

Guidance on use of the Pesticide Residue Risk Assessment Tool for footnote 1 products

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Introduction

The Pesticide guide (www.securefeed.eu/en/pesticide-guide) of the Royal Dutch Grain and Feed Trade Association, MVO, Nevedi, OPNV, SecureFeed, VDDN and Vernof describes how to handle results regarding pesticide residues in feed materials for the Dutch market. MRLs do not apply to products exclusively used for feed, according to footnote 1 of EU Regulation 396/2005 (“MRLs do not apply to products or part of products that by their characteristics and nature are used exclusively as ingredients of animal feed, until separate MRLs are set in the specific category [...]”). A risk assessment might be necessary to establish if the product is safe to be placed on the market (as per diagram V of the Pesticide guide). To ease and harmonise this work, the above sectors joined forces to develop a risk assessment tool for screening whether a certain pesticide residue/footnote 1 product combination poses a food or feed safety concern.

Input for this Tool (the Pesticide Residue Risk Assessment Tool for footnote 1 products, www.graan.com/voedselveiligheid) is the level of the pesticide residue in the feed material (as reported on the Certificate of Analysis, without deduction of measurement uncertainty). Drop-down menus contain pesticide residues most commonly found by the Dutch feed sectors and footnote 1 products most commonly used in these sectors. This Pesticide Residue Risk Assessment Tool for footnote 1 products has been coordinated with the Dutch Food and Consumer Safety Authority (NVWA). This Tool has also been submitted to the Ministry of Public Health and the Ministry of Agriculture .

The output is whether this level poses a dietary exposure safety concern for animal or human health. Animal health is assessed by comparing the dietary exposure to various farmed animals with the acute reference dose (ARfD) of the residue involved. Per type of such animal the tool contains a default compound feed formula. Human health is assessed by comparing exposure to toddlers, infants and adults with the acceptable daily intake (ADI) of the residue involved for various types of food of animal origin.

The tool is transparent and shows the background information that is used for the calculations. In addition, this guidance document explains the working of the Tool and shows which additional data is used. For the risk assessment of animal safety the ARfD is preferred over the no-observed-adverse-effect level (NOAEL), as the first one (ARfD) is usually available from the European Food Safety Authority (EFSA). In case of absence of the ARfD, the lowest available NOAEL divided by hundred is taken instead. This is currently only the case for two pesticide residues (anthraquinone and 2-phenylphenol). The value of the ADI is equal to or lower than the ARfD. Using the ADI for assessing human exposure therefore provides an additional safety factor compared to the ARfD. The tool assumes that the moisture content of the feed materials is 12%. For assessment of human health a worst-case consumption scenario is taken which is explained in the last paragraph of section 2.3 Calculations underlying table on human safety.

Given a pesticide residue/footnote 1 product combination, the Tool identifies the animal with the highest exposure to this residue relative to this animal’s toxicological threshold exposure for this residue. Given this animal, the Tool identifies the human age group with the highest exposure to that residue through a food product from this animal relative to this age groups’ toxicological threshold exposure for this residue. The Tool disregards other sources of exposure i.e. for the animal other feed materials containing that pesticide residue and for human age groups other products from the same animal or other animals or from vegetable origin. This Guidance explains the content and describes the calculations used in the Tool.

Disclaimer: the Tool is meant as an aid for the animal feed production chain to perform a risk assessment. The company using this aid remains primarily responsible for putting safe products on the market. The Tool calculates if a product is safe for animals and for humans consuming foods originating from these animals, under the conservative assumptions stated in the tool. The calculations are not meant to provide guidance if the food of animal origin complies with the applicable MRL for the substance in question, as this can only be verified by analytical testing.

Disclaimer: Although the Tool is aligned with the Dutch Food and Consumer Safety Authority (NVWA), the latter remains the right to perform their own Risk Assessment in cases they deem this necessary.

Definitions

ADI: Human health calculations are based on the acceptable daily intake (ADI). The ADI is an estimate of amount of a substance in food or drinking water, usually expressed on body weight basis that can be ingested daily over a lifetime without presenting an appreciable risk to health. Unit: mg/kg body weight.

