Appendix to:
EFSA (European Food Safety Authority), 2018. Conclusion on the peer review of the pesticide risk assessment of the active substance cypermethrin. EFSA Journal 2018;16(8):5402, 33 pp. doi:10.2903/j.efsa.2018.5402
© European Food Safety Authority, 2018

Appendix A – List of end points for the active substance and the representative formulation

Identity, Physical and Chemical Properties, Details of Uses, Further Information (Regulation (EU) N° 283/2013, Annex Part A, points 1.3 and 3.2)

| Active substance (ISO Common Name) | Cypermethrin |
|----------------------------------|--------------|
| Function (e.g. fungicide)        | Insecticide  |
| Rapporteur Member State          | Belgium      |
| Co-rapporteur Member State       | Germany      |

Identity (Regulation (EU) N° 283/2013, Annex Part A, point 1)

| Chemical name (IUPAC) | (RS)-α-cyano-3-phenoxybenzyl (1RS,3RS;1RS,3SR)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate or (RS)-α-cyano-3-phenoxybenzyl-(1RS)-cis-trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical name (CA)    | cyano(3-phenoxyphenyl)methyl 3-(2,2-dichloroethyl)-2,2-dimethylcyclopropanecarboxylate                                                                                                                  |
| CIPAC No              | 332                                                                                                                                   |
| CAS No                | 52315-07-8                                                                                                                             |
| EC No (EINECS or ELINCS) | 257-842-9                                                                                                                          |
| FAO Specification (including year of publication) | FAO specification 332/TC/S/F – 1993 : min. 900 g/kg.  The cis- isomer content shall be declared and shall be between 40 % minimum and 60 % maximum of the declared cypermethrin content. The permitted tolerance shall be ± 10 % of the declared cis-isomer content. |
| Minimum purity of the active substance as manufactured (note: EU agreed min. purity: 900 g/kg (Commission Directive 2005/53/EC, 2005 whereas 920 g/kg was proposed). cis:trans : 40/60 to 60/40 Min. 950 g/kg (Arysta) Min. 958 g/kg (SBM) Each with the cis:trans ratio : 40/60 to 60/40 |

Identity of relevant impurities (of toxicological, ecotoxicological and/or environmental concern) in the active substance as manufactured

| Hexane (g/kg) open | Open for others |
|--------------------|----------------|
| C_{22}H_{19}Cl_{2}NO_{3} | 416.3 g/mol |

1R,S describes the configuration at the carboxyl-bearing carbon atom (C-1) of the cyclopropane ring; cis/trans describes the relationship to this carboxyl of the dichlorovinyl group at C-3; αR,S describes the configuration at the ‘alpha’ (α) position, i.e. the carbon atom bearing the nitrile (-CN, cyano) functional group.
### Physical and chemical properties (Regulation (EU) N° 283/2013, Annex Part A, point 2)

| Property                                      | Value                                                                                                                        |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Melting point (state purity)                  | Melting endotherm: onset 41.2°C, peak 47.3°C (98.3%, cis/trans: 37.6/62.4) 43.75°C (98.6%, cis/trans: 41.7/56.9) (supplementary information) |
| Boiling point (state purity)                  | Not applicable (decomposition)                                                                                              |
| Temperature of decomposition (state purity)   | Decomposition between 220 and 370°C (98.6%, cis/trans: 41.7/56.9)                                                          |
| Appearance (state purity)                     | Pale yellow viscous liquid (room temperature) (97.9%, cis/trans: 43.0/54.9)                                                |
|                                               | Yellow viscous transparent liquid (20°C) (95.97%, cis/trans: 43.2/56.8)                                                      |
| Vapour pressure (state temperature, state purity) | 6.78 × 10^-6 Pa at 20°C (98.6%, cis/trans: 41.7/56.9)                                                                       |
| Henry’s law constant (state temperature)      | ≥ 0.31 Pa.m^3.mol^-1 (at 20°C)                                                                                            |
| Solubility in water (state temperature, state purity and pH) | < 9 µg/L at 20°C (pH=6 and pH=4) (98.3%, cis/trans: 37.6/62.4)                                                             |
|                                               | ≤ 10.6 µg/L at 20°C (pH=8.6) (98.6%, cis/trans: 41.7/56.9) (supplementary information)                                   |
| Solubility in organic solvents (state temperature, state purity) | At 20°C (technical a.s., 94.1%, cis/trans: 41.5/58.5)                                                                      |
|                                               | n-heptane: 57-67 g/L                                                                                                       |
|                                               | 1,2-dichlorethane: > 250 g/L                                                                                                |
|                                               | p-xylene: > 250 g/L                                                                                                        |
|                                               | methanol: > 250 g/L                                                                                                        |
|                                               | acetone: > 250 g/L                                                                                                         |
|                                               | ethyl acetate: > 250 g/L                                                                                                   |
| Solubility in organic solvents (state temperature, state purity) | At 20°C (technical a.s., 95.97%, cis/trans: 43.2/56.8) – as supplementary information:                                |
|                                               | n-hexane: 59.8 g/L                                                                                                         |
|                                               | dichloromethane: > 252 g/L                                                                                                |
|                                               | toluene: ≥ 250 g/L                                                                                                         |
|                                               | methanol: > 252 g/L                                                                                                        |
|                                               | acetone: > 253 g/L                                                                                                         |
|                                               | ethyl acetate: > 250 g/L                                                                                                   |
| Surface tension (state concentration and temperature, state purity) | Not determined (test not required if solubility < 1 mg/L)                                                               |
| Partition coefficient (state temperature, pH and purity) | log P<sub>OW</sub> range of discrete isomer pairs: 5.55 to 5.83 at 25°C (pH)                                               |
|                                                | No influence of pH                                                                                                        |
| Dissociation constant (state purity)           | No dissociation of the a.s.                                                                                                |
### UV/VIS absorption (max.) incl. $\varepsilon$

(state purity, pH)

| Wavelength (nm) | $\varepsilon$ (L.mol$^{-1}$.cm$^{-1}$) |
|----------------|--------------------------------------|
| 204            | 43217                                |
| 278            | 2368                                 |
| 204 (acidic)   | 45294                                |
| 278 (acidic)   | 2322                                 |
| 220 (alkaline) | 27421                                |
| 307 (alkaline) | 1799                                 |
| \(\lambda > 290\) nm |
| 290 (unadjusted pH) | 839                                 |
| 295            | 411                                  |
| 304            | 332                                  |
| 314            | 316                                  |
| 290 (acidic)   | 839                                  |
| 295 (acidic)   | 386                                  |
| 304 (alkaline) | 283                                  |
| 314 (alkaline) | 253                                  |
| 290 (alkaline) | 1213                                 |
| 295            | 1446                                 |
| 304            | 1765                                 |
| 314            | 1674                                 |

### Flammability (state purity)

Not flammable (96.5%, cis/trans: 41/59)

Supplementary information:
Not flammable (94.1%, cis/trans: 41.5/58.5 and 95.97%, cis/trans: 43.2/56.8)

### Explosive properties (state purity)

Not explosive (statement)

### Oxidising properties (state purity)

No oxidising properties (94.1%, cis/trans: 41.5/58.5)
Summary of representative uses evaluated, for which all risk assessments needed to be completed (Cypermethrin) (Regulation (EU) No 284/2013, Annex Part A, points 3, 4)

| Crop and/or situation (a) | Member State or Country | Product name | FG or I (b) | Pests or Group of pests controlled (c) | Preparation | Application | Application rate per treatment | Remarks |
|---------------------------|-------------------------|--------------|-------------|----------------------------------------|-------------|-------------|---------------------------------|---------|
| Winter and spring cereals: | Central and Northern Zone (CEZ and NEZ) | Cypermethrin 500 EC | F | Aphids (BYDV-vector): Rhopalosiphum padi [RHOPPA] Sitobion avenae [MACSAV] Metopolophium dirhodum [METODR] | EC 500 g/L | Overall spray | Season: Autumn (winter sowing) Spring (spring sowing) Growth stage: BBCH 10 -31 | 1 | not relevant | 0.004 - 0.017 | 150-600 | 0.025 | 28 | for cereal grain production only |
|                           |                          |              |             | Foliar and ear aphids: Rhopalosiphum padi [RHOPPA] Sitobion avenae [MACSAV] Metopolophium dirhodum [METODR] |             |             | Season: Spring/Summer Growth stage: BBCH 31 - 77 |             |             |  | | |
|                           |                          |              |             | Cereal leaf beetles: Oulema melanopus [LEMAME] Oulema lichenis [LEMALI] |             |             | Season: Spring Growth stage: BBCH 31 - 77 |             |             |  | | |
|                           |                          |              |             | Midges: Haplodiplosis marginata [HAPDIMA] Sitodiplosis mosellana [SITDMO] |             |             | Season: Spring Growth stage: BBCH 31 - 69 |             |             |  | | |
| Crop and/or situation (a) | Member State or Country (b) | Product name | FG or I (b) | Pests or Group of pests controlled (c) | Preparation | Application | Application rate per treatment | PHI (days) (m) | Remarks |
|--------------------------|-----------------------------|--------------|-------------|--------------------------------------|-------------|-------------|-------------------------------|----------------|---------|
| Winter and spring cereals: Wheat, rye, triticale, barley, spelt, oat | Southern Europe (SEZ) | Cypermethrin 500 EC | F | Aphids (BYDV-vector): Rhopalosiphum padi [RHOPPA] Sitobion avenae [MACSAV] Metopolophium dirhodum [METODR] Leafhopper (WDV – vector): Psammothetia striatus [AMST] | EC 500 g/L Overall spray | Season: Autumn (winter sowing) Spring (spring sowing) Growth stage: BBCH 10-31 | kg a.s./ha min-max (l) Water L/ha min-max | 28 | 1 application/year; for cereal grain production only |
| | | | | Foliar and ear aphids: Rhopalosiphum padi [RHOPPA] Sitobion avenae [MACSAV] Metopolophium dirhodum [METODR] | | | | |
| | | | | Cereal leaf beetles: Oulema melanopus [LEMAME] Oulema lichenis [LEMALI] | | | | |
| | | | | Malacos: Haplodiplosis marginata [HAPDMA] Sitodiplosis mosellana [SITDMO] Tortrix moths: Cnephasia punicana [CNEPPU] Agrotis segetum [AGROSE] | | | | |
| | | | | | | | | | |
| Crop and/or situation (a) | Member State or Country (b) | Product name | F or G or I (b) | Pests or Group of pests controlled (c) | Preparation | Application | Application rate per treatment | PHI (days) (m) | Remarks |
|--------------------------|-----------------------------|--------------|----------------|----------------------------------------|-------------|----------------|--------------------------------|----------------|---------|
| Winter oilseed rape      | Central and Northern Zone (CEZ and NEZ) | Cypermethrin 500 EC | F | Aphids: Myzus persicae [MYZUPE] Flea beetles: Phyllotreta sp. [PHYESP] Turnip sawfly: Athalia rosae [ATALCO] Winter stem weevil: Ceutorhynchus piciarsis [CEUTPI] Stem weevils: Ceuthorhynchus napi [CEUTNA] Ceuthorhynchus quadridens [CEUTQU] | EC 500 g/L Overall spray Season: Autumn Growth stage: BBCH 09-30 | 2 90 days 0.004 - 0.017 150-600 0.025 49 | 1 application in autumn and 1 application in spring/summer |
|                          |                             |              |                |                                        |             |               |                                |                |         |
## Crop and/or situation (a)
### Spring oilseed rape

| Member State or Country | Product name | FG or I (b) | Pests or Group of pests controlled (c) | Preparation | Application | Application rate per treatment | PHI (days) (m) | Remarks |
|-------------------------|--------------|-------------|----------------------------------------|-------------|-------------|-------------------------------|---------------|---------|
| Central and Northern Zone (CEZ and NEZ) | Cypermethrin 500 EC | F | **Aphids:**  
Myzus persicae [MYZUPE]  
Flea beetles:  
Psylliodes chrysocephala [PSYCH]  
Phyllotreta sp. [PHYESP]  
Turnip sawfly:  
Athalia rosae [ATALCO]  
Winter stem weevil:  
Ceutorhynchus pityaris [CEUTPI]  
**Stem weevils:**  
Ceutorhynchus napi [CEUTNA]  
Ceutorhynchus quadridens [CEUTQU]  
**Pollen/Blossom beetle:**  
Meligethes aeneus [MELIAE]  
Aphids:  
Brevicoryne brassicae [BRVCBR]  
**Seedpod weevil:**  
Ceutorhynchus assimilis [CEUTAS]  
Brassica pod midge :  
Dasineura brassicae [DASYBR]  
Aphids:  
Brevicoryne brassicae [BRVCBR] | EC 500 g/L | Overall spray | Season: Spring  
Growth stage: BBCH 09-30 | 1 | not relevant | 0.004 - 0.017 | 150-600 | 0.025 | 49 |
| Crop and/or situation (a) | Member State or Country | Product name | F or G (b) | Pests or Group of pests controlled (c) | Preparation | Application | Application rate per treatment | Remarks |
|--------------------------|-------------------------|--------------|----------|--------------------------------------|-------------|-------------|-------------------------------|---------|
| Potato Southern Europe (SEZ) | Cypermethrin 500 EC | F | Colorado potato beetle: *Leptinotarsa decemlineata* [LPTNDE] Aphids: *Myzus persicae* [MYZUPE] Aphis nasturtii [APHINA] Tuber moth and caterpillars: e.g. *Phthorimaea operculella* [PHTOOP] | EC | 500 g/L | Overall spray | Whole season (up to PHI) | 1 | not relevant | 0.005 – 0.025 | 200-1000 | 0.05 | 3 |

(a) For crops, the EU and Codex classifications (both) should be taken into account; where relevant, the use situation should be described (e.g. fumigation of a structure)

(b) Outdoor or field use (F), greenhouse application (G) or indoor application (I)

(c) e.g. biting and sucking insects, soil born insects, foliar fungi, weeds

(d) e.g. wettable powder (WP), emulsifiable concentrate (EC), granule (GR)

(e) CropLife International Technical Monograph no 2, 6th Edition. Revised May 2008. Catalogue of pesticide

(f) All abbreviations used must be explained

(g) Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench

(h) Kind, e.g. overall, broadcast, aerial spraying, row, individual plant, between the plant- type of equipment used must be indicated

(i) g/kg or g/L. Normally the rate should be given for the active substance (according to ISO) and not for the variant in order to compare the rate for same active substances used in different variants (e.g. fluoroxypyr). In certain cases, where only one variant is synthesised, it is more appropriate to give the rate for the variant (e.g. benthialvalicarb-isopropyl).

