct use of pesticides

Just like medicines, crop protection products are subject to regulations.

The safety of these products is reviewed by independent authorities before they are allowed to be used on crops.

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. The potential residues on a harvested crop are regulated by a maximum level (MRL) which is set **A**s **L**ow **A**s **R**easonably **A**chievable; the **ALARA** principle. The MRL is an important trading standard.

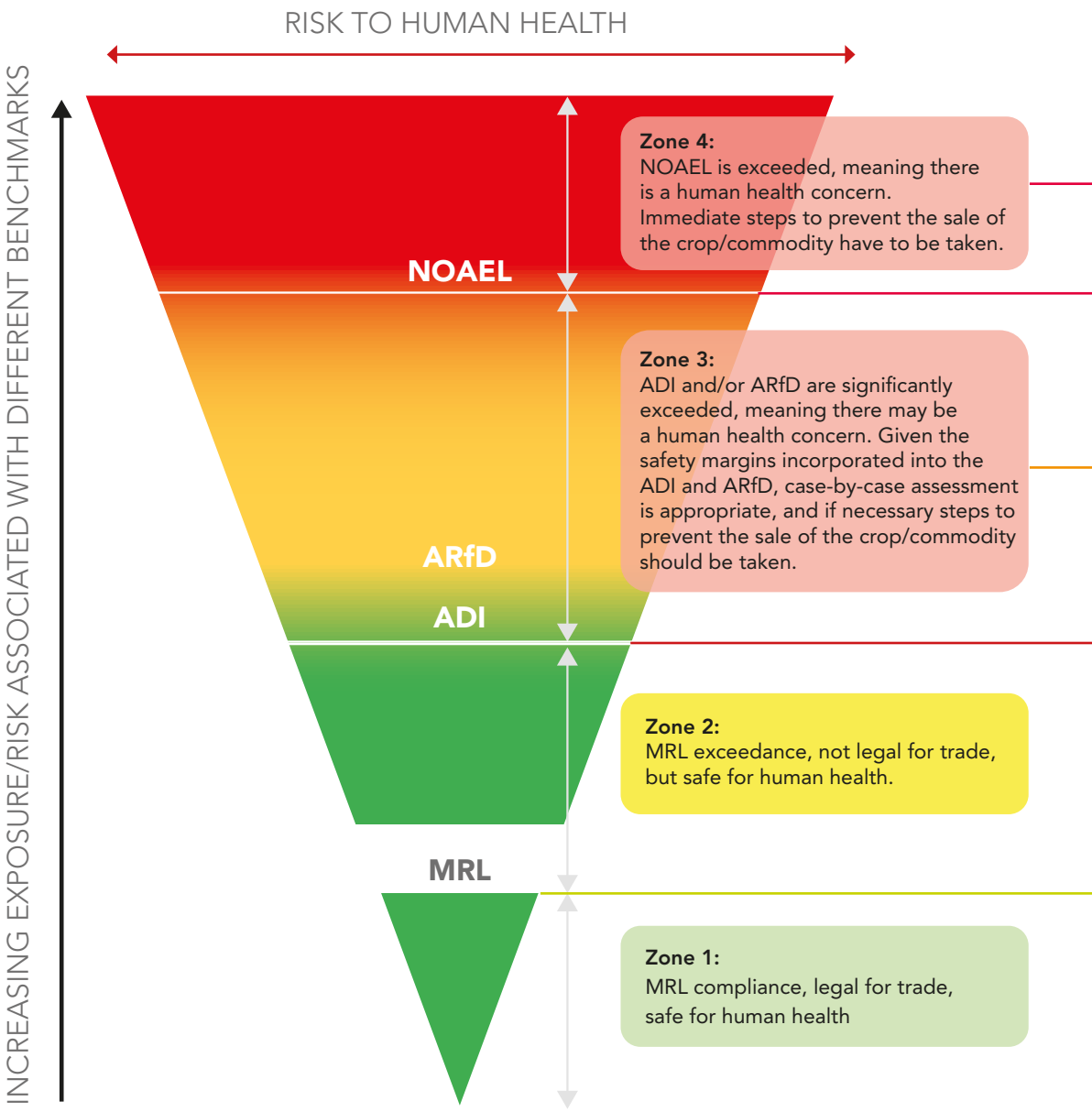
Maximum Residue Levels (MRLs) can also help verify that a pesticide has been correctly applied.