(Source: EFSA - <https://www.efsa.europa.eu/en/glossary-taxonomy-terms>)

ARfD: the Acute Reference Dose (ARfD): The ARfD is an estimate of a substance in food or drinking water, expressed on body weight basis, that can be ingested over a short period of time, usually during one meal or one day, without appreciable health risk to the consumer on the basis of all known facts at the time of evaluation. Unit: mg/kg bodyweight. (Source: JMPR (2002): Pesticide residues in food –Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group on Pesticide Residues.

Biotransfer factor: Ratio of the concentration of a chemical found in animal tissues to the animal's daily intake of that chemical. The factor describes how much of the pesticide level will end up in a specific tissue / animal product (egg, milk, meat, fat, edible offal). This transfer factor is expressed as the concentration of the compound in animal products (mg/kg) on a wet weight basis divided by the concentration of the compound in animal feed (mg/kg) on a dry weight basis. (W.R. Leeman, K. J. Van Den Berg & G. F. Houben (2007) Transfer of chemicals from feed to animal products: The use of transfer factors in risk assessment, Food Additives & Contaminants, 24:1, 1-13)

CoA: certificate of analysis, providing the concentration of pesticide residue in ppm (which equals mg/kg) on product base (as is).

Log Pow: Ratio of the equilibrium concentration of a dissolved substance in a two-phase system comprising two largely immiscible solvents, n-octanol and water.

NOAEL: no observed adverse effect level. NOAEL is the greatest concentration or amount of a substance at which no detectable adverse effects occur in an exposed population (Source: EFSA - <https://www.efsa.europa.eu/en/glossary-taxonomy-terms>).

Pesticide: Pesticide residues that are to be entered in the Tool should mirror those as listed in the EU pesticide database –pesticides

Further to what is indicated on the scope in the Introduction, this Risk Assessment Tool:

- Does not cover direct feeding and neither covers products other than footnote 1 products such as wheat, barley and maize as these are consumed by humans as well.
- Is not containing processing factors.
- Does not include calf milk replacer. It does cover any other calf (compound) feed.
- Does not take into account any cumulative effects of different pesticide residues.
- Does not take into account pets, ornamental fish and salmon.

Regarding the products listed, the following should be taken into account:

- Per botanical origin all types of meals are under one heading.
- Cane molasse: only if it is feed grade due to the presence of processing aids.
- Acid oils as well as fatty acid distillates (FAD) can be from any botanical origin.

Content of the tool

The Tool contains three tabs: summary, risk assessment and highest exposure.

- 1. Summary:** Overview of the found pesticide(s) level(s), the product in which the pesticide(s) is/are found, exposure per type of animal and human exposure per type of animal product
- 2. Risk assessment:** Overview of risks associated with animal exposure and human exposure to the pesticide(s) via compound feed and animal products i.e. eggs, milk and meat products.
- 3. Highest Exposure:** Calculation of the highest exposure of humans to the pesticide(s) in the animal products meat, fat and edible offal.

1. Summary

There is a drop-down menu for the found pesticide residue, and there is a drop-down menu for the footnote 1 product in which this residue was found. The number behind the name of the products corresponds with the EU Feed Catalogue. The pesticide level is to be filled in in ppm (mg/kg). The level as shown on the CoA is to be used. Given this above input, the tool calculates the animal and human exposure and shows the results per pesticide in the following two tables.

The left table is on assessing animal consumption. Per pesticide residue, the exposure to the animal via feed is divided by the ARfD. Values below 1 indicate that the exposure of the residue is below the ARfD, indicating no acute risk for animals. Values equal to or above 1 do indicate an acute safety concern for animals and will appear in red color.

(In case the ARfD is lacking, the lowest NOAEL divided by hundred is used instead. This is described in more detail in Section 2 – Calculations & Explanation).

The right table is on assessing human consumption. Per pesticide residue, the human exposure via animal products is divided by the ADI. Values below 1 indicate that the exposure of the substance is below the ADI, indicating no risk for humans. Values equal to or above 1 do indicate a safety concern for humans. Values equal to or above 1 will appear in red color, as shown below for paraquat in rabbits.