(j) Growth stage range from first to last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application

(k) Indicate the minimum and maximum number of applications possible under practical conditions of use

(l) The values should be given in g or kg whatever gives the more manageable number (e.g. 200 kg/ha instead of 200 000 g/ha or 12.5 g/ha instead of 0.0125 kg/ha

(m) PHI - minimum pre-harvest interval
Further information, Efficacy

Effectiveness (Regulation (EU) N° 284/2013, Annex Part A, point 6.2)

Cypermethrin contained in product Cypermethrin 500 g/L EC has been tested in field development trials which demonstrated efficacious activity in accordance to the GAP of the representative uses. It has been registered in many EU countries based on detailed national assessments of the efficacy package in compliance with Regulation (EC) No 545/2011 and according to the Uniform Principles (Regulation (EC) No 546/2011), with which Member States authorities were satisfied. A more detailed assessment should be performed for products authorization applications.

Adverse effects on field crops (Regulation (EU) N° 284/2013, Annex Part A, point 6.4)

There are no adverse effects on treated crops when the product is used as recommended. A more detailed assessment should be performed for products authorization applications.

Observations on other undesirable or unintended side-effects (Regulation (EU) N° 284/2013, Annex Part A, point 6.5)

Significant toxicity of cypermethrin is observed on aquatic organisms, bees and terrestrial non-target arthropods other than bees. Mitigation measures to limit the exposure are therefore necessary. A more detailed assessment should be performed for products authorization applications.

Groundwater metabolites: Screening for biological activity (SANCO/221/2000-rev.10-final Step 3 a Stage 1)

Activity against target organism

| none | none |

Assessment not triggered since there are no relevant metabolisms in groundwater for cypermethrin.

Methods of Analysis

Analytical methods for the active substance (Regulation (EU) N° 283/2013, Annex Part A, point 4.1 and Regulation (EU) N° 284/2013, Annex Part A, point 5.2)

Technical a.s. (analytical technique)

| Arysta | SBM |
|--------|-----|
| Determination of the cypermethrin content : GC-FID |
| Determination of the cis :trans isomer ratio: HPLC-UV |
| HPLC-UV (CIPAC method 332/EC/(M)/3.2) |

Impurities in technical a.s. (analytical technique)

| HPLC-UV |
| GC-FID |

Plant protection product (analytical technique)

| HPLC-UV (based on the CIPAC method 332/EC/(M)/3.2). |

Method is able to determine the cis:trans ratio

Analytical methods for residues (Regulation (EU) No 283/2013, Annex Part A, point 4.2 & point 7.4.2)

Residue definitions for monitoring purposes

| Environment          | Residue definition                                           |
|----------------------|---------------------------------------------------------------|
| Food of plant origin | Cypermethrin including other mixtures of constituent isomers (sum of isomers) |
| Food of animal origin| Cypermethrin including other mixtures of constituent isomers (sum of isomers) |
| Soil                 | Cypermethrin                                                  |
| Sediment             | Cypermethrin                                                  |
| Water                | Cypermethrin                                                  |
| Air                  | Cypermethrin                                                  |
| Body fluids and tissues| 4-OH-PBA sulfate and DCVA glucuronide                          |

Monitoring/Enforcement methods

Food/feed of plant origin (analytical technique and LOQ for methods for monitoring purposes)

- GC-MS (3 fragment ions)
- LOQ = 0.01 mg/kg total cypermethrin in high water, high acid, dry [high starch and high protein] and oily matrices
- Independently validated.

Data gap:
- for linearity data for confirmative ions (primary method): a new study is on-going (dates of completion and submission not communicated).
- for extraction efficiency in oily matrices: addressed if access to the referred protected studies from the alpha-cypermethrin BASF dossier could be demonstrated.

Food/feed of animal origin (analytical technique and LOQ for methods for monitoring purposes)

- GC-MS (3 fragment ions)
- LOQ = 0.05 mg/kg total cypermethrin (meat, liver, kidney, fat)
- LOQ = 0.005 mg/kg total cypermethrin (milk)
- LOQ = 0.01 mg/kg total cypermethrin (egg)

Data gap: for confirmation method/data on milk

Extraction efficiency for milk and fat and eggs: addressed if access to the referred protected studies from the alpha-cypermethrin BASF dossier could be demonstrated.
**Soil (analytical technique and LOQ)**

GC-MS(NCI) (monitoring of 3 fragment ions)
LOQ = 0.05 mg/kg total cypermethrin

Data gap: for confirmation method/data: a new study is on-going (dates of completion and submission not communicated).

**Water (analytical technique and LOQ)**

**Surface water:**
GC-MS(capillary column with a mid-polarity phase) total cypermethrin
LOQ = 0.1 ng/L total cypermethrin
Confirmation by GC-MS (low polarity column with different selectivity)

**Drinking water:**
GC-ECD
LOQ = 0.01 µg/L total cypermethrin
Confirmation by GC-MS (performed during the ILV) Independently validated

**Air (analytical technique and LOQ)**
GC-MS(NCI)
LOQ = 0.375 µg/m³

**Body fluids and tissues (analytical technique and LOQ)**
GC-MS
LOQ = 0.01 mg/L (only for total cypermethrin, not metabolites) in swine whole blood and human urine.
Data gap for 4-OH-PBA sulfate, DCVA glucuronide

**Classification and labelling with regard to physical and chemical data (Regulation (EU) N° 283/2013, Annex Part A, point 10)**

| Substance          | Cypermethrin                      |
|--------------------|-----------------------------------|
| Harmonised classification according to Regulation (EC) No 1272/2008 and its Adaptations to Technical Process [Table 3.1 of Annex VI of Regulation (EC) No 1272/2008 as amended]¹: | No classification with regard to physical and chemical properties |
| Peer review proposal ² for harmonised classification according to Regulation (EC) No 1272/2008: | - |

¹ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. OJ L 353, 31.12.2008, 1-1355.

² It should be noted that harmonised classification and labelling is formally proposed and decided in accordance with Regulation (EC) No 1272/2008.
Impact on Human and Animal Health

### Absorption, distribution, metabolism and excretion (toxicokinetics) (Regulation (EU) N° 283/2013, Annex Part A, point 5.1)

| Rate and extent of oral absorption/systemic bioavailability | ~50 % (based on urinary excretion and cage washes at single low dose level) This value of ~50 is considered appropriate for the AOEL and AAOEL setting. |
|---|---|
| Toxicokinetics | \( C_{\text{max}} = 1.8 \text{ mg/kg, for a dose of 2 mg/kg} \) \( T_{\text{max}} = \text{between 8 and 24 h, slightly higher in ♀} \) Rapid excretion (\( T_{1/2} > 5.9 \text{h for blood), except for fat (} T_{1/2} > 24\text{h} \)) |
| Distribution | Rapidly distributed to blood, liver (higher amount in ♀), kidney, ovaries, muscle and skin (mainly from the back). Highest amounts of residues are found in fat |
| Potential for bioaccumulation | No evidence for accumulation |
| Rate and extent of excretion | At the lower dose, the excretion through urine and faeces is similar, while at the higher dose, the faecal excretion is predominant suggesting saturation. Excretion in expired air is minimal (0.09%). Biliary excretion is low (1-1.6% of an oral dose). After a single oral dose, the excretion is virtually complete after 72 h |
| Metabolism in animals | First step of cypermethrin metabolism is the hydrolytic cleavage of the ester bond, between cyclopropanecarboxylic acid and 3-phenoxybenzyl moieties Elimination of the cis/trans cyclopropanecarboxylic acid moiety (cis/trans 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylic acid or “DCCA”) in the free and conjugated form is rapid in rats and in man. Minimal hydroxylation occurs at the methyl groups attached to the cyclopropane ring, giving a complex mixture of metabolites. There is, as yet, no evidence for the metabolism at the 2,2-dichlorovinyl group of cypermethrin. The 3-phenoxybenzyl moiety is mainly converted into 3-phenoxybenzoic acid (3PBA); 3PBA is excreted free but aromatic hydroxylation at the 4’-position (4OH3PBA) may occur before excretion followed by sulphation. |

### In vitro metabolism

A comparative in vitro metabolism assay reveals that metabolism of cypermethrin is similar between rat and human with no human specific metabolites being observed. The major metabolites identified are isomers of DCCA and 3PBA. No masses or proposed structure has been elucidated for some metabolites.

### Toxicologically relevant compounds (animals and plants)

- Parent compound and metabolites
### Acute toxicity (Regulation (EU) No° 283/2013, Annex Part A, point 5.2)

| Test Type                  | Endpoint Descriptions                      | Classification | Code
|---------------------------|--------------------------------------------|----------------|----------------
| Rat LD₅₀ oral             | 287-500 mg/kg bw                           | ACUTE TOXIC 3  | (H302)
| Rat LD₅₀ dermal           | > 2000 mg/kg bw                            |                |                
| Rat LC₅₀ inhalation       | ♂♀: 3.56 mg/L                              | ACUTE TOXIC 4  | (H332)
|                           |                                            | STOT SE 3      | (H335)
| Skin irritation           | Non-irritant                               |                |                
| Eye irritation            | Slightly irritant but not classified       |                |                
| Skin sensitisation        | Not sensitizer                             |                |                
| Phototoxicity             | Not phototoxic                             |                |                

### Short-term toxicity (Regulation (EU) No° 283/2013, Annex Part A, point 5.3)

| Test Type                  | Endpoint Descriptions                      | Classification | Code
|---------------------------|--------------------------------------------|----------------|----------------
| Target organ / critical effect | Rat: liver (hypertrophy), kidney (hypertrophy), nervous system Dog: nervous system Critical effect: neurotoxic clinical signs in all species | STOT RE 2      | (H373)
| Relevant oral NOAEL       | 35-day dog: 3.75 mg/kg bw per day 2-year, dog: 7.5 mg/kg bw per day 90-day, dog: 12.5 mg/kg bw per day 90-day rat: 24 mg/kg bw per day |                |                
| Relevant dermal NOAEL     | 15-day, rabbit: 20 mg/kg bw per day       |                |                
| Relevant inhalation NOAEL | No data - not required                     |                |                

### Genotoxicity (Regulation (EU) No° 283/2013, Annex Part A, point 5.4)

| Test Type                  | Endpoint Descriptions                      | Classification | Code
|---------------------------|--------------------------------------------|----------------|----------------
| In vitro studies          | Negative                                   |                |                
| In vivo studies           | Negative                                   |                |                
| Photomutagenicity         | Not required                               |                |                
| Potential for genotoxicity| Cypermethrin is unlikely to be genotoxic  |                |                

### Long-term toxicity and carcinogenicity (Regulation (EU) No°283/2013, Annex Part A, point 5.5)

| Test Type                  | Endpoint Descriptions                      | Classification | Code
|---------------------------|--------------------------------------------|----------------|----------------
| Long-term effects (target organ/critical effect) | Rat: kidney (hypertrophy, ↑ urea level, body weight |                |                
| Relevant long-term NOAEL  | 2-year, rat: 0.5 mg/kg bw per day 18-month, mouse: 62 mg/kg bw per day |                |                


### Carcinogenicity (target organ, tumour type)

| Species | Tumour Type | Notes |
|---------|-------------|-------|
| Rat     | no tumours  |       |
| Mouse   | no tumours  |       |

Cypermethrin is unlikely to pose a hazard to humans.

### Relevant NOAEL for carcinogenicity

- 2-year, rat: 50 mg/kg bw per day
- 2-year, mouse: 240 mg/kg bw per day

### Reproductive toxicity (Regulation (EU) N° 283/2013, Annex Part A, point 5.6)

#### Reproduction toxicity

**Reproduction target / critical effect**

| Species | Effect Area | Details |
|---------|-------------|---------|
| Rat     | Parental toxicity | ↓ body weight, ↓ food intake, acute neurotoxicity. |
|         | Reproductive toxicity | ↓ litter bodyweight gain at maternal toxic doses. |
|         | Offspring’s toxicity | changes in litter and pup data variably observed |

**Relevant parental NOAEL**

- 10 mg/kg bw per day

**Relevant reproductive NOAEL**

- 10 mg/kg bw per day

**Relevant offspring NOAEL**

- 10 mg/kg bw per day

### Developmental toxicity

**Developmental target / critical effect**

| Species | Effect Area | Details |
|---------|-------------|---------|
| Rat     | Maternal toxicity | ↓ body weight, clinical signs – number of days with occurrences of acute toxicity |
|         | Developmental toxicity | total litter loss, neonatal survival indices (↓ post-implantation live birth index and ↓ viability index), a few changes in FOB |
| Rabbit  | Maternal toxicity | No |
|         | Developmental toxicity | no sign of teratogenicity |

**Relevant maternal NOAEL**

- Rat: < 5 mg/kg bw per day
- Rabbit: 120 mg/kg bw per day

**Relevant developmental NOAEL**

- Rat: 5 mg/kg bw per day
- Rabbit: 120 mg/kg bw per day

### Neurotoxicity (Regulation (EU) N° 283/2013, Annex Part A, point 5.7)

**Acute neurotoxicity**

- < 5 mg/kg b.w./d

**Repeated neurotoxicity**

- 25 mg/kg b.w./d

**Additional studies (e.g. delayed neurotoxicity, developmental neurotoxicity)**

- Delayed neurotoxicity: 1000 mg/kg b.w./d
- Developmental neurotoxicity:
Maternal NOAEL: < 15 mg/kg bw per day (clinical signs)

Developmental NOAEL: 15 mg/kg bw per day (FOB changes and testes/epididymis alterations)

### Other toxicological studies (Regulation (EU) No 283/2013, Annex Part A, point 5.8)

#### Supplementary studies on the active substance

**Endocrine disrupting properties**

Intact male rat study, 15d

| NOAEL = 6 mg/kg b.w./d |
|------------------------|
| LOAEL = 18 mg/kg b.w./d, based upon ↓b.w. gain. |

At 50 mg/kg b.w./d (top-dose): ↑neurotoxic clinical signs, ↑sperm cell abnormality, very weak ↓seminal vesicle weight

#### Studies performed on metabolites or impurities

Group of hydroxylated derivatives of cypermethrin and their conjugates: unlikely to be genotoxic or to be more toxic than the parent.

Group of PBA and derivatives (4-OH-PBA, 4-OH-PBA sulfate, 3-PBA, 3-PBAld): they could be initially considered unlikely to be of higher toxicity than the parent. Data gap for further studies submitted under confirmatory data on lambda-cyhalothrin.

### Medical data (Regulation (EU) No 283/2013, Annex Part A, point 5.9)

No detrimental effects on health in manufacturing personnel

### Summary³ (Regulation (EU) No 1107/2009, Annex II, point 3.1 and 3.6)

| Parameter | Value (mg/kg bw (per day)) | Study | Uncertainty factor |
|-----------|----------------------------|-------|-------------------|
| **Acceptable Daily Intake (ADI)** | 0.005 | 24 months combined toxicity/carcinogenicity study in the rat, supported by the DNT study | 100 |
| | | | 3000 |
| **Acute Reference Dose (ARfD)** | 0.005 | DNT study | 3000 |
| **Acceptable Operator Exposure Level (AOEL)** | 0.0025* | DNT study | 3000 |
| | | supported by the 24 months study | 100 |
| **Acute Acceptable Operator Exposure Level (AAOEL)** | 0.0025* | DNT study (Bartlett, 2011) | 3000 |

* Including correction for limited oral absorption/bioavailability (50%).