In the EU MRLs are set by the European Commission following a regulatory process involving the European Food Safety Authority (EFSA) and Member States.

Pesticide residues are traces of crop protection products on or in the harvested product.

Pesticide residues – What are Maximum Residue Levels (MRLs), and is my food safe?
Watch ECPA's explanatory video. This and more at **http://www.youtube.com/user/eurocropprotection/videos**

Measuring residue levels



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 risks to the health of the consumer.

ADI and ARfD are calculated by dividing the NOAEL by a factor of at least 100

MRL (Maximum Residue Level):
A legally fixed maximum concentration for a particular active ingredient in a particular crop.
A trade standard, intended primarily to check that a pesticide has been applied correctly.

Maximum residue levels (MRLs) are not toxicological safety limits. They are a commercial standard, indicating the legally allowed maximum amount of an active ingredient which may be present as a residue in or on an unprocessed raw product (such as an unpeeled banana or orange). In other words, they serve to verify whether a crop protection product has been correctly applied or not.

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 recognisable harmful effects are observed; the **No Observable Adverse Effect Level (NOAEL)**. In accordance with international practice, the NOAEL is divided by an uncertainty factor of at least 100 to compensate for potential differences between animals and humans – and for differences between individuals. Since the NOAEL may differ for chronic (long term) and acute (short term) effects, the ADI and ARfD may be set at different levels.

Before an active ingredient can be 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.

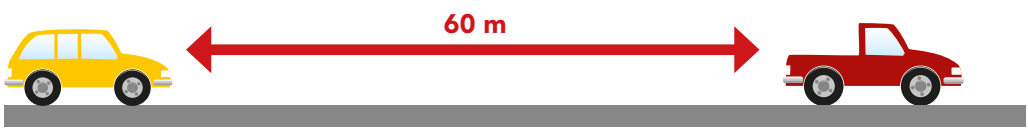
Authorisation is granted only if the maximum residue levels are shown to be safe under a set of "worst case" assumptions.

Consumer protection is ensured through toxicologically based safety limits:

The ADI (Acceptable Daily Intake) refers to the maximum quantity of a substance which can be consumed every day for a lifetime without harm to the consumer.

The ARfD (Acute Reference Dose) refers to the maximum quantity of a substance that can be ingested in a single day without any harm to 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 requires at 120 km/h (75 mph) a distance of 6,000 metres (20,000 feet) to the car in front.

Source: IVA, 2008

Exceeding Maximum Residue Levels

Exceeding the Maximum Residue Levels does not necessarily imply a risk to health. However, it usually indicates that a pesticide **has been incorrectly used. Food products which have residues exceeding MRL cannot be placed on the market.**

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.

However, 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.

Import tolerances

To overcome the problem of non-harmonised MRLs, **import tolerances** have been established.

MRLs in international trade with non-EU countries

An MRL is usually only established when a pesticide is needed for local farmers to control weeds, pests and diseases. For example, the UK has no pesticides authorised for use on bananas as the fruit is not grown locally.

Other reasons for MRL differences are due to local conditions – for example, a wetter climate may result in heavier fungal infestation, requiring different levels of fungicide application.

These MRLs are called "import tolerances" and they also have to comply with the same high safety standards. Import tolerances facilitate international trade.

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 commodity:

- Containing residues of a substance used in the EU but where the commodity is not produced in the EU (e.g. papayas);
- Treated with a substance no longer or not yet used in the EU; 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 than the EU's GAP.

Why do MRL exceedances occur?

MRL exceedances can occur due to the following reasons:

- The crop protection product 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 crop protection product safety instructions regarding the storage, use and cleaning of material were not respected;
- The crop protection product was not registered for the respective country and/or was used illegally;
- Authorised pesticides were used in non-authorised commodities;
- 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 use was not covered by a suitable MRL / import tolerance in the EU;
- Environmental contamination;
- Change of EU MRLs standards.

Other exceptional cases include:

- Spray drift from neighbouring treated fields;
- Contamination of crops during storage;
- 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).