Pesticide *
Paraquat

Fill in result CoA (ppm) *
0.56

Product *
Sun meal 2.19.4

CALCULATE

Summary Risk assessment Highest exposure

Assessment animal consumption

Animal	Exposure / max intake acc. ARfD
Calves	0.1680
Cow	0.0862
Fattening pigs	0.5600
Goats	0.1867
Poultry	0.3220
Poultry (reproduction)	0.9660
Sheep	0.2427
Sow	0.5120
Turkey (reproduction)	0.2400
Horse	0.0840
Rabbit	1.1200
Turkey (fattening)	0.5600
Piglet	0.0986
Cattle (fattening)	0.1680

Guidance: when the substance in feed / ARfD < 1 no safety concern for animal.

Assessment human consumption

Potential for residues in products	Exposure / ADI
Egg & egg products	0.001
Milk & dairy products	0.023
Meat & meat products	0.010
Fat	0.001
Edible offal	0.001

Guidance: when the exposure (animal products) / ADI < 1 no safety concern for humans.

2. Risk Assessment

2.1 Principle


The selected pesticide, the selected footnote 1 product and the entered residue level are shown in the left upper corner (first overall table). The toxicological reference values of the pesticide are explained in chapter 4 "Pesticides properties" .

The second table calculates the pesticide residue in the compound feed and determines the animal safety (last column). A value below 1 indicates no acute risk for the animal. The third table is on human safety. This table calculates the human exposure to the selected pesticide residues via several animal products and it calculates the risk. A value below 1 indicates no risk for humans. Values equal to or above 1 for both animal and human indicate a safety concern and will appear in red color.

Below the picture all columns are explained in more detail.

Pesticide * Fill in result CoA (ppm) * Product *

CALCULATE

Summary **Risk assessment** Highest exposure 

Risk assessment

Found pesticide	Paraquat
CoA	0.56
ARfD in mg/kg bw	0.005
ADI in mg / kg bw	0.004
Product	Sun meal 2.19.4

Animal consumption

Animal	Compound feed intake (kg/day)	in compound feed (in %)	kg product in compound feed	mg pesticide/kg compound feed	max. intake mg/kg compound feed according Arfd	mg pesticide/kg compound feed/intake mg/kg compound feed according Arfd
Calves	3.000	5%	0.150	0.028000	0.166667	0.168000
Cow	10.000	5%	0.500	0.028000	0.325000	0.086154
Fattening pigs	3.000	10%	0.300	0.056000	0.100000	0.560000
Goats	2.000	5%	0.100	0.028000	0.150000	0.186667
Poultry	0.115	5%	0.006	0.028000	0.086957	0.322000
Poultry (reproduction)	0.115	15%	0.017	0.084000	0.086957	0.966000
Sheep	2.600	5%	0.130	0.028000	0.115385	0.242667
Sow	8.000	10%	0.800	0.056000	0.109375	0.512000
Turkey (reproduction)	0.300	5%	0.015	0.028000	0.116667	0.240000
Horse	3.000	10%	0.300	0.056000	0.666667	0.084000
Rabbit	0.100	20%	0.020	0.112000	0.100000	1.120000
Turkey (fattening)	0.300	5%	0.015	0.028000	0.050000	0.560000
Piglet	0.880	2%	0.018	0.011200	0.113636	0.098560
Cattle (fattening)	6.000	10%	0.600	0.056000	0.333333	0.168000

Guidance: when the substance in feed / ARfD <1 no safety concern for animal.

Human consumption

Potential for residues in products	daily consumption kg/kg bw (worst case)	Biotransfer factor	Estimated pesticide residue (mg/kg) in animal product	Exposure mg/kg bw/day	Exposure / ADI
Egg & egg products	0.004740	0.03	0.0010	0.000005	0.001131
Milk & dairy products	0.144000	0.02	0.0006	0.000092	0.022909
Meat & meat products	0.016010	Calculated in table highest exposure		0.000041	0.010188
Fat	0.002260	Calculated in table highest exposure		0.000003	0.000719
Edible offal	0.001890	Calculated in table highest exposure		0.000005	0.001203

Guidance: when the exposure (animal products) / ADI < 1 no safety concern for humans.

2.2 Calculations underlying table on animal safety

Per type of animal listed in the first column, the second, third and fourth column contain the following information:

Column: Compound feed intake (kg/day) is the amount compound feed consumption per day.