³ If available include also reference values for metabolites
**Dermal absorption** (Regulation (EU) N° 284/2013, Annex Part A, point 7.3)

Representative formulation *(indicate name, type e.g. EC and concentration of active substance)*

| Concentrate: 1 % | Spray dilution: 5 % |

**Exposure scenarios** (Regulation (EU) N° 284/2013, Annex Part A, point 7.2)

| OPERATORS | Level of PPE | % AOEL |
|-----------|--------------|--------|
| German model of operator exposure | | |
| German model (70 kg b.w. default) | | |
| Cereals and oil seed rape; Field crop tractor-mounted | No PPE = long work wear (long sleeved shirt and trousers) but no gloves | 36.46 |
| 20 ha/day | | |
| Application rate 0.025 kg/ha | | |
| Potato; Field crop tractor-mounted | No PPE = long work wear (long sleeved shirt and trousers) but no gloves | 72.91 |
| 20 ha/day | | |
| Application rate 0.05 kg/ha | | |
| UK POEM model of operator exposure | | |
| UK POEM (60 kg b.w. default) | | |
| Cereals and oil seed rape; Field crop tractor-mounted | No PPE = single layer of work clothing, but no gloves | 404.17 |
| 50 ha/day | | |
| ● Application rate 0.025 kg/ha (0.05 L/ha) | PPE (gloves during mix/load and application) | 59.17 |
| Potato; Field crop tractor-mounted | No PPE = single layer of work clothing, but no gloves | 522.92 |
| 50 ha/day | | |
| Application rate 0.05 kg/ha (0.025 L/ha) | PPE (gloves during mix/load and application) | 80.42 |
| EFSA model of operator exposure | | |
| EFSA model (60 kg b.w. default) | | |
| Cereals and oil seed rape; Field crop tractor-mounted | No PPE = single layer of work clothing (option 'Work wear - arms, body and legs covered'), but no gloves | 48.92 |
| 50 ha/day | | |
| ● Application rate 0.025 kg/ha | | |
| Potato; Field crop tractor-mounted | No PPE = single layer of work clothing (option | 83.99 |
| 50 ha/day | | |
| Activity/Region | Application Rate | PPE Level | % AOEL |
|-----------------|-----------------|-----------|--------|
| Scouting/cereals and oilseed rape; Tractor-mounted boom sprayer | 0.025 kg/ha, 2 applications | No PPE | 12.0 |
| Scouting/potatoes; Tractor-mounted boom sprayer | 0.05 kg/ha, 1 application | No PPE | 21.4 |
| Cereals and oil seed rape; Field crop tractor-mounted | 0.025 kg/ha | No PPE = single layer of work clothing (option ‘Work wear - arms, body and legs covered’, but no gloves) | 7.0 |
| Potato; Field crop tractor-mounted | 0.05 kg/ha | No PPE = single layer of work clothing (option ‘Work wear - arms, body and legs covered’, but no gloves) | 14.0 |

**BYSTANDERS AND RESIDENTS**

| Activity/Region | Application Rate | Bystander or Resident, adults or children | % AOEL |
|-----------------|-----------------|----------------------------------------|--------|
| Cereals and oil seed rape; Field crop tractor-mounted | 0.025 kg/ha | Bystander adults | 2.31 |
| | | Bystander children | 1.81 |
| | | Resident adults | 0.29 |
| | | Resident children | 0.75 |
| Potato; Field crop tractor-mounted | 0.05 kg/ha | Bystander adults | 4.63 |
| | | Bystander children | 3.62 |
| | | Resident adults | 0.34 |
| | | Resident children | 0.87 |
### EFSA model for estimation of bystander and resident exposure

(60 kg b.w. default)

| Cereals and oil seed rape; Field crop tractor-mounted | Bystander or resident, adults or children | % (A)AOEL |
|-----------------------------------------------------|------------------------------------------|------------|
|                                                     | Bystander                                |            |
|                                                     | adults                                   | 4.69       |
|                                                     | children                                 | 8.44       |
|                                                     | Resident                                 |            |
|                                                     | adults                                   | 14.21      |
|                                                     | children                                 | 55.39      |
|                                                     | **Potato; Field crop tractor-mounted**   |            |
|                                                     | **50 ha/day**                            |            |
|                                                     | Application rate 0.025 kg/ha             |            |
|                                                     | Bystander                                |            |
|                                                     | adults                                   | 9.38       |
|                                                     | children                                 | 16.88      |
|                                                     | Resident                                 |            |
|                                                     | adults                                   | 18.71      |
|                                                     | children                                 | 65.47      |

**Classification with regard to toxicological data (Regulation (EU) No 283/2013, Annex Part A, Section 10)**

Substance:

Harmonised classification according to Regulation (EC) No 1272/2008 and its Adaptations to Technical Process [Table 3.1 of Annex VI of Regulation (EC) No 1272/2008 as amended]⁴:

| Cypermethrin                          |
|---------------------------------------|
| H302: Harmful if swallowed            |
| H332: Harmful if inhaled              |
| H335: May cause respiratory irritation|

Peer review proposal ⁵ for harmonised classification according to Regulation (EC) No 1272/2008:

| H302: Harmful if swallowed            |
| H332: Harmful if inhaled              |
| H335: May cause respiratory irritation|
| H373: May cause damage to organs through prolonged or repeated exposure |

---

⁴ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. OJ L 353, 31.12.2008, 1-1355.

⁵ It should be noted that harmonised classification and labelling is formally proposed and decided in accordance with Regulation (EC) No 1272/2008. Proposals for classification made in the context of the evaluation procedure under Regulation (EC) No 1107/2009 are not formal proposals.
### Residues in or on treated products food and feed

**Metabolism in plants (Regulation (EU) N° 283/2013, Annex Part A, points 6.2.1, 6.5.1, 6.6.1 and 6.7.1)**

| Primary crops (Plant groups covered) | Crop groups | Crop(s) | Application(s) | DAT (days) |
|--------------------------------------|-------------|---------|----------------|------------|
| Fruit crops                          | Apples*     | Applied directly (via syringe) to fruits and leaves (application rate not specified); cis-cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$; trans-cypermethrin $[^{14}\text{C}-\text{Ph}]$ | 26 (leaves); 22 (apples) |
| Fruit crops                          | Potatoes    | Foliar spraying, 2x 50 g a.s./ha (2N); 14 d interval Cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | 3 |
| Root crops                           | Sugar beet  | Foliar spraying, 3x 0.27/0.22 kg a.s./ha (13-16N); interval 27d / 35d Cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | 21 |
| Leafy crops                          | Lettuce*    | Applied directly via syringe cis-cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$; trans-cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | Study I (indoor) 18 |
| Leafy crops                          |              | Foliar spraying, 2 x 0.3 kg a.s./ha Cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | Study II (field) 19, 21 |
| Leafy crops                          |              | Applied directly via syringe, 1x 0.3 kg a.s./ha Cypermethrin $[^{14}\text{C}-\text{Ph}]$ | Study III (indoor) 0,3,7,15,30 |
| Leafy crops                          | Cabbage*    | Applied directly via syringe cis-cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$; trans-cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | 14, 42 |
| Cereals/grass crops                  | Wheat       | Foliar spraying, 2x 25 g a.s./ha (2N) at BBCH 51 and BBCH 75; Cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | 8 (hay; BBCH 79)), 28 (straw, grain) |
| Cereals/grass crops                  | Maize/corn  | Painting, (a) 2x 0.43 kg a.s./ha (34 N) (b) 3x 0.43 kg a.s./ha (ca. 50 N) Cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | Study I * (a) 3 (forage, stalk, husk, ears); 15 (silage) (b) 29 (fodder, grain) |
|                                     |             | Foliar spraying, at 0.151 kg a.s./ha (6N) **Zeta-cypermethrin $[^{14}\text{C}-\text{Ph} \;/ \;^{14}\text{C}-\text{Cy}]$ | Study II (indoor) 31 (forage) 80 (stover/husk/cobs, grain) |
### Pulses/Oilseeds

| Crop          | Description                                                                 | Conditions                                                                 |
|---------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Oilseed rape  | Foliar spraying, 1x 25 g a.s./ha (1N); first appl. at BBCH 30              | (a) 21 (seeds); (b) 0 (forage), 49 (seeds)                                 |
|               | Cypermethrin [14C-Ph / 14C-Cy]                                              |                                                                            |

### Cotton

| Crop          | Description                                                                 | Conditions                                                                 |
|---------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------|
|               | Applied directly (via syringe), cis-cypermethrin [14C-Ph / 14C-Cy]; trans-cypermethrin [14C-Ph] | Study I * (indoor) 42                                                     |
|               | Applied directly                                                            |                                                                            |
|               | Cypermethrin [14C-Ph]                                                       |                                                                            |
|               | Foliar spraying, 3x 0.3 kg a.s./ha                                           | Study II * (indoor) 35                                                     |
|               | cis-cypermethrin [14C-Ph / 14C-Cy]; trans-cypermethrin [14C-Ph]             |                                                                            |
|               | Cypermethrin [14C-Ph / 14C-Cy]                                              | Study III * (field) > 100                                                  |
|               | Foliar spraying, 1x 0.67 kg a.s./ha                                          | Study IV 34 (forage), 74/88 (bolls)                                       |
|               | Cypermethrin [14C-Ph / 14C-Cy]                                              |                                                                            |

### Soya bean

| Crop          | Description                                                                 | Conditions                                                                 |
|---------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------|
|               | Foliar spraying, 2 x 0.54 kg a.s./ha                                         | > 40                                                                       |
|               | Cypermethrin [14C-Ph]                                                       |                                                                            |

### Miscellaneous

| Crop          | Description                                                                 | Conditions                                                                 |
|---------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------|
|               | cis-cypermethrin [14C-Ph]; trans-cypermethrin [14C-Cy]; 3-PBAcid [14C-Ph]   | --                                                                         |

14C-Ph: 14C-[phenoxybenzyl]; 14C-Cy: 14C-cyclopropyl (labelling always tested separately)

* No stand-alone fully OECD guideline-compliant study (deficiencies noted).

Only the metabolism studies on potatoes, wheat and oilseed rape (and some of the studies on sugar beet, maize and cotton) were conducted under GLP and according to OECD guidelines. Only enantiospecific analysis of cypermethrin in the potato, wheat and OSR study.

### Rotational crops (metabolic pattern)

**OECD Guideline 502**

| Crop groups       | Crop(s)                        | PBI (days) | Comments                                                                 |
|-------------------|--------------------------------|------------|--------------------------------------------------------------------------|
| Root/tuber crops  | Sugar beet                     | 29, 60, 120| 1 kg a.s./ha (20N – cf. repr. use potato 1x50g/ha)                       |
|                   | 14C-benzyl cypermethrin (all crops) and 14C-cyclopropyl cypermethrin (sugar beet only) |
| Leafy crops       | Lettuce                        | 29, 60, 120|                                                                          |
| Cereal (small grain) | Wheat                         | 29, 60, 120|                                                                          |
| Other             | Cotton (Oilseeds)              | 29, 60, 120|                                                                          |

Rotational crop and primary crop metabolism similar?

Certain potential for uptake of soil residues, with preference of cypermethrin metabolites specific to the cycloprane moiety, no identification of residues conducted. Further rotational crop metabolism waived for representative uses, due to insignificant total residues expected at 1N.

### Processed commodities (standard hydrolysis study)

| Conditions | Cypermethrin | M5 | M7 | Comments |
|------------|--------------|----|----|----------|
| 20 min, 90°C, pH 4 | 99.7% | (-) | (-) | Benzyl-label |

---

---
**OECD Guideline 507**

| Time | Temp. | % | -  | - | Benzyl-label |
|------|-------|---|----|---|---------------|
| 60 min, 100°C, pH 5 | 97.6% | (-) | (-) | Benzyllabel |
| 20 min, 120°C, pH 6 | 54.7% | (-) | 33.7% | Benzyl-label |
| | 56.1% | 30.1% | (-) | Cyclopropyl-label |

Results expressed as mean % of the applied radioactivity; (-) not detected

M5: DCVC acid; M7: 3-PBAld

**Residue pattern in processed commodities similar to residue pattern in raw commodities?**

Yes (for processed commodities involving pasteurization, boiling, baking and/or brewing);
No (for processed commodities involving sterilisation and other processing operations combining high temperature/pH ≥6)

Cypermethrin is thermally unstable. There are indications that degradation of cypermethrin is significantly influenced by the food matrix: e.g. significant degradation also observed in tomato paste (pH 4.3-4.5) upon cold storage (12 days at 5°C); Significant degradation observed during canning of peeled tomatoes;

Main The same residue definition as for primary crops is applicable to processed commodities upon finalisation of the assessment of the toxicological relevance of metabolites with the 3-phenoxycbenzoyl moiety (3-PBAlddehyde). degradation product: 3-phenoxycbenzaldehyde (3-PBAld)

**Plant residue definition for monitoring (RD-Mo)**

OECD Guidance, series on pesticides No 31

Cypermethrin including other mixtures of constituent isomers (sum of isomers)

**Plant residue definition for risk assessment (RD-RA)**

Cypermethrin (sum of isomers) pending finalisation of the assessment of the genotoxic potential of 3-phenoxycbenzoic acid (3-PBA) and review of the preliminary conclusions in toxicology on the whole group of related metabolites bearing the 3-phenoxycbenzoyl moiety (besides 3-PBA also e.g. PBAld, 4-OH-PBA) once the confirmatory data on lambda-cyhalothrin have been peer reviewed (provisional)

**Conversion factor (monitoring to risk assessment)**

Pending finalisation of residue definition for risk assessment (not necessary if identical residue definitions are confirmed for monitoring and risk assessment)

**Metabolism in livestock (Regulation (EU) No 283/2013, Annex Part A, points 6.2.2, 6.2.3, 6.2.4, 6.2.5 6.7.1)**

**OECD Guideline 503 and SANCO/11187/2013 rev. 3 (fish)**

**Animals covered**

| Animal   | Dose (mg/kg bw/d) | Duration (days) | N rate/comment |
|----------|-------------------|-----------------|----------------|
| Laying hen | 0.57              | 14              | Study I        |
|          | 0.12 – 0.13       | 8               | Study II       |
|          | 0.67 – 0.77       | 8               | Study II       |
| Cow/Goat | Ca. 0.0036        | 20 or 21        | Cow *          |
|          | 0.1 N (sheep) – 0.2 N (bovine) | | Cypermethrin [14C-Ph] |
| Animal          | Time needed to reach a plateau concentration in milk and eggs (days) | Animal residue definition for monitoring (RD-Mo) | Animal residue definition for risk assessment (RD-RA) | Conversion factor (monitoring to risk assessment) | Metabolism in rat and ruminant similar (Yes/No) | Fat soluble residues (Yes/No) (FAO, 2009) |
|-----------------|---------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|---------------------------------------------|
| Pig             |                                                               |                                                  |                                                      |                                                 | Yes                                           | Yes                                         |
| Fish            |                                                               |                                                  |                                                      |                                                 | No study submitted (data gap)                 |                                             |
| Cow *           |                                                               |                                                  |                                                      |                                                 |                                               |                                             |
| 0.09 N (sheep)  | Milk: 3-7 days                                                 | Cypermethrin including other mixtures of constituent isomers (sum of isomers) |                                                      |                                                 |                                               |                                             |
| Cow *           |                                                               |                                                  |                                                      |                                                 |                                               |                                             |
| 0.17 N (sheep)  |                                                               |                                                  |                                                      |                                                 |                                               |                                             |
| 5.7 N (sheep)   |                                                               |                                                  |                                                      |                                                 |                                               |                                             |
| Pig             |                                                               |                                                  |                                                      |                                                 |                                               |                                             |
| Fish            |                                                               |                                                  |                                                      |                                                 |                                               |                                             |

Note: 

- **Ca.** 0.09 
- **Ca.** 0.17 
- 0.49 – 0.55

### Conversion factor (monitoring to risk assessment)

- **1** occurrence data for all cypermethrin isomers to be considered, but toxicity of alpha-cypermethrin to be considered by application of a relative potency factor of 4 for risk assessment.