How to correctly and safely use crop protection products

- Observe the crops for timely detection of any problem;
- Carefully read the label instructions of the crop protection product and/or
- Consult a technician to know what crop protection products are recommended to be used with your crop and the type of weeds and diseases affecting it;
- The crop protection products you use must be registered in your country and for the particular crop you want to treat;
- If the crop is intended to be exported check that the use of the crop protection product is covered by suitable MRLs / import tolerances in the potential countries of destination (in case of doubt consult an expert);
- Expired crop protection products or chemicals in bad state should not be used (verify expiration date);
- Apply only the required proportion of crop protection products 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 crop protection products you have used.

What influences residue levels?

Properties of the active ingredient and formulation
All crop protection products degrade with time. Different active ingredients and formulations lead to different degradation rates.

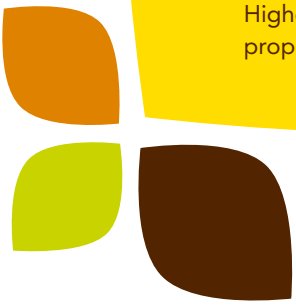
Regional cultivation and site conditions
Factors like hours of sunlight, temperature and rainfall influence degradation and thus residue levels.

Period of time
More time between the application of a crop protection product 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).



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DuPont de Nemours

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Syngenta

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Certis Europe

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FMC

Gowan Company

ISK Biosciences Europe

Janssen Pharmaceutica

Nufarm

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Sumitomo Chemical

Taminco

United Phosphorous Ltd

Full Member Associations

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FCIO – Fachverband der Chemischen Industrie Oesterreichs

Belgium
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Denmark
DCPA – Danish Crop Protection Association

France
UIPP – Union des Industries de la Protection des Plantes

Germany
IVA – Industrieverband Agrar eV

Greece
HCPA – Hellenic Crop Protection Association

Ireland
APHA – Animal and Plant Health Association

Italy
Agrofarma – Associazione nazionale imprese agrofarmaci

Netherlands
Nefyto – Dutch Crop Protection Association

Spain
aepla – Asociación Empresarial para la Protección de las Plantas

United Kingdom
CPA – Crop Protection Association

Group of Nordic Country Associations, Constituting One Member Only

Finland
KASTE
Kasvinsuojeluteollisuus ry

Norway
NPF – Norsk Plantevern Forening

Sweden
Svenskt Växtskydd

National Associations as Associate Members

Bulgaria
BgCPA – Bulgarian Crop Protection Association NA

Croatia
CROCPA – Croatian Crop Protection Association

Cyprus
CCPA – Cyprus Crop Protection Association

Czech Republic
CCPA – Czech Crop Protection Association

Hungary
HuCPA – Hungarian Crop Protection Association

Latvia
LAARUTA – Latvian Crop Protection Association

Lithuania
LCPA – Lithuanian Crop Protection Association

Poland
PSOR – Polskie Stowarzyszenie Ochrony Roślin

Portugal
ANIPLA – Associação National da Indústria para a Protecção das Plantas

Romania
AIPROM – Romanian Crop Protection Association

Russia
AEB – Russian Federation

Serbia
SECPA – Serbian Crop Protection Association

Slovak Republic
SCPA – Slovak Crop Protection Association

Slovenia
SLOCPA – Slovenian Crop Protection Association

Switzerland
scienceindustries
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Turkey
ZIMID – Zirai Mücadele Ilaclari Üreticileri Dernegi

Ukraine
EBA – European Business Assoc. Agrochemical Committee

Kazakhstan
The Kazakhstan Plant Protection Association

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COMPO

Everris

Monsanto Europe

Neudorff

Nufarm

Scotts France

Syngenta

GAPEG Member Associations (non-agriculture)

Spain
aepla
Asociación Empresarial para la Protección de las Plantas

Belgium
Phytofar – Belgische Vereniging voor de Industrie van Phytosanitaire Producten
Association Belge de l'Industrie des Produits Phytosanitaire

Italy
Agrofarma
Associazione nazionale imprese agrofarmaci

France
UPJ – Union des entreprises pour la Protection des Jardins et Espaces Verts

European
Crop Protection

The European Crop Protection Association (ECPA) represents the crop protection industry at the European level. Its members include all major crop protection companies and national associations across Europe.

ECPA promotes modern agricultural technology in the context of sustainable development; to protect the health of humans and the environment, and to contribute towards an affordable healthy diet, competitive agriculture and a high quality of life.

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

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