- For more information see chapter 6.

Column: in compound feed (on weight basis in %m/m) is the mass percentage of the selected product (as is) in compound feed.

- For more information see chapter 6

Column: kg product in compound feed is the intake of the product per day, based on the inclusion rate of the product present in the compound feed

- Calculation: compound feed intake (kg/day) * inclusion rate in compound feed (in % m/m)

Per type of animal listed in the first column and given the pesticide(s) and product selected, the fifth and sixth column contain the following information:

Column: Concentration of pesticide in compound feed (mg pesticide / kg compound feed) is the amount of pesticide present per kg compound feed containing product.

- Calculation = CoA value in ppm * inclusion rate in compound feed (%m/m)

Column: Maximum concentration of pesticide in compound feed based on ARfD (mg pesticide/kg compound feed) is the maximum acceptable pesticide level per kg compound feed., based on the ARfD (maximum limit per kg body weight), the body weight of the animal and the daily compound feed intake. The ARfD multiplied by body weight of the animal gives the maximum amount of pesticide an animal can consume per day. By dividing this value by the kg compound feed consumed per day, the maximum amount of pesticide per kg compound feed is obtained.

- Calculation: ARfD * body weight of animal / compound feed intake (kg/day)
- Values ARfD see chapter 4
- Values body weight see chapter 6.

Column: mg pesticide/kg compound feed/max. intake mg/kg compound feed according ARfD is the amount of pesticide present in 1 kg compound feed, divided by the maximum level in a kg compound feed based on the ARfD.

- Calculation: (mg pesticide/kg compound feed) / (max. intake mg/kg compound feed according ARfD)
 - A value **below 1** indicates that the calculated level in the feed is below the ARfD and therefore does not pose a risk to animal health.
 - A value **equal to or above 1** indicates that the calculated level in the feed is higher than the ARfD and therefore may pose a risk to animal health.

2.3 Calculations underlying table on human safety

Per type of food product of animal origin as listed in the first column, the second column contains the following information:

Column: Daily consumption kg / kg bw (worst case) = the amount of animal product that a human would eat per day, per kg body weight.

- This value represents the consumer group (infants, toddlers or adults) with the highest dietary intake (as worst-case scenario). Exposure (Source: EFSA Comprehensive European Food Consumption Database – 2: Chronic food consumption statistics all subjects (g/kg bw per day). More information about human consumption can be found in chapter 5.

Per type of food product of animal origin as listed in the first column and given the selected pesticide(s), the third column contains the applicable Biotransfer factor.

- More information on the biotransfer factors can be found in chapter 4
 - Source: Leeman study (2007) (see 'Definitions' – 'biotransfer factor')

Per type of food product of animal origin as listed in the first column and given the pesticide(s) selected in the Summary tab, the rest of the table contains the following information.

Column: Estimated pesticide residue (mg/kg) in animal product: Pesticide level present in animal products.

- Calculation: mg pesticide/kg compound feed on dry weight basis* biotransfer factor.

Column: Exposure mg/kg bw /day: amount of pesticide to which humans are exposed per kg body weight when consuming the animal product. Based on the consumer group with highest consumption per day.

- Calculation: daily consumption kg/kg bw (worst case) * estimated pesticide residue (mg/kg) in animal product.

Column: Human safety risk: Exposure / ADI: the amount of pesticide in the animal product humans are exposed to per kg body weight, divided by the maximum allowed ADI.

- Calculation: (exposure mg/kg bw/day) / ADI
- A value **below 1** indicates that the current level in the animal product is below the ADI and therefore does not pose a risk to human health.
- A value **equal to or above 1** indicates that the current level in the animal product is higher than the ADI and therefore may pose a risk to human health.

Note: when a value is above 1, a more detailed risk assessment should be performed. The current Tool is based on the worst case scenario. Data has been obtained by the EFSA Comprehensive Food Consumption Database – 2: Chronic food consumption statistics - all subjects (g/kg bw per day). The data contained consumption data from many EU countries. Per consumer group in this Tool (toddler, infant, adult) the highest consumption data at 99th percentile has been chosen for each product group." Use of more realistic food consumption data will allow to determine the risk more precisely which will lead to a clearer conclusion on the safety for consumers. The current Tool is using default biotransfer factors. Using available toxicokinetic study results giving rates of accumulation in the animal body will allow to calculate more precise animal and humans exposure values.