- **1** pending clarification on the relative toxicity of individual cypermethrin isomers and finalisation of the assessment of the genotoxic potential of 3-phenoxybenzoic acid (3-PBA) and review of the preliminary conclusions in toxicology on the whole group of related metabolites bearing the 3-phenoxybenzoyl moiety once the confirmatory data on lambda-cyhalothrin have been peer reviewed (provisional).

### Metabolism in rat and ruminant similar (Yes/No)

- Yes

### Fat soluble residues (Yes/No) (FAO, 2009)

- Yes

(Log Pow for Cypermethrin = 5.6 – 5.8;
Concentration of cypermethrin residues in tissue fat and milk fat observed in animal metabolism and feeding studies)
Residues in succeeding crops (Regulation (EU) No 283/2013, Annex Part A, point 6.6.2)

| **Confined rotational crop study** | Confined rotational crop study conducted with wheat, sugar beet, lettuce and cotton planted 29, 60 and 120 days after soil application with $^{14}$C-benzyl (and $^{14}$C-cyclopropyl)-labelled Cypermethrin at a rate of 1 kg a.s./ha (20N) indicated that residue levels in rotational crops will be well below 0.01 mg/kg when primary crops are treated at a 1N rate. |
|---|---|
| (Quantitative aspect) |  |
| **OECD Guideline 502** |  |

| **Field rotational crop study** | Data provided not acceptable, however currently no further data required |
|---|---|
| **OECD Guideline 504** |  |
Stability of residues (Regulation (EU) N° 283/2013, Annex Part A, point 6.1)
OECD Guideline 506

| Plant products (Category) | Commodity                   | T (°C) | Stability (Months) |
|---------------------------|-----------------------------|--------|--------------------|
|                           |                             |        | Cypermethrin       |
| High water content        | Lettuce                     | < -18  | 12                 |
|                           | Peas (fresh without pods)   | < -18  | 12                 |
|                           | Sugar beet leaves           | < -18  | 12                 |
|                           | Tomatoes                    | < -18  | 18                 |
|                           | Maize whole plant           | < -18  | 10                 |
|                           | Head cabbage                | < -18  | 5                  |
| High oil content          | Oilseed rape seeds          | < -18  | 12                 |
| High protein content      |                             | ---    | ---                |
| High starch content       | Wheat grain                 | < -18  | 12                 |
|                           | Sugar beet root             | < -18  | 12                 |
|                           | Maize grain                 | < -18  | 10                 |
| High acid content         |                             | ---    | ---                |
| Processed products        |                             | ---    | ---                |
| Other                     |                             | ---    | ---                |

Upon frozen storage, residues of cypermethrin remain stable for at least 12 months in oilseed rape seeds and in all plant products belonging to the category of high water content or high starch content commodities.

| Animal      | Animal commodity | T (°C) | Stability (Months) |
|-------------|------------------|--------|--------------------|
|             |                  |        | Cypermethrin       |
| Hen         | Muscle           | -18    | 10                 |
|             | Liver            | ---    | ---                |
|             | Kidney           | ---    | ---                |
| ---         | Milk             | ---    | ---                |
| Hen         | Egg              | -18    | 9                  |
| Hen         | Fat              | -18    | 10                 |
|             | Fat              | -20    | <41 days           |

Storage stability was investigated in livestock feeding studies (samples with incurred residues). Apparent instability in bovine fat was observed in a storage stability test performed with incurred residues within the cow feeding study.
### Summary of residues data from the supervised residue trials (Regulation (EU) No 283/2013, Annex Part A, point 6.3) OECD Guideline 509, OECD Guidance, series on pesticides No 66 and OECD MRL calculator

| Crop                | Region/Indoor (a) | Residue levels (mg/kg) observed in the supervised residue trials relevant to the supported GAPs (b) | Recommendations/comments (OECD calculations) | MRL proposals (mg/kg) | HR (mg/kg) (c) | STMR (mg/kg) (d) |
|---------------------|-------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------|----------------|----------------|
| Wheat (grain)       | NEU               | < 0.01 (5x), 0.01, 0.02 (2x)                                                                                      | Proportionality concept applied to SEU dataset due to majority of trials being conducted at rate >25% deviating from cGAP rate. MRL proposal derived from merged NEU/SEU datasets. 1 additional GAP-compliant SEU trial is required (data gap). Extrapolation according to SANCO 7525/VI/95 rev.10.2 (EC, 2016) | 0.04 (tentative)       | 0.02           | <0.01          |
|                     | SEU               | 1x 40 g/ha: < 0.01 (4x), 0.01, 0.04 1x 25 g/ha: <0.01 Scaled down to cGAP rate (1x 25 g/ha): <0.01 (6x), 0.03 |                                                                                                                |                        |                |                |
|                     | NEU + SEU         | < 0.01 (11x), 0.01, 0.02 (2x), 0.03                                                                                |                                                                                                                |                        |                |                |
| Wheat (straw)       | NEU               | <0.1, 0.21, 0.25, 0.26, 0.35, 0.43, 0.48, 0.57                                                                   | Proportionality concept applied to SEU dataset due to majority of trials being conducted at rate >25% deviating from cGAP rate. *highest results from 2 dependent trials (experimental replicates) 4 trials with application rate slightly outside +25% deviation range (32-34 g a.s./ha) Extrapolation according to SANCO 7525/VI/95 rev.10.2 (EC, 2016) At least 2 additional trials on barley compliant with the SEU GAP are required (data gap). | 0.3 (tentative)        | 0.57           | 0.31           |
|                     | SEU               | 1x 40 g/ha: 0.25, 0.44, 0.45, 0.58, 0.60, 1.00 1x 25 g/ha: < 0.1 Scaled down to cGAP rate (1x 25 g/ha): <0.1, 0.16, 0.28, 0.28, 0.36, 0.38, 0.63 |                                                                                                                |                        | 0.63           | 0.28           |
|                     | NEU + SEU         | <0.1 (2x), 0.16, 0.21, 0.22, 0.25, 0.26, 0.28, 0.32, 0.35, 0.38, 0.43, 0.48, 0.57, 0.63 |                                                                                                                |                        | 0.63           | 0.28           |
| Barley (grain)      | NEU               | 0.01, 0.03, 0.04 (2x), 0.05, 0.05, 0.09, 0.10, 0.10, 0.11, 0.12, 0.19                                              | MRL proposal derived from NEU dataset. 3 trials with application rate slightly outside +25% deviation range (32-34 g a.s./ha) Extrapolation according to SANCO 7525/VI/95 rev.10.2 (EC, 2016) At least 2 additional trials on barley compliant with the SEU GAP are required (data gap). | 0.19                   | 0.19           | 0.07           |
|                     | SEU               | < 0.01, 0.02 (2x), 0.03 0.05 (2x)                                                                                |                                                                                                                |                        | 0.05           | 0.03           |

**Representative uses**
- Risk assessment residue definition: Cypermethrin (sum of isomers) *(provisional)*;
- Monitoring residue definition: Cypermethrin including other mixtures of constituent isomers (sum of isomers)

---

*OECD* Guideline 509, *OECD* Guidance, series on pesticides No 66 and *OECD* MRL calculator

- Crop: Representative uses Risk assessment residue definition: Cypermethrin (sum of isomers) *(provisional)*; Monitoring residue definition: Cypermethrin including other mixtures of constituent isomers (sum of isomers)
- Region/Indoor: (a)
- Residue levels (mg/kg) observed in the supervised residue trials relevant to the supported GAPs (b)
- Recommendations/comments (OECD calculations)
- MRL proposals (mg/kg)
- HR (mg/kg) (c)
- STMR (mg/kg) (d)
## Peer review of the pesticide risk assessment of the active substance cypermethrin

### Crop, Region/Indoor (a), Residue levels (mg/kg) observed in the supervised residue trials relevant to the supported GAPs (b)

| Crop                              | Region/Indoor (a) | Residue levels (mg/kg) | Recommendations/comments (OECD calculations) | MRL proposals (mg/kg) | HR (mg/kg) (c) | STMR (mg/kg) (d) |
|-----------------------------------|-------------------|------------------------|---------------------------------------------|-----------------------|----------------|-----------------|
| Barley (straw) (extrapolated to oats) | NEU               | < 0.1, 0.2, 0.3 (3x), 0.33 (3x), 0.36, 0.37, 0.40, 0.62 | Shorter interval (14 ±1 days) between applications, but <LOQ residue situation confirmed | Not applicable | 0.62 | 0.33 |
| [1 x 25 g/ha; PHI 28 days]        | SEU               | 0.2, 0.3, 0.5, 0.6, 0.9, 1.0 | | | 1.0 | 0.4 |
| Oilseed rape (seeds) [2 x 25 g/ha; min. interval 90 days; PHI 49 days] | NEU               | < 0.01 (8) | 2 applications instead of 1 (repr. use); ‘zero’ residue situation (predicted from representative potato metabolism study) confirmed | 0.01* | < 0.01 | < 0.01 |
| Potatoes [1 x 50 g/ha; PHI 3 days] | SEU               | < 0.01 (7) | | 0.01* | < 0.01 | < 0.01 |

### Summary of the data on formulation equivalence OECD Guideline 509

| Crop | Region | Residue data (mg/kg) | Recommendations/comments |
|------|--------|----------------------|-------------------------|
| Potatoes | SEU | < 0.01 (2) | 2x 50 g/ha EC formulation (Emulsifiable concentrate) | Not applicable | < 0.01 | < 0.01 |
| SEU | < 0.01 (2) | 2x 50 g/ha ME formulation (Micro-emulsion) | | | | |

### Summary of data on residues in pollen and bee products (Regulation (EU) No 283/2013, Annex Part A, point 6.10.1)

| Product(s) | Region | Residue data (mg/kg) | Recommendations/comments |
|------------|--------|----------------------|-------------------------|
|            |        |                      |                         |

(a): NEU or SEU for northern or southern outdoor trials in EU member states (N+SEU if both zones), Indoor for glasshouse/protected crops, Country if non-EU location.

(b): Residue levels in trials conducted according to GAP reported in ascending order (e.g. 3x <0.01, 0.01, 6x 0.02, 0.04, 0.08, 3x 0.10, 2x 0.15, 0.17). When residue definition for monitoring and risk assessment differs, use Mo/RA to differentiate data expressed according to the residue definition for Monitoring and Risk Assessment.

(c): HR: Highest residue. When residue definition for monitoring and risk assessment differs, HR according to residue definition for Monitoring reported in brackets (HRMo).

(d): STMR: Supervised Trials Median Residue. When residue definition for monitoring and risk assessment differs, STMR according to definition for monitoring reported in brackets (STMRMo).
## Inputs for animal burden calculations

| Feed commodity                  | Median dietary burden (mg/kg) | Comment   | Maximum dietary burden (mg/kg) | Comment   |
|---------------------------------|-------------------------------|-----------|--------------------------------|-----------|
| **Risk assessment residue definition:** Cypermethrin (sum of isomers) *(provisional)* |                               |           |                                |           |
| Cereal straw (Barley/Oat)       | 0.4                           | STMR      | 1.0                            | HR        |
| Cereal straw (Rye/Triticale/Wheat) | 0.28                         | STMR      | 0.63                           | HR        |
| Potato culls                    | -                             | ‘zero’-residue situation (<0.01 mg/kg) | -       | ‘zero’-residue situation (<0.01 mg/kg) |
| Cereal grain (Barley, Oat)      | 0.07                          | STMR      | 0.07                           | STMR      |
| Cereal grain (Rye/Triticale/Wheat) | 0.01                         | STMR      | 0.01                           | STMR      |
| Brewer’s grain dried            | 0.09                          | 0.07 (STMR) x 1.22 (PF₁) | 0.09 | 0.07 (STMR) x 1.22 (PF₁)       |
| Distiller’s grain dried         | 0.09                          | 0.07 (STMR) x 1.22 (PF₁) | 0.09 | 0.07 (STMR) x 1.22 (PF₁)       |
| Potato process waste            | -                             | ‘zero’-residue situation RAC (<0.01 mg/kg) | -       | ‘zero’-residue situation RAC (<0.01 mg/kg) |
| Potato dried pulp               | -                             | ‘zero’-residue situation RAC (<0.01 mg/kg) | -       | ‘zero’-residue situation RAC (<0.01 mg/kg) |
| Rape meal                       | -                             | <LOQ residue situation RAC (<0.01 mg/kg) | -       | <LOQ residue situation RAC (<0.01 mg/kg) |
| Wheat gluten meal               | 0.003                         | 0.01 (STMR) x 0.28 (PF²) | 0.003 | 0.01 (STMR) x 0.28 (PF²)       |
| Wheat, milled by-products       | 0.02                          | 0.01 (STMR) x 1.62 (PF³) | 0.02  | 0.01 (STMR) x 1.62 (PF³)       |

0 PF of 1.22 based on “Dried spent grain” derived from the barley processing study
1 PF of 0.28 based on “Gluten feed meal” derived from the wheat processing study
2 PF of 1.62 based on mean of “bran fine” & “bran coarse” derived from the wheat processing study
### Residues from livestock feeding studies (Regulation (EU) N° 283/2013, Annex Part A, points 6.4.1, 6.4.2, 6.4.3 and 6.4.4)

**OECD Guideline 505 and OECD Guidance, series on pesticides No 73**

Only applicable to residues of Cypermethrin (sum of isomers)

| MRL calculations | Ruminant | Pig/Swine | Poultry | Fish |
|------------------|----------|-----------|---------|------|
| **Highest expected intake**<br>(mg/kg bw/d)<br>(mg/kg DM for fish) | Beef cattle | Ram/Ewe | Breeding | 0.002 | Broiler | 0.005 | Carp | 0.132 |
| Dairy cattle | 0.015 | Lamb | 0.030 | Finishing | 0.002 | Layer | 0.010 | Trout | 0.193 |
| **Intake >0.004 mg/kg bw** | Yes | Yes | No | Yes | Yes |
| **Feeding study submitted** | Study I (0.028/0.085/0.28 mg/kg bw/d); Study II (0.24/0.71/2.4 mg/kg bw/d); Study III (0.0082/0.22/1.9 mg/kg bw/d); Study IV (0.022/0.057/0.21 mg/kg bw/d) | No (see ruminant study) | Study I (0.23/0.70/2.3 mg/kg bw/d – 23N/70N/230N); Study II (0.062/0.28/0.82 mg/kg bw/d – 6N/28N/82N) | No (Note: significant residues ≥0.01 mg/kg not expected in fish matrices based on fish metabolism study with alpha-cypermethrin (owned by other company) to which applicant should obtain legitimate regulatory access) |
| **Representative feeding level**<br>(mg/kg bw/d, mg/kg DM for fish) and **N rates** | Level 0.022 | Level 0.022 | Level 0.022 | Level 12N/9N | Level 0.062 | level 6N/28N/82N | Level: n.a. | N rate: Carp/Trot: n.a. |
| **Estimated HR**<sup>(a)</sup> at 1N | Meat | Muscle | Fat | Meat<sup>(b)</sup> | Liver | Kidney | Milk<sup>(a)</sup> | Eggs |
| MRL proposals | 0.05* | 0.05* | 0.05* | 0.05* | 0.05* | 0.05* | 0.05* | 0.05* |
| **Method of calculation**<sup>(c)</sup> | Tf | Tf (It for fat; Ln for milk) | Tf | Tf | Not applicable |

<sup>(a)</sup>: Estimated HR calculated at 1N level (estimated mean level for milk).

<sup>(b)</sup>: HR in meat calculated for mammalian on the basis of 20% fat + 80% muscle and 10% fat + 90% muscle for poultry.

<sup>(c)</sup>: The OECD guidance document on residues in livestock (series on pesticides 73) recommends three different approaches to derive MRLs for animal products; by applying a transfer factor (Tf), by extrapolation (It) or by linear regression (Ln). Fill in method(s) considered to derive the MRL proposals.
| STMR calculations | Ruminant | Pig/Swine | Poultry | Fish |
|-------------------|----------|-----------|---------|------|
| **Median expected intake**<br>(mg/kg bw/d)<br>(mg/kg DM for fish) | | | | |
| Beef cattle | 0.005 | | Breeding | 0.002 | Broiler | 0.005 | Carp | 0.132 |
| Dairy cattle | 0.007 | Lamb | 0.013 | Finishing | 0.002 | Layer | 0.007 | Trout | 0.193 |
| | | | | | Turkey | 0.004 | |
| **Representative feeding level**<br>(mg/kg bw/d, mg/kg DM for fish) and N rates | | | | |
| Level 0.022 | | | | |
| Level 0.022 | Beef: 4 N | Level 0.022 | Lamb: 1.7N | Level 0.062 | B or T: 12N |
| Dairy: 3 N | Ewe: 2.2 N | | Breed/Finish 11N / 11N | Layer: 9 N |
| Mean level in feeding level | Estimated STMR<sup>(b)</sup> at 1N | Mean level in feeding level | Estimated STMR<sup>(b)</sup> at 1N | Mean level in feeding level | Estimated STMR<sup>(b)</sup> at 1N |
| Muscle | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | n.a. | n.a. |
| Fat | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.027 | <0.01 | n.a. | n.a. |
| Meat<sup>(a)</sup> | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | - | <0.01 | n.a. | n.a. |
| Liver | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.01 | |
| Kidney | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | - | <0.01 | |
| Milk | <0.005 | <0.005 | <0.005 | <0.005 | | | | |
| Eggs | | | | | | | | |
| Method of calculation<sup>(c)</sup> | Tf | Tf | Tf | Tf | Not applicable |

<sup>(a)</sup>: STMR in meat calculated for mammalian on the basis of 20% fat + 80% muscle and 10% fat + 90% muscle for poultry

<sup>(b)</sup>: When the mean level is set at the LOQ, the STMR is set at the LOQ.

<sup>(c)</sup>: The OECD guidance document on residues in livestock (series on pesticide 73) recommends three different approaches to derive MRLs for animal products: by applying a transfer factor (Tf), by intrapolation (It) or by linear regression (Ln). Fill in method(s) considered to derive the MRL proposals.
Conversion Factors (CF) for monitoring to risk assessment

For animal products, considering the observed shift in isomers, the relatively higher toxicological potency of alpha-cypermethrin compared to cypermethrin is considered in the risk assessment by means of an adjustment factor of 4.

Processing factors (Regulation (EU) N° 283/2013, Annex Part A, points 6.5.2 and 6.5.3)
OECD Guideline 508 and OECD Guidance, series on testing and assessment No 96

Only applicable to residues of Cypermethrin (sum of isomers)

| Crop (RAC)/Edible part or Crop (RAC)/Processed product | Number of studies (a) | Processing Factor (PF) | Conversion Factor (CF<sub>P</sub>) for RA (b) |
|--------------------------------------------------------|-----------------------|------------------------|---------------------------------------------|
|                                                        | Individual values     | Median PF              |                                             |
| Wheat                                                  |                       |                        |                                             |
| Refined Flour (Type 550)                               | 4                     | 0.43, 0.47, 0.49, 0.52 | 0.48                                        |
| Wholemeal Flour                                        | 4                     | 1.12, 1.17, 1.25, 1.49 | 1.21                                        |
| White Bread                                            | 4                     | 0.14, 0.16, 0.17, 0.21 | 0.17                                        |
| Wholemeal Bread                                        | 4                     | 0.48, 0.53, 0.63, 0.65 | 0.58                                        |
| Dried Starch                                           | 4                     | 0.08 (2), 0.09, 0.13   | 0.09                                        |
| Dried Gluten                                           | 4                     | 0.44, 0.54, 0.55, 0.63 | 0.55                                        |
| Wheat germans                                          | 4                     | 0.22, 0.31, 0.37, 0.45 | 0.34                                        |
| Gluten feed meal                                       | 4                     | 0.25, 0.27, 0.28, 0.31 | 0.28                                        |
| Wheat milled by-products:                              |                       |                        |                                             |
| Shorts                                                 | 1                     | 0.34                   | n.a.                                        |
| Middlings                                              | 1                     | 0.49                   | n.a.                                        |
| Bran, fine (flour processing)                          | 4                     | 0.18, 0.29, 0.31, 0.45 | 0.30                                        |
| Bran, coarse                                           | 4                     | 1.64, 2.02, 2.80, 3.06 | 2.93, 3.31                                  |
|                                                       |                        | 1.62                   | ---                                         |
| Barley                                                 |                       |                        |                                             |
| Barley flour                                           | 4                     | 0.07, 0.14, 0.19, 0.21 | 0.17                                        |
| Pot barley                                             | 4                     | 0.09, 0.10, 0.12, 0.22 | 0.11                                        |
| Pearl barley                                           | 4                     | <0.02 (2), 0.03 (2)    | <0.03                                       |
| Beer                                                   | 4                     | 0.01 (4)               | 0.01                                        |
| Brewer’s grain (Brewing Malt)                          | 4                     | 0.39, 0.46, 0.50, 0.70 | 0.48                                        |
| Dried spent grain (= brewer’s grain, dried)            | 4                     | 0.29, 1.15, 1.29, 1.51 | 1.22                                        |

(a): Studies with residues in the RAC at or close to the LOQ should be disregarded (unless concentration)
(b): When the residue definition for risk assessment differs from the residue definition for monitoring
Consumer risk assessment (Regulation (EU) No 283/2013, Annex Part A, point 6.9)

Only applicable to risk assessment residue definition: Cypermethrin (sum of isomers) (provisional);

Representative uses

| ADI | 0.005 mg/kg bw per day |
|-----|------------------------|
| TMDI according to EFSA PRIMo (rev.2) | Highest TMDI: 46 % ADI (DK child) |
| NTMDI, according to (to be specified) | Not applicable |
| IEDI (% ADI), according to EFSA PRIMo | Max. 41 % ADI (NL child) |
| NEDI (% ADI), according to (to be specified) | Not applicable |

Factors included in the calculations

For TMDI: MRLs derived to accommodate for repr. uses
For IEDI: STMR (plant commodities), MRLs derived to accommodate for repr. uses (animal commodities)
Adjustment factor of 4 for animal products (to reflect 4x higher toxicological potency of isomers composition in alpha-cypermethrin compared to isomer composition in cypermethrin)

| ARfD | 0.005 mg/kg bw |
|------|----------------|
| IESTI (% ARfD), according to EFSA PRIMo (rev.2) | Highest IESTI: 99.4 % ARfD (cattle milk, UK infant) |
| NESTI (% ARfD), according to (to be specified) | Not applicable |

Factors included in IESTI and NESTI

HR (plant commodities); MRLs derived to accommodate for repr. uses (animal commodities); Adjustment factor of 4 for animal products (to reflect 4x higher toxicological potency of isomers composition in alpha-cypermethrin compared to isomers composition in cypermethrin)

Including all uses (MRL screening)

| TMDI (% ADI), according to EFSA PRIMo (rev.2) | Highest TMDI: 1212 % ADI (NL child) |
|-----------------------------------------------|--------------------------------------|
| NTMDI (% ADI), according to (to be specified) | Not applicable |
| IEDI (% ADI), according to EFSA PRIMo (rev.2) | Calculation not performed |
| NEDI (% ADI), according to (to be specified) | Not applicable |

Factors included in the calculations

EU MRLs (Reg. (EU) No 2017/626)

| IESTI (% ARfD, according to EFSA PRIMo rev.2) | Highest IESTI: 5305 % ARfD (oranges) |
|-----------------------------------------------|--------------------------------------|
| NESTI (% ARfD, according to (to be specified) | Not applicable |

Factors included in IESTI and NESTI

EU MRLs (Reg. (EU) No 2017/626)
Proposed MRLs (Regulation (EU) No 283/2013, Annex Part A, points 6.7.2 and 6.7.3)

Note: The safety of the derived MRLs can only be concluded once the assessment of the genotoxic potential of 3-phenoxybenzoic acid (3-PBA) and review of the preliminary conclusions on the whole group of related metabolites bearing the 3-phenoxybenzoyl moiety (i.e. 4-OH-PBA, 4-OH-PBA sulfate, 3-PBA, 3-PBALdehyde) is finalised. The proposed MRLs have therefore all to be considered tentative.

| Code    | Commodity/Group                        | MRL/Import tolerance (mg/kg) and Comments                      |
|---------|----------------------------------------|----------------------------------------------------------------|
| 0211000 | Potatoes                               | 0.01* SEU only                                                 |
| 0401060 | Oilseed rape seeds                     | 0.01* NEU only                                                 |
| 0500010 | Barley                                 | 0.3 Tentative proposal due to trial in SEU missing             |
| 0500050 | Oats                                   | 0.3 Tentative proposal due to trial in SEU missing Extrapolation from barley |
| 0500070 | Rye                                    | 0.04 Tentative proposal due to trial in SEU missing; Extrapolation from wheat |
| 0500090 | Wheat                                  | 0.04 Tentative proposal due to trial in SEU missing; Also applicable to spelt and triticale |

Animal commodities

| Code    | Commodity/Group                        | MRL/Import tolerance (mg/kg) and Comments                      |
|---------|----------------------------------------|----------------------------------------------------------------|
| 1010000 | Terrestrial Animals – tissues from swine, bovine, sheep, goat, equine, poultry and other farmed terrestrial animals except sheep/goat fat tissue | 0.05* MRL proposals derived considering representative uses only. Remark: EU MRLs for cypermethrin (sum of isomers) in animal products (ruminant’s muscle/fat/liver/kidney/milk at 0.02 mg/kg; ruminant’s fat at 0.2 mg/kg) are also set under Commission Regulation (EU) No 37/2010 for its use as a veterinary drug. |
| 1013020 | Sheep/goat – fat tissue                | 0.06                                                           |
| 1020000 | Milk                                   | 0.01* Note: For (cattle) milk, there is an acute intake concern for residues above 0.01 mg/kg. However, further method validation may be required to enforce an MRL at this level (see section 1). |
| 1030000 | Birds eggs                             | 0.01*                                                          |
| 1100000 | Products of animal origin – Fish, fish products and any other marine and freshwater food products | 0.05* Remark: EU MRLs for cypermethrin (sum of isomers) in Salmonidae fish (in muscle and skin in natural proportions: 0.05 mg/kg) have been established by Commission Regulation (EU) No 37/2010 for its use as a veterinary drug. |

(a): Commodity code number, as listed in Annex I of Regulation (EC) No 396/2005  
(b): MRLs proposed at the LOQ, should be annotated by an asterisk (*) after the figure.