3. Highest Exposure

The animal products meat, fat and edible offal can be derived from multiple animals. In this tab the human exposure per animal is calculated. The highest exposure is used in the Risk Assessment tab.

At the top of the table the pesticide and the animal products are indicated. Also, the highest human daily consumption (see chapter 5) and the biotransfer factors are mentioned.



Calculation highest exposure for human consumption

	Meat & meat products		Fat		Edible offal	
Human daily consumption kg/kg bw (worst case)	0.01601		0.00226		0.00189	
Biotransfer factor	0.02		0.01		0.02	
Animal	Estimated pesticide residue (mg/kg)	Exposure mg/kg bw/day	Estimated pesticide residue (mg/kg)	Exposure mg/kg bw/day	Estimated pesticide residue (mg/kg)	Exposure mg/kg bw/day
Calves	0.0006364	0.000010	0.000318	0.000001	0.000636	0.000001
Cow	0.0006364	0.000010	0.000318	0.000001	0.000636	0.000001
Fattening pigs	0.0012727	0.000020	0.000636	0.000001	0.001273	0.000002
Goats	0.0006364	0.000010	0.000318	0.000001	0.000636	0.000001
Poultry	0.0006364	0.000010	0.000318	0.000001	0.000636	0.000001
Sheep	0.0006364	0.000010	0.000318	0.000001	0.000636	0.000001
Sow	0.0012727	0.000020	0.000636	0.000001	0.001273	0.000002
Horse	0.0012727	0.000020	0.000636	0.000001	0.001273	0.000002
Rabbit	0.0025455	0.000041	0.001273	0.000003	0.002545	0.000005
Turkey (fattening)	0.0006364	0.000010	0.000318	0.000001	0.000636	0.000001
Piglet	0.0002545	0.000004	0.000127	0.000000	0.000255	0.000000
Cattle (fattening)	0.0012727	0.000020	0.000636	0.000001	0.001273	0.000002
Highest value	0.0025455	0.000041	0.001273	0.000003	0.002545	0.000005
Worst case animal		Rabbit		Rabbit		Rabbit

Estimated pesticide residue mg/kg: pesticide level present per type of animal product.

- Calculation: mg pesticide/kg compound feed * biotransfer factor.
 - mg pesticide/kg compound feed: value obtained from 'Risk assessment' tab.
 - Biotransfer factor: see chapter 4.

Exposure mg/kg bw /day: amount of pesticide to which humans are exposed per kg body weight when consuming the animal product. Based on the consumer group with highest consumption.

- Calculation: human daily consumption kg/kg bw (worst case) * estimated pesticide residue (mg/kg).

The worst case animal is shown at the bottom of the table. In this example exposure for meat, fat and edible offal is highest in rabbits. However, the highest exposure animal can differ per animal product.

4. Pesticides properties

This tool contains several pesticides, with their LogP_{ow}, ADI, ARfD, NOAEL and biotransfer factors. The table below (which is only visible in the underlying calculating tool/data), shows these pesticides and these factors.

Pesticide	Log	ADI	Ref.	ARfD	Ref.	NOAEL	Ref.	Log	Ref.	PPS PF Feed project?	Comments
	Pow range	(mg/kg bw/day)		(mg/kg bw/day)		(mg/kg bw/day, oral)		Pow			
Anthraquinone	≥3 <4	0.02	NDAEL/10	0.02	NDAEL/100	2	ECHA	3.52	PPDB	+	ECHA 1376
Azoxystrobin	≥2 <3	0.2	EUPD	0.2	NDAEL/100	20	EFSA	2.5	Inclusion doc EUPD 22 april 1998		NOAEL - EFSA 2010
Bifenthrin	≥6 <7	0.015	EUPD	0.03	EUPD			6.6	PPDB	-	
Carbendazim	≥18 <2	0.02	EUPD	0.02	EUPD			1.5	Inclusion doc EUPD 5 January		
Chloromequat	<0	0.04	EUPD	0.09	EUPD			-3.47	PPDB		
Chlorpropham	≥3 <4	0.05	EUPD	0.5	EUPD			3.76	Inclusion doc EUPD 28	-	
Chlorpyrifos-methyl	≥4 <5	0.01	EFSA	0.1	EFSA			4	Inclusion doc EUPD 3 june 2005	+	ADI/ARfD - EFSA 2011 Reasoned opinion
Chlorpyrifos	≥4 <5	0.001	EFSA	0.005	EFSA			4.7	Review report EUPD 2005	+	ADI-ARfD - EFSA 2014
Cyfluthrin	≥6 <7	0.003	EUPD	0.02	EUPD			I & II = 6 II and IV = 5,3	List1-29-en_pdf Review report EUPD 2 december 2002	-	
Cypermethrin	≥5 <6	0.005	EUPD	0.005	EUPD			5,3-5,6	Renewal of approval report 2021 EUPD	+	
Deltamethrin	≥4 <5	0.01	EUPD	0.01	EUPD			4.6	Inclusion 2002 EUPD 17 October 2002	+	
Difenoconazole	≥4 <5	0.01	EUPD	0.16	EUPD			4.36	PPDB		
Diquat	<0	0.002	EUPD	0.01	EUPD			-4.6	Inclusion EUPD 22 march 2001; PPDB		
Epoxiconazole	≥3 <4	0.008	EUPD	0.023	EUPD			3.3	PPDB		
Fenpropidin	≥2 <3	0.02	EUPD	0.02	EUPD			2.6	PPDB		
Fipronil	≥3 <4	0.0002	EUPD	0.009	EUPD			3.75	PPDB	-	
Fluopyram	≥3 <4	0.012	EUPD	0.5	EUPD			3.3	PPDB	-	
Fluazifop-P	≥3 <4	0.01	EUPD	0.017	EUPD			3.18	PPDB	-	
Haloxifop	≥4 <5	0.00065	EUPD	0.075	EUPD			4.2	Pubchem	-	Log Pow obtained fro Pubchem, the calculated XLogP3-AA value.
Glyphosate	<0	0.5	EUPD	0.5	EUPD			-3.2	Inclusion EUPD 21 january 2002		
Imidacloprid	≥0 <1	0.06	EUPD	0.08	EUPD			0.57	PPDB	+	
Malathion	≥2 <3	0.03	EUPD	0.3	EUPD			2.75	PPDB	+	
MCPA	<0	0.05	EUPD	0.15	EUPD			-0.61	Inclusion report 2006 EUPD 11 july 2008; PPDB		
Mepiquat	<0	0.2	EUPD	0.3	EUPD			-3.55	PPDB	+	EFSA 2008
Metalaxyl	≥18 <2	0.08	EUPD	0.5	EUPD			1.75	Review report EUPD 12 march	-	
Permethrin	≥6 <7	0.05	ECHA	0.5	ECHA			6.1	PPDB	-	ADI/ARfD - ECHA 2014
2-Phenylphenol	≥3 <4	0.4	EUPD	0.39	NDAEL/100	39	EFSA	3.18	PPDB	+	NOAEL - EFSA 2008
Paraquat	<0	0.004	EUPD	0.005	EUPD			-4.5	Review report EUPD 3 october 2003	-	No ml for animal products available therefore default.
Pirimiphos-methyl	≥4 <5	0.004	EUPD	0.15	EUPD			4.2	PPDB	+	
Propamocarb	≥0 <1	0.23	EUPD	1	EUPD			0.84	PPDB	-	
Propargite	≥5 <6	0.03	EUPD	0.06	EUPD			5.7	PPDB		
Pyraclostrobin	≥3 <4	0.03	EUPD	0.03	EUPD			3.99	Review report 8 september 2004		
Tebuconazole	≥3 <4	0.03	EUPD	0.03	EUPD			3.7	PPDB	+	
Thiamethoxam	<0	0.026	EUPD	0.5	EUPD			-0.13	PPDB		
Tricyclazole	≥18 <2	0.0042	EFSA	0.05	EFSA			1.4	PPDB	-	EFSA 2013
Trifloxystrobin	≥4 <5	0.1	EUPD	0.5	EUPD			4.5	PPDB		

The ADI and ARfD (or NOAEL) are used in the Summary and Risk Assessment tabs. In case no ARfD is known, the NOAEL/100 is used instead, as explained in section 1. References for the ADI, ARfD and NOAEL are mentioned in the table.