Environmental fate and behaviour

Route of degradation (aerobic) in soil (Regulation (EU) No 283/2013, Annex Part A, point 7.1.1.1)
Mineralisation after 100 days

| Compound                  | % AR after 90 d (range)       | (n= 8) | % AR after 120 d (range) | (n= 8) |
|---------------------------|-------------------------------|--------|--------------------------|--------|
| [14C-cyclopropyl]-cypermethrin | 33.0-77.8                     |        | 20.5                     |        |
| [14C-phenyl]-cypermethrin  | 34.6-54.2                     |        | 23.9                     |        |

Non-extractable residues after 100 days

| Compound                  | % AR after 90 d (range)       | (n= 4) | % AR after 120 d (range) | (n= 4) |
|---------------------------|-------------------------------|--------|--------------------------|--------|
| [14C-cyclopropyl]-cypermethrin | 14.1-28.4                     |        | 9.1                      |        |
| [14C-phenyl]-cypermethrin  | 20.4-36.4                     |        | 24.1                     |        |

Metabolites requiring further consideration

- DCVA (cis + trans) – 0.2-47.4 % AR at 7 d (n= 8), [14C-cyclopropyl]-cypermethrin
- 3-PBA – 0.2-10.2 % AR at 7 d (n= 4), [14C-phenyl]-cypermethrin

Sterile conditions: no data available

Route of degradation (anaerobic) in soil (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.1.2)

| Compound                  | % AR after 90 d (range)       | (n= 1) | % AR after 120 d (range) | (n= 1) |
|---------------------------|-------------------------------|--------|--------------------------|--------|
| [14C-cyclopropyl]-cypermethrin | 20.5                         |        | 9.1                      |        |
| [14C-phenyl]-cypermethrin  | 23.9                          |        | 24.1                     |        |

Metabolites that may require further consideration

- cis-DCVA
  - flood water- 3.7-16.7 % AR at 182 d (n= 1), flooded soil-3.2-7.6 % AR at 182 d (n=1), total system- 6.9-24.3 % AR at 182 d (n=1), [14C-cyclopropyl]-cypermethrin
  - trans-DCVA
  - flood water- 11.9-21.3 % AR at 120 d (n= 1), flooded soil- 6.9-9.9 % AR at 120 d (n=1), total system- 20.4-31.2 % AR at 120 d (n=1), [14C-cyclopropyl]-cypermethrin
- 3-PBA
  - flood water- 3.7-16.6 % AR at 120 d (n=1), flooded soil-11.2-18.5 % AR at 120 d (n=1), total system- 14.9-35.1 % AR at 120 d (n=1), [14C-phenyl]-cypermethrin

Sterile conditions: no data available

Route of degradation (photolysis) on soil (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.1.3)

| Compound                  | % AR after 90 d (range)       | (n= 2) | % AR after 120 d (range) | (n= 1) |
|---------------------------|-------------------------------|--------|--------------------------|--------|
| [14C-cyclopropyl]-cypermethrin | 6.7-18.9                     |        | 0.7                      |        |
| [14C-phenyl]-cypermethrin  | 0.7-15.1                      |        | 18.9                     |        |

Sterile conditions: no data available
**Rate of degradation in soil (aerobic) laboratory studies active substance (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.1.1 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.1)**

| Cypermethrin | Dark aerobic conditions |
|--------------|-------------------------|
|              | Persistence endpoints | Modelling endpoints |
| Soil type    |                          |                      |
| Sandy loam   | X<sup>7</sup>           | pH<sup>a</sup>       | t. °C / % MWHC | DT<sub>50</sub>/DT<sub>90</sub> (d) | St. (χ<sup>2</sup>) | Method of calculation | DT<sub>50</sub> (d) 20 °C pF2/10kPa<sup>b</sup> | St. (χ<sup>2</sup>) | Method of calculation |
| (Study No. 721-001) | 6.6  | 20/21.65 | 10.2/82.6 | (α 0.157; β 3.038) | 2.7 | FOMC | 5.7 (k1 0.021; k2 0.005; g 0.090) | 3.7 | DFOP |
| Sandy loam   | 4.2  | 20/12.5 | 24.2/80.3 | 10.0 | SFO | 27.7 | 10.7 | SFO |
| (Study No. 721-001) | 4.2  | 20/12.5 | 24.2/80.3 | 10.0 | SFO | 27.7 | 10.7 | SFO |
| Clay loam    | 7.0  | 20/32.9 | 5.6/36.6 | (k1 0.015; k2 0.007; g 0.050) | 1.9 | DFOP | 4.2 (k1 0.014; k2 0.006; g 0.044) | 1.9 | DFOP |
| Silt loam    | 5.8  | 20/35.3 | 6.6/45.3 | (α 0.209; β 2.349) | 2.9 | FOMC | 6.1 (k1 0.014; k2 0.007; tb 0.554) | 7.7 | HS |
| Sandy loam   | 7.3  | 20/20.7 | 8.4/90.4 | (k1 0.1876; k2 0.0164; g 0.5596) | 1.0 | DFOP | 15.9 | 14.2 | SFO |
| (Study No. 721-003) | 7.3  | 20/20.7 | 8.4/90.4 | (k1 0.1876; k2 0.0164; g 0.5596) | 1.0 | DFOP | 15.9 | 14.2 | SFO |
| Loamy sand   | 5.5  | 20/16.5 | 20.2/412 | (k1 0.1604; k2 0.0040; g 0.4778) | 2.0 | DFOP | 58.3 | 13.7 | SFO |
| (Study No. 721-003) | 5.5  | 20/16.5 | 20.2/412 | (k1 0.1604; k2 0.0040; g 0.4778) | 2.0 | DFOP | 58.3 | 13.7 | SFO |

<sup>7</sup> X This column is reserved for any other property that is considered to have a particular impact on the degradation rate. Column and this footnote may be removed if not used.
### Isomer-specific DT₅₀ values relevant for modelling purposes based on SFO or DFOP kinetic model, respectively (based on study 721-003)

| Cypermethrin isomer* | Speyer 5M DT₅₀ [d] | Speyer 2.2 DT₅₀ [d] | Brierlow DT₅₀ [d] | South Witham DT₅₀ [d] | Geometric mean DT₅₀ [d] |
|----------------------|--------------------|--------------------|------------------|---------------------|-----------------------|
| RRS                  | 15.0 (1)           | 33.0               | 56.5 (2)         | 5.3 (1)             | 19.6                  |
| SSR                  | 9.9 (1)            | 62.7 (2)           | 39.3 (2)         | 1.2                 | 13.1                  |
| RRR                  | 28.0               | 98.4 (2)           | 34.9             | 2.4                 | 21.9                  |
| SSS                  | 35.6               | 271                | 47.5 (2)         | 2.6                 | 33.0                  |
| RSS                  | 32.1               | 110                | 77.7 (2)         | 2.8                 | 29.6                  |
| SRR                  | 29.5               | 114                | 35.7             | 3.1                 | 24.7                  |
| SRS                  | 3.5                | 30.8               | 44.5 (2)         | 3.8                 | 11.6                  |
| Geometric mean       | 17.5               | 79.4               | 40.8             | 3.1                 | 19.7                  |

* C-atoms configuration was provided in the following order: C1, C3, Cα

1) based on DFOP kinetics, pseudo-SFO DT₅₀
2) based on DFOP kinetics, DT₅₀ related to degradation rate of the slow phase (k2)

### Rate of degradation in soil (aerobic) laboratory studies transformation products (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.1.2 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.1)

| Carboxamide | Dark aerobic conditions | Metabolite dosed | Soil type       | X² | pH | t. °C / % MWHC | DT₅₀/ DT₉₀ (d) | f. f. k₉ / k₉ | St. (χ²) | Method of calculation | DT₅₀ (d) 20 °C pF2 (pseudo-SFO) |
|-------------|-------------------------|------------------|----------------|----|----|----------------|----------------|--------------|----------|----------------------|-------------------------------|
| Silt loam (Study No. 721-002) | 5.6 | 20/40.0 | 1.5/104 | - | 3.5 | FOMC α = 0.399 β = 0.324 | 31.3 |
| Clay loam (Study No. 721-002) | 7.6 | 20/35.6 | 1.7/19 | - | 7.4 | FOMC α = 0.608 β = 0.440 | 5.7 |
### Loamy sand (Study No. 721-002)

| Soil type          | pH   | t. °C / % MWHC | DT\(_{50}\)/ DT\(_{90}\) (d) | f. f. k\(_{f}\) / k\(_{dp}\) | St. (\(\chi^2\)) | Method of calculation | DT\(_{50}\) (d) 20 °C pF2 (all SFO) |
|--------------------|------|----------------|------------------------------|-----------------------------|----------------|----------------------|-----------------------------------|
| Sandy loam\(^1\)  | 6.6  | 20/21.65       | 2.4/8.1                      | 0.46                        | 16.0           | DFOP-SFO            | 2.2                               |
| Sandy loam\(^1\)  | 4.2  | 20/12.5        | 4.1/13.7                     | 0.24                        | 26.4           | SFO-SFO             | 3.9                               |
| Clay loam\(^1\)   | 7.0  | 20/32.9        | 2.8/9.3                      | 0.47                        | 4.9            | DFOP-SFO            | 2.6                               |
| Silt loam\(^1\)   | 5.8  | 20/35.3        | 1.4/4.5                      | 0.42                        | 13.0           | HS-SFO              | 1.4                               |
| Loamy sand\(^2\)  | 5.8  | 20/45          | 0.8/3.0                      | -                           | -              | Biphasic            | 7.0 (slow phase)                  |
| Loam \(^2\)       | 7.1  | 20/45          | 1.4/7.0                      | -                           | -              | Biphasic            | 2.7 (slow phase)                  |
| Clay loam\(^2\)   | 6.8  | 20/45          | 5/16                         | -                           | -              | SFO                 | 4.3 (slow phase)                  |
| Loamy sand\(^3\)  | 5.5  | 20/50          | 0.38/1.3                     | -                           | 4.7            | SFO                 | 0.38                              |
| Sandy loam\(^3\)  | 6.6  | 20/50          | 0.8/2.8                      | -                           | 3.9            | SFO                 | 0.79                              |
| Clay\(^3\)        | 7.2  | 20/50          | 2.1/7                        | 1.8                         | SFO            |                      | 1.13                              |

Geometric mean (if not pH dependent) 35.0

### DCVA

| Soil type          | pH   | t. °C / % MWHC | DT\(_{50}\)/ DT\(_{90}\) (d) | f. f. k\(_{f}\) / k\(_{dp}\) | St. (\(\chi^2\)) | Method of calculation | DT\(_{50}\) (d) 20 °C pF2 (all SFO) |
|--------------------|------|----------------|------------------------------|-----------------------------|----------------|----------------------|-----------------------------------|
| Sandy loam\(^1\)  | 6.6  | 20/21.65       | 5.5/18.4                     | 0.54                        | 13.2           | DFOP-SFO            | 5.1                               |
| Sandy loam\(^1\)  | 4.2  | 20/12.5        | 2.5/8.3                      | 0.76                        | 11.2           | SFO-SFO             | 2.4                               |
| Clay loam\(^1\)   | 7.0  | 20/32.9        | 4.6/15.4                     | 0.53                        | 7.0            | DFOP-SFO            | 4.4                               |

**Geometric mean (if not pH dependent)** 2.0

**Arithmetic mean** 0.40

**pH dependence, Yes or No** No

---

\(^{1}\) Brice, and Cooke, 2006 (parent-dosed study, study submitted for renewal of Cypermethrin, Doc. No. 721-001), degradation rates from kinetic re-assessment as provided with the dossier update of January 2017

\(^{2}\) Class and Dorn, 2003 (metabolite-dosed study, accepted in EFSA conclusion regarding the peer review of the pesticide risk assessment of the active substance zeta-cypermethrin. EFSA Scientific Report (2008) 196, 1-119; DOI: 10.2903/j.efsa.2009.196r)

\(^{3}\) Shepler, 2011 (metabolite-dosed study, accepted in EFSA conclusion regarding the peer review of the pesticide risk assessment of the active substance gamma-cyhalothrin. EFSA Journal (2014) 12,(2):3560, 93 pp; DOI: 10.2903/j.efsa.2014.3560)

\(^{a}\) Measured in calcium chloride solution

\(^{b}\) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7
### DCVA

Dark aerobic conditions - the precursor from which the f.f was determined was cypermethrin, metabolite-dosed if no f.f. is indicated

| Soil type                  | pH     | t. °C / % MWHC | DT$_{50}$/DT$_{90}$ (d) | f. f. $k_{f}$/ $k_{dp}$ | St. ($\chi^2$) | Method of calculation | DT$_{50}$ (d) | Notes |
|----------------------------|--------|----------------|--------------------------|--------------------------|----------------|-----------------------|----------------|-------|
| Silt loam 1)               | 5.8    | 20/35.3        | 2.7/8.9                  | 0.50                     | 4.7            | HS-SFO $^b$           | 2.6            |       |
| Sandy loam 2)              | 7.3    | 20/20.7        | 18.1/60.1                | 0.77                     | 16.7           | DFOP-SFO $^b$         | 18.1           |       |
| Sandy loam 2)              | 5.5    | 20/16.5        | 10.7/35.6                | 0.47                     | 20.3           | DFOP-SFO $^b$         | 10.7           |       |
| Sandy silt loam 3)         | 5.6    | 20/40          | 8.1/26.7                 | 0.46                     | 25.0           | DFOP-SFO $^b$         | 8.1            |       |
| Clay loam 2)               | 7.6    | 20/35.6        | 9.0/29.7                 | 0.75                     | 35.4           | DFOP-SFO $^b$         | 9.0            |       |
| Loamy sand 3)              | 5.8    | 20/45          | 3.4/10                   | -                        | -              | SFO                   | 3.4            |       |
| Loamy sand 4)              | 5.8    | 20/45          | 3.6/10                   | -                        | -              | SFO                   | 3.6            |       |
| Loamy sand 3)($^a$)        | 5.8    | 20/45          | -                        | -                        | -              | -                     | 3.5 ($^c$)     |       |
| Loam 3)                    | 7.1    | 20/45          | 2.7/10                   | -                        | -              | SFO                   | 2.4            |       |
| Loam 4)                    | 7.1    | 20/45          | 3.1/10                   | -                        | -              | SFO                   | 2.8            |       |
| Loam 3)($^a$)              | 7.1    | 20/45          | -                        | -                        | -              | -                     | 2.6 ($^c$)     |       |
| Clay loam 3)               | 6.8    | 20/45          | 8.0/27                   | -                        | -              | SFO                   | 6.9            |       |
| Clay loam 4)               | 6.8    | 20/45          | 11.0/35                  | -                        | -              | SFO                   | 9.5            |       |
| Clay loam 3)($^a$)         | 6.8    | 20/45          | -                        | -                        | -              | -                     | 8.1 ($^c$)     |       |

#### Geometric mean (n = 11 $^d$)

| pH dependence, Yes or No | No |
|--------------------------|----|
| Geometric mean (n = 8)   | 5.5|
| Arithmetic mean (n = 8)  | 0.60|

1) Brice, and Cooke, 2006 (parent-dosed study, study submitted for renewal of Cypermethrin, Doc. No. 721-001), degradation rates from kinetic re-assessment as provided with the dossier update of January 2017
2) Yeomans, and Kelly, 2015 (parent-dosed study, study submitted for renewal of Cypermethrin, Doc. No. 721-003)
3) cis-DCVA in Class and Dorn, 2003 (metabolite-dosed study, accepted in the EFSA conclusion regarding the peer review of the pesticide risk assessment of the active substance zeta-cypermethrin. EFSA Scientific Report (2008) 196, 1-119; DOI: 10.2903/j.efsa.2009.196r)
4) trans-DCVA in Class and Dorn, 2003 (metabolite-dosed study, accepted in the EFSA conclusion regarding the peer review of the pesticide risk assessment of the active substance zeta-cypermethrin. EFSA Scientific Report (2008) 196, 1-119; DOI: 10.2903/j.efsa.2009.196r)

$^a$ Normalised using a Q10 of 2.58 and a Walker equation coefficient of 0.7

$^b$ First model refers to the parent, second to the metabolite

$^c$ Geometric mean considering total DCVA, i.e. cis- and trans-DCVA considered as replicates

$^d$ Geometric mean based on total DCVA for the separate soils
### Rate of degradation field soil dissipation studies (Regulation (EU) No. 283/2013, Annex Part A, point 7.1.2.2.1 and Regulation (EU) No. 284/2013, Annex Part A, point 9.1.1.2.1)

| Cypermethrin                | Aerobic conditions | Soil type (indicate if bare or cropped soil was used). | Location (country or USA state). | pH (a) | Depth (cm) | DT₅₀ (d) actual | DT₉₀(d) actual | St. (χ²) | DT₅₀ (d) Normc) | Method of calculation |
|-----------------------------|-------------------|--------------------------------------------------------|---------------------------------|--------|------------|----------------|----------------|----------|--------------------|----------------------|
| Silt loam (Study No. 723-001) Bare soil | Germany | 6.11 | 10 | 17.1 | 56.9 | 15.21 | NA(b) | SFO |
| Sandy loam (Study No. 723-001) Bare soil | Germany | 6.27 | 10 | 9.3 | 30.9 | 5.36 | NA(b) | SFO |
| Loam (Study No. 723-001) Bare soil | France | 6.89 | 10 | 31.2 | 103.6 | 19.62 | NA(b) | SFO |
| Sandy clay loam (Study No. 723-001) Bare soil | Spain | 7.31 | 10 | 29.8 | 99.1 | 14.80 | NA(b) | SFO |
| Geometric mean (if not pH dependent) | | | | | | | | 19.6 | 65.2 |
| pH dependence, Yes or No | | | | | | | | No |

---

(a) Measured in calcium chloride solution  
(b) NA= Not Available  
(c) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7, values are DegT50matrix

---

X This column is reserved for any other property that is considered to have a particular impact on the degradation rate. Column and this footnote may be removed if not used.
Combined laboratory and field kinetic endpoints for modelling (when not from different populations)*

| Endpoint                                                                 | Value            |
|-------------------------------------------------------------------------|------------------|
| Rate of degradation in soil active substance, normalised geometric mean (if not pH dependent) | 11.4 days        |
| Rate of degradation in soil transformation products, normalised geometric mean (if not pH dependent) | Carboxamide: 35 days; 3-PBA: 3.1 days; DCVA: 5.5 days |
| Kinetic formation fraction (f. f. $k_i / k_{dp}$) of transformation products, arithmetic mean | Carboxamide from cypermethrin: 0.66; 3-PBA from cypermethrin: 0.40; DCVA from cypermethrin: 0.60 |

* Only relevant after implementation of the published EFSA guidance describing how to amalgamate laboratory and field endpoints.

**Soil accumulation (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.2.2 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.2.2)**

Soil accumulation and plateau concentration: Not applicable; DT$_{90}$ from field study (worst-case 104 days) is <1 year. No studies on soil accumulation were submitted.

**Rate of degradation in soil (anaerobic) laboratory studies active substance (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.1.3 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.1)**

| Cypermethrin | Dark anaerobic conditions |
|--------------|---------------------------|
| Soil type    | $\chi^2$ | pH$^a$ | t. °C / % MWHC | DT$_{50}$ / DT$_{90}$ (d) | DT$_{50}$ (d) 20 °C$^b$ | St. ($\chi^2$) | Method of calculation |
| Sandy loam (Study No. 722-001) | 6.6 | 20/21.65 | 41.1/188.1 (α 1.053; β 68.202) | 3.2 | FOMC |
| Geometric mean (if not pH dependent) | - |

$^a$ Measured in calcium chloride solution
$^b$ Normalised using a Q10 of 2.58
$^c$ C: cyclopropyl-label; $^p$: phenyl-label

9 X This column is reserved for any other property that is considered to have a particular impact on the degradation rate. Column and this footnote may be removed if not used.
Rate of degradation in soil (anaerobic) laboratory studies transformation products (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.1.4 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.1)

| Soil type | pH | t. °C / % MWHC | DT_{50}/DT_{90} (d) | f. f. \(k_f/k_{dp}\) | DT_{50} (d) 20°C | St. \((\chi^2)\) | Method of calculation |
|-----------|----|----------------|---------------------|---------------------|------------------|----------------|---------------------|
| Sandy loam (Study No. 722-001) | 6.6 | 20/21.65 | >1000/>1000 | 0.59 | 16.5 | SFO |
| Sandy loam (Study No. 994-07003) | 5.7 | 20/35.3 | 42.6/220.0 \((k_1 0.0957; k_2 0.0091; t_b 3.54)\) | 2.6 | HS |
| Sandy loam (Study No. 722-001) | 8.6 | 20/20.7 | 44/193 \((k_1 5.112; k_2 0.0108; g 0.195)\) | 4.0 | DFOP |

Rate of degradation on soil (photolysis) laboratory active substance (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.1.3)

| Cypermethrin | Soil photolysis |
|--------------|-----------------|
| Soil type    | X\(^{10}\) | pH\(^{a}\) | t. °C / % MWHC | DT_{50}/DT_{90} (d) calculated at 30ºN | St. \((\chi^2)\) | Method of calculation |
| Silt loam (Study No. 994-07003) | 5.7 | 20/35.3 | 42.6/220.0 \((k_1 0.0957; k_2 0.0091; t_b 3.54)\) | 2.6 | HS |
| Sandy loam (Study No. 722-001) | 8.6 | 20/20.7 | 44/193 \((k_1 5.112; k_2 0.0108; g 0.195)\) | 4.0 | DFOP |

\(^{a}\) Measured in water

\(^{10}\) X This column is reserved for any other property that is considered to have a particular impact on the degradation rate. Column and this footnote may be removed if not used.
Soil adsorption active substance (Regulation (EU) No 283/2013, Annex Part A, point 7.1.3.1.1 and Regulation (EU) No 284/2013, Annex Part A, point 9.1.2.1)

| Soil Type                  | OC % | Soil pH\(^a\) | \(K_d\) (mL/g) | \(K_{doc}\) (mL/g) | \(K_F\) (mL/g) | \(K_{Foc}\) (mL/g) | 1/n |
|---------------------------|------|---------------|----------------|-------------------|---------------|------------------|-----|
| Sandy loam (sediment)     | 1.7  | 5.4           | 8976           | 527972            | Not determined|                  |     |
| (Study No. 731-002)       |      |               |                |                   |               |                  |     |
| Loam                      | 3.0  | 6.3           | 4858           | 202418            |               |                  |     |
| (Study No. 731-002)       |      |               |                |                   |               |                  |     |
| Loamy sand                | 0.8  | 4.2           | 4595           | 574360            |               |                  |     |
| (Study No. 731-002)       |      |               |                |                   |               |                  |     |
| Clay loam                 | 4.8  | 7.5           | 3871           | 80653             |               |                  |     |
| (Study No. 731-002)       |      |               |                |                   |               |                  |     |
| Silt loam                 | 3.2  | 4.7           | 4876           | 152388            |               |                  |     |
| (Study No. 731-002)       |      |               |                |                   |               |                  |     |

Geometric mean (if not pH dependent)*: 194425**
Arithmetic mean (if not pH dependent): 1***

pH dependence, *Yes or No*: No

---

* Measured in calcium chloride solution
* Only relevant after implementation of the published EFSA guidance.
** Sediment excluded
***Default value
Soil adsorption transformation products (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.3.1.2 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.2.1)

### 3-PBA

| Soil Type          | OC % | Soil pH (CaCl₂) | Soil pH (H₂O) | Kᵢ (mL/g) | Kᵢ,oc (mL/g) | 1/n |
|--------------------|------|-----------------|--------------|-----------|--------------|-----|
| Loamy sand ¹)      | 0.8  | 4.2             | 5.1  b)      | 16.62     | 2078         | 0.88|
| Silt loam ¹)       | 2.7  | 6.1             | 7.0  b)      | 4.97      | 184          | 0.82|
| Clay loam ¹)       | 4.8  | 7.5             | 8.0  b)      | 2.84      | 59           | 0.77|
| Sandy loam ²)      | 0.98 | 6.4             | 6.9  a)      | 0.88      | 90.1         | 0.84|
| Clay ²)            | 1.75 | 7.2             | 7.7  a)      | 1.06      | 60.5         | 0.88|
| Silt loam ²)       | 1.3  | -               | 6.6  b)      | 0.76      | 58.8         | 0.88|
| Silty clay ³)      | 2.56 | -               | 6.4  c)      | 3.11      | 122          | 0.66|
| Sandy loam ³)      | 0.83 | -               | 6.8  c)      | 0.98      | 118          | 0.65|
| Sandy loam ³)      | 1.14 | -               | 5.6  c)      | 2.44      | 215          | 0.67|
| Loamy sand ⁴)      | 2.1  | 5.5             | 6.1  a)      | -         | 58           | 0.914|
| Sandy loam ⁴)      | 1.0  | 6.6             | 7.1  a)      | -         | 71           | 0.864|
| Clay ⁴)            | 1.7  | 7.2             | 7.7  a)      | -         | 47           | 0.865|

Geometric mean (n = 11, soil with pH of 4.2 not included)  
Arithmetic mean (n = 11, soil with pH of 4.2 not included) 0.801

pH dependence d) No

¹) Wimbush, and Cooke, 2006 (study submitted for the renewal on Cypermethrin, Doc. No. 731-003)
²) Hein, 2009 (accepted in the EFSA conclusion on the peer review of the pesticide risk assessment of the active substance beta-cypermethrin. EFSA Journal 2014;12(6):3717; DOI: 10.2903/j.efsa.2014.3717)
³) Gravelle, 1994 (accepted in the EFSA conclusion regarding the peer review of the pesticide risk assessment of the active substance zeta-cypermethrin. EFSA Scientific Report (2008) 196, 1-119; DOI: 10.2903/j.efsa.2009.196r)
⁴) LaMar and Quistad, 2010 (accepted in EFSA conclusion regarding the peer review of the pesticide risk assessment of the active substance gamma-cyhalotrin. EFSA Journal (2014) 12,(2):3560, 93 pp; DOI: 10.2903/j.efsa.2014.3560)
a) Recalculated to pH-H₂O using the equation pH-H₂O = 0.953 pH-CaCl₂ + 0.85 as presented in the Final Report of the FOCUS Ground Water Work Group (Sanco/13144/2010, version 3, 10 October 2014
b) pH measured in water
c) pH assumed to be measured in water, although not explicitly stated in the DAR on zeta-cypermethrin (May 2008)
d) pH dependency was tested with the Kendall’s tau test

### DCVA

| Soil Type          | OC % | Soil pH (CaCl₂) | Soil pH (H₂O) | Kᵢ (mL/g) | Kᵢ,oc (mL/g) | 1/n |
|--------------------|------|-----------------|--------------|-----------|--------------|-----|
| Loamy sand ¹)      | 0.8  | 4.2             | 5.1  b)      | 5.12      | 640          | 1.05|
| Silt loam ¹)       | 2.7  | 6.1             | 7.0  b)      | 1.85      | 69           | 1.00|
| Clay loam ¹)       | 4.8  | 7.5             | 8.0  b)      | 0.61      | 13           | 0.92|
| Loamy sand ²)      | 0.8  | 4.2             | 5.1  b)      | 5.00      | 625          | 1.00|
### Carboxamide

| Soil Type         | OC % | Soil pH | $K_d$ (mL/g) | $K_{oc}$ (mL/g) | $K_f$ (mL/g) | $K_{foc}$ (mL/g) | 1/n |
|-------------------|------|---------|--------------|----------------|--------------|-----------------|-----|
| Silt loam (Study No. 731-001) | 2.7  | 5.6     | 867          | 32102          |              |                 |     |
| Sand (Study No. 731-001)        | 0.8  | 3.8     | 459          | 57376          |              |                 |     |
| Loam (Study No. 731-001)        | 5.2  | 7.4     | 760          | 14609          |              |                 |     |

#### Geometric mean (if not pH dependent) *

| 29966 |

#### Arithmetic mean (if not pH dependent) *

| 1** |

#### pH dependence, *Yes or No*

| No |

---

1) cis-DCVA in Wimbush and Cooke, 2006 (study submitted for the renewal on Cypermethrin, Doc. No. 731-003)
2) trans-DCVA in Wimbush and Cooke, 2006 (study submitted for the renewal on Cypermethrin, Doc. No. 731-003)
3) CPA corresponding to DCVA in Hein, 2009 (accepted in the EFSAs conclusion on the peer review of the pesticide risk assessment of the active substance beta-cypermethrin. EFSA Journal 2014;12(6):3717; DOI: 10.2903/j.efsa.2014.3717)
4) trans-DCVA in Gravelle, 1994 (accepted in the EFSA conclusion regarding the peer review of the pesticide risk assessment of the active substance zeta-cypermethrin. EFSA Scientific Report (2008) 196, 1-119; DOI: 10.2903/j.efsa.2009.196r)

a) Recalculated to pH-H$_2$O using the equation $pH$-H$_2$O = 0.953 pH-CaCl$_2$ + 0.85 as presented in the Final Report of the FOCUS Ground Water Work Group (Sanco/13144/2010, version 3, 10 October 2014
b) pH measured in water
c) pH assumed to be measured in water, although not explicitly stated in the DAR on zeta-cypermethrin (May 2008)
d) pH dependency was tested with the Kendall's tau test

---

### Mobility in soil column leaching active substance (Regulation (EU) N° 283/2013, Annex Part A)
point 7.1.4.1.1 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.2.1)

| Column leaching | Elution (mm): 675 mm  
|                 | Time period (d): 63 days (after 21 days incubation of soil)  
|                 | Leachate: <0.9 % - <1.5 % total residues/radioactivity in leachate (4 soils)  
|                 | >99 % total residues/radioactivity retained in top 5 cm (Study No. 994-07039) |

Mobility in soil column leaching transformation products (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.4.1.2 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.2.1)

| Column leaching | Elution (ml): 545.8 ml water for the silty clay soil, 373.8 ml for the loamy sand soil  
|                 | Time period (d): until all water movement through the column has stopped  
|                 | Leachate:  
|                 | DCVA: 20 % and <4 % AR in leachates from the silty clay soil and the loamy sand soil, respectively (2 soils)  
|                 | 0.2 % DCVA at the 41-43 cm depth in both soils (estimated, not measured)  
|                 | > 92 % DCVA in the 18-38 cm in the silty clay soil  
|                 | > 95 % DCVA in the 0-30.5 cm in the loamy sand soil  
|                 | > 90 % AR in the pooled segment extracts (TLS analysis, 2 soils) were identified as PBAc (Study No. 994-07038) |

Lysimeter / field leaching studies (Regulation (EU) N° 283/2013, Annex Part A, points 7.1.4.2 / 7.1.4.3 and Regulation (EU) N° 284/2013, Annex Part A, points 9.1.2.2 / 9.1.2.3)

| Lysimeter/field leaching studies | Results of the FOCUS groundwater modelling assessment demonstrate that the formulation can be used as proposed in accordance with its supported uses without risk of cypermethrin exceeding the 0.1 μg/L regulatory threshold (vol. 3 CP B8) therefore no field leaching data are provided or are considered necessary. |
Hydrolytic degradation (Regulation (EU) No 283/2013, Annex Part A, point 7.2.1.1)

Hydrolytic degradation of the active substance and metabolites > 10 %

| pH 4: | Cypermethrin stable during 29 days at 50°C  
(Study No. 711-001) |
| Cypermethrin stable during 5 days at 50°C  
(Study No. 711-002) |

| pH 7: | Cypermethrin stable during 29 days at 25°C  
At 50°C: 4.73 d (1\textsuperscript{st} order)  
DCVA: maximum 88 % (15 d)  
PBAAldehyde: maximum 78 % (15 d)  
(Study No. 711-001) |
| At 50°C: DT\textsubscript{50} = 3.5 d and DT\textsubscript{90} = 11.5 d for total cypermethrin  
DT\textsubscript{50} = 2.6-5.5 d (1\textsuperscript{st} order, χ\textsuperscript{2} = 4.4-17.3 %) for the eight isomers, arithmetic mean 3.7 ± 1.0 d  
(Study No. 711-002) |

| pH 9: | 1.9 h at 50 °C (1\textsuperscript{st} order), not tested at other temperatures since half-life is < 2.4 h at 50°C  
DCVA: maximum 94 % (8 h)  
PBAAldehyde: maximum 88 % (8 h)  
(Study No. 711-001) |
| At 20°C: DT\textsubscript{50} = 3.8 and DT\textsubscript{90} = 12.7 d for total cypermethrin  
DT\textsubscript{50} = 3.0-6.0 d (1\textsuperscript{st} order, χ\textsuperscript{2} = 6.6-8.3 %) for the eight isomers, arithmetic mean 4.3 ± 1.4 d  
(Study No. 711-002) |
Aqueous photochemical degradation (Regulation (EU) N° 283/2013, Annex Part A, points 7.2.1.2 / 7.2.1.3)

Photolytic degradation of active substance and metabolites above 10 %

| Substance                  | Artificial sunlight equivalent to natural Florida summer sunlight, natural light, 30°N | Photolysis degradation of active substance and metabolites above 10 % |
|----------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Phenyl-cypermethrin:       | DT$_{50}$ = 8.61 d, DT$_{90}$ = 29.2 d                                                      | DT$_{50}$ = 8.61 d, DT$_{90}$ = 29.2 d                                |
| Cyclcopropyl-cypermethrin: | DT$_{50}$ = 6.72 d, DT$_{90}$ = 23.2 d                                                      | DT$_{50}$ = 6.72 d, DT$_{90}$ = 23.2 d                                |
| DCVA:                      | maximum 18 % AR (7 d)                                                                         | 3-PBA: maximum 15 % AR (7 d)                                         |
| 3-PBA:                    | maximum 15 % AR (7 d)                                                                         | (Study No. 994-07007)                                               |
| Total cypermethrin:       | Artificial sunlight, DT$_{50}$ = 7.8 d, DT$_{90}$ = 25.9 d                                   | Artificial sunlight, DT$_{50}$ = 7.8 d, DT$_{90}$ = 25.9 d          |
| Cis-cypermethrin:         | equivalent to DT$_{50}$ = 7.5 d, DT$_{90}$ = 24.9 d with natural sunlight, 30 to 50°N     | equivalent to DT$_{50}$ = 7.5 d, DT$_{90}$ = 24.9 d with natural     |
| Trans-cypermethrin:       | Artificial sunlight, DT$_{50}$ = 5.3 d, DT$_{90}$ = 17.6 d                                   | sunlight, 30 to 50°N                                               |
| DT$_{50}$ = 5.3 d, DT$_{90}$ = 17.6 d | equivalent to DT$_{50}$ = 5.1 d, DT$_{90}$ = 16.9 d with natural sunlight, 30 to 50°N | |
| DCVA:                      | maximum 18.4 % AR (5 d)                                                                        | 3-PBA: maximum 17.6 % AR (7 d)                                       |
| 3-PBA:                    | maximum 17.6 % AR (7 d)                                                                         | (Study No. 712-001)                                               |
| Total cypermethrin:       | Artificial sunlight, DT$_{50}$ = 5.96 d, DT$_{90}$ = 19.80 d                                 | Artificial sunlight, DT$_{50}$ = 5.96 d, DT$_{90}$ = 19.80 d        |
| Cis-cypermethrin:         | equivalent to DT$_{50}$ = 8.4 d, DT$_{90}$ = 27.8 d with natural sunlight at 30-50°N       | equivalent to DT$_{50}$ = 8.4 d, DT$_{90}$ = 27.8 d with natural     |
| DT$_{50}$ = 4.56-6.35 d, DT$_{90}$ = 15.15-21.11 d with natural sunlight at 30-50°N |                                                  | sunlight at 30-50°N                                               |
| Trans-cypermethrin:       | DT$_{50}$ = 7.79-13.68 d, DT$_{90}$ = 25.86-45.46 d with natural sunlight at 30-50°N       | (Study No. 712-002)                                               |

Quantum yield of direct phototransformation in water at $\lambda > 290$ nm

| Quantum yield of direct phototransformation in water at $\lambda > 290$ nm | No data available |

‘Ready biodegradability’ (Regulation (EU) N° 283/2013, Annex Part A, point 7.2.2.1)

Readily biodegradable (yes/no)

| Readily biodegradable (yes/no) | No |

www.efsa.europa.eu/efsajournal 47 EFSA Journal 2018;16(8):5402
## Aerobic mineralisation in surface water (Regulation (EU) No 283/2013, Annex Part A, point 7.2.2.2 and Regulation (EU) No 284/2013, Annex Part A, point 9.2.1)

| Cypermethrin | pH water phase | pH sed | t. (°C)a) | DT₅₀ /DT₉₀ whole sys. (suspended sediment test) | St. (χ²) | DT₅₀ /DT₉₀ Water (pelagic test) | St. (χ²) | Method of calculation |
|--------------|----------------|--------|----------|-----------------------------------------------|--------|--------------------------------|--------|----------------------|
| **Fresh water** (0.8 µg/L cypermethrin) (Study No. 714-001) | 7.61 | 8.0 | 20 | 1.05/22.8 Pseudo-SFO DT₅₀: 17.3 days | 5.04 | 0.95/1 6.7 Pseudo-SFO DT₅₀: 5 days | 6.91 | DFOP (sediment) FOMC (water) |
| | H₂O | | | Normalised to 12°C | | Normalised to 12°C | | |
| **Fresh water** (4 µg/L cypermethrin) (Study No. 714-001) | 7.61 | 8.0 | 20 | 1.26/31.8 Pseudo-SFO DT₅₀: 20.1 days | 5.95 | 1.02/3 5.6 Pseudo-SFO DT₅₀: 18.5 days | 5.57 | DFOP (both) |
| | H₂O | | | Normalised to x (°C)c) | | Normalised to x (°C)c) | | |

### Metabolite 3-PBA

Max in total system 68 % after 14 days

| System identifier (indicate fresh, estuarine or marine) | pH water phase | pH sed | t. (°C)a) | DT₅₀ /DT₉₀ whole sys. (suspended sediment test) | St. (χ²) | DT₅₀ /DT₉₀ Water (pelagic test) | St. (χ²) | Method of calculation |
|--------------------------------------------------------|----------------|--------|----------|-----------------------------------------------|--------|--------------------------------|--------|----------------------|
| **Fresh water** (0.8 µg/L cypermethrin) (Study No. 714-001) | 7.61 | 8.0 | 20 | 31.8/105. 5 | 5.7 | 27.6/9 1.6 | 19.1 | DFOP (sediment) FOMC (water) |
| | H₂O | | | Normalised to x (°C)c) | | Normalised to x (°C)c) | | |
| **Fresh water** (4 µg/L cypermethrin) (Study No. 714-001) | 7.61 | 8.0 | 20 | 52.4/174. 0 | 4.9 | 26.8/8 9.1 | 16.9 | DFOP (sediment) DFOP* (water) |

### Notes

a) Measured in water
b) Temperature of incubation=temperature that the environmental media was collected or std temperature of 20°C
c) Normalised using a Q10 of 2.58 to the temperature of the environmental media at the point of sampling. (note temp of x should be stated).
Temperature of incubation=temperature that the environmental media was collected or std temperature of 20°C
Normalised using a Q10 of 2.58 to the temperature of the environmental media at the point of sampling. (note temp of x should be stated).
DFOP was considered to be a better fit than FOMC from visual inspection of the graph (Chi2 Err % values very close for FOMC and DFOP models).

| Metabolite DCVA | Max in total system 88.4 % after 60days |
|-----------------|----------------------------------------|
| System identifier (indicate fresh, estuarine or marine) | pH water phase | pH seq a) | t. b)°C | DT50 / DT90 whole sys. (suspended sediment test) | St. (χ²) | DT50 / DT90 Water (pelagic test) | St. (χ²) | Method of calculation |
| Fresh water (0.8 µg/L cypermethrin) (Study No. 714-001) | | | | | | | | |
| Fresh water (4 µg/L cypermethrin) (Study No. 714-001) | | | | | | | | |
Mineralisation and non-extractable residues (for parent dosed experiments)

| System identifier          | pH  | pH  | Mineralisation \(x\%\) after \(n\) d. (end of the study). | Non-extractable residues. max \(x\%\) after \(n\) d (suspended sediment test) | Non-extractable residues. max \(x\%\) after \(n\) d (suspended sediment test) |
|----------------------------|-----|-----|----------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Fresh water (Study No. 714-001) | 7.61 | 8.0 | Maximum 47\% of 0.8 µg/L \(^{14}\)C-cyclopropyl]Cypermethrin in the suspended sediment (60 days) and 76.6\% of 4 µg/L \(^{14}\)C-cyclopropyl]Cypermethrin in the pelagic system (60 days) | Not available | Not available |

Water / sediment study (Regulation (EU) N° 283/2013, Annex Part A, point 7.2.2.3 and Regulation (EU) N° 284/2013, Annex Part A, point 9.2.2)

| Water/sediment system | pH  | pH  | T °C | Persistence DT50/DT90 whole system | Method of calculating \(\chi^2\) | Modelling DT50/DT90 whole system St \(\chi^2\) Method of calculating |
|------------------------|-----|-----|------|------------------------------------|---------------------------------|---------------------------------|
| Calwich Abbey Lake – site A (Study No. 714-002) | 8.22 | 7.4 | 20 | 5.7/53.9 Alpha: 0.966; beta: 5.466 | 4.618 FOMC | 8.5/28.4 12.7 20 SFO |
| Swiss Lake (Study No. 714-002) | 5.85 | 6.1 | 20 | 2.8/45.1 Alpha: 0.679; beta: 1.569 | 4.142 FOMC | 2.8/45.1 Alpha: 0.679; beta: 1.569 4.14 2 FOMC |

| Water/sediment system | pH  | pH  | T °C | DT50/DT90 whole system | ff | St \(\chi^2\) | Method of calculation |
|------------------------|-----|-----|------|------------------------|----|----------|---------------------|
| Calwich Abbey Lake – site A* (Study No. 714-002) | 8.22 | 7.4 | 20 | - | - | - | - |
| Swiss Lake (Study No. 714-002) | 5.85 | 6.1 | 20 | 4.6/15.2 | 0.119 a) | 33.356 | SFO |

| Geometric mean | 4.6 |

a) From parent

* Not acceptable
### Metabolite DCVA

| Water/sediment system | pH water | pH sed | T °C | DT50/DT90 whole system | ff | St (χ²) | Method of calculation |
|-----------------------|---------|--------|------|------------------------|----|---------|----------------------|
| Calwich Abbey Lake – site A (Study No. 714-002) | 8.22 H₂O | 7.4 H₂O | 20 | 124.8/414.7 | 0.916<sup>a</sup> | 3.258 | SFO |
| Swiss Lake (Study No. 714-002) | 5.85 H₂O | 6.1 H₂O | 20 | 69.3/230.3 | 0.924<sup>a</sup> | 14.317 | SFO |

**Geometric mean**

93.0

<sup>a</sup> From parent

### Metabolite Unk1

| Water/sediment system | pH water | pH sed | T °C | DT50/DT90 whole system | ff | St (χ²) | Method of calculation |
|-----------------------|---------|--------|------|------------------------|----|---------|----------------------|
| Calwich Abbey Lake – site A (Study No. 714-002) | 8.22 H₂O | 7.4 H₂O | 20 | 42.3/140.5 | 0.492<sup>b</sup> | 6.994 | SFO |
| Swiss Lake (Study No. 714-002) | 5.85 H₂O | 6.1 H₂O | 20 | >1000/>1000 | 0.213<sup>b</sup> | 19.912 | SFO |

**Geometric mean**

b) From DCVA

### DT<sub>50</sub> for individual cypermethrin isomers behaviour in the water/sediment systems by the SFO model

| Cypermethrin isomer<sup>a</sup> | Calwich Abbey system | Swiss Lake system |
|---------------------------------|----------------------|------------------|
| | Total system | Surface water | Sediment | Total system | Surface water | Sediment |
| DT<sub>50</sub> [days] | | | | | | |
| RRR [1R-(1α (R*),3 α)] | 30.3 | 0.71 | 35.7 | 9.5 | 0.63 | 12.2 |
| SRR [1R-(1α (S*),3 α)] | 31.7 | 0.77 | 32.7 | 8.1 | 0.70 | 9.6 |
| RSS [1S-(1α (R*),3 α)] | 51.8 | 0.75 | 56.2 | 7.4 | 0.69 | 9.1 |
| SSS [1S-(1α (S*),3 α)] | 25.4 | 0.73 | 30.7 | 5.8 | 0.59 | 7.0 |
| RRS [1R-(1α (R*),3 β)] | 6.4 | 0.59 | 12.2 | 2.9 | 0.55 | 3.6 |
| SSR [1S-(1α (S*),3 β)] | 1.2 | 0.33 | 3.3 | 0.6 | 0.35 | 2.1 |
| SRS [1R-(1α (S*),3 β)] | 5.4 | 0.69 | 6.1 | 2.2 | 0.78 | 2.6 |
| RSR [1S-(1α (R*),3 β)] | 3.1 | 0.43 | 8.6 | 1.8 | 0.49 | 2.1 |
DegT50 values for individual isomers were within a range of 0.6 to 51.8 days considering both total systems. Differences among the degradation rates of individual isomers in the total systems were mostly attributable to the degradation behaviour in the sediment. Thus, the DT50 values for the sediments varied between 2.1 and 56.2 days (both sediments), whereas DisT50 values for water phases accounted for 0.33 to 0.78 days. Modelling endpoints for cypermethrin were based on the isomer degradation behaviour. Thus, a total system geometric mean value from the isomer with the highest geometric mean DT50 of 19.6 days was chosen (isomer RSS with the geometric mean obtained from the values 51.8 and 7.4 days in total system).

### Mineralization and non-extractable residues (from parent dosed experiment)

| Water/sediment system | pH water | pH sed | Mineralisation x % after n d. (end of the study) | Non-extractable residues in sed. max x % after non-extractable residues in sed. max x % after n d (end of the study) |
|-----------------------|----------|--------|------------------------------------------------|------------------------------------------------|
|                       |          |        |                                               |                                                |

*C*-atoms configuration was provided in the following order: Cα, C1, C3

DegT50 values for individual isomers were within a range of 0.6 to 51.8 days considering both total systems. Differences among the degradation rates of individual isomers in the total systems were mostly attributable to the degradation behaviour in the sediment. Thus, the DT50 values for the sediments varied between 2.1 and 56.2 days (both sediments), whereas DisT50 values for water phases accounted for 0.33 to 0.78 days. Modelling endpoints for cypermethrin were based on the isomer degradation behaviour. Thus, a total system geometric mean value