- Currently the NOAEL/100 are mentioned is **only used for anthraquinone and 2 phenyl-phenol**.

Sources:

- EU pesticide database (EUPD https://ec.europa.eu/food/plants/pesticides/eu-pesticides-database_en)
- Pesticides Properties Database: <http://sitem.herts.ac.uk/aeru/ppdb/en/search.htm> including the Review Reports in that database (RR)
- US National Library of Chemicals (PubChem): <https://pubchem.ncbi.nlm.nih.gov/>

The LogP_{ow} is necessary to determine the biotransfer factors for animal products. The log Pow is shown on the right side of the table. The LogPow range is shown on the left side.

A value above 3 indicates that the pesticide is fat soluble. A negative value indicates that the pesticide is water soluble. The corresponding biotransfer factors are used in the tabs Risk Assessment and Highest Exposure.

Biotransfer factors based on LogPow

Log Pow range	Egg	Whole milk	Meat	Fat	Edible offal
<0	0,03	0,02	0,02	0,01	0,02
≥0 & <1	0,05	0,03	0,04	0,01	0,3
≥1 & <2	0,04	0,02	0,01	0,01	0,02
≥2 & <3	0,13	0,01	0,02	0,02	0,04
≥3 & <4	0,92	0,33	0,01	14,1	0,21
≥4 & <5	0,11	0,03	0,05	0,58	0,08
≥5 & <6	2,43	0,43	0,03	17	1,5
≥6 & <7	1,6	0,52	0,33	30	2,62
≥7 & <8	0,75	0,9	0,33	16,3	2,79
≥8	0,21	0,32	0,04	0,74	0,08

The biotransfer factor describes how much of the pesticide level will end up in a specific tissue (fat, muscle, etc) or animal product (egg, milk, etc).

5. Human consumption

The tool calculates with the worst case consumer, which differs per consumed animal product. The table below (which is only visible in the underlying calculating tool/data) shows the human consumption of animal products for three consumer groups: infants, toddlers and adults.

The daily intake (green color) is human consumption data obtained from EFSA. The consumption data is based on the highest consumption data from all EU countries and the 99th percentile of each consumer group, to calculate the worst-case scenario.

- Source: EFSA <http://data.europa.eu/euodp/en/data/dataset/the-efsa-comprehensive-european-food-consumption-database> "2 :Chronic food consumption statistics - all subjects (g/kg bw per day)"

The highest exposure is colored in red. This value is used in the tabs Risk Assessment & Highest Exposure.

Human category*	Body weight (kg)	max. daily intake** of				
		Egg & egg products (in kg/kg bw)	Milk & dairy products (in kg/kg bw)	Meat & meat products (in kg/kg bw) (incl edible offal)	Fat (in kg/kg bw)	Edible offal (in kg/kg bw)
Toddler	5	0,00474	0,14067	0,01601	0,00214	0,00189
Infants	12	0,00334	0,144	0,01125	0,00226	0,00118
Adults	70	0,0016	0,02072	0,00725	0,00115	0,00146

6. Compound Feed

The tool calculates with the percentage of feed material that is incorporated in the compound feed for the respective animals, which is shown in the tab risk assessment, column 3 (Source: Dutch compound feed industry)

The picture below shows:

- the animals included in the Tool
- their body weight (source: EFSA - <https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2017.5021>)
- their compound feed consumption. Source: Dutch compound feed industry.

Animal	Body weight (kg)	Compound feed consumption /day (kg)
EU Catalogue number		
Calves	100	3
Cow	650	10
Fattening pigs	60	3
Goats	60	2
Poultry	2	0.115
Poultry (reproduction)	2	0.115
Sheep	60	2.6
Sow	175	8
Turkey (reproduction)	7	0.3
Horse	400	3
Rabbit	2	0.1
Turkey (fattening)	3	0.3
piglet	20	0.88
cattle (fattening)	400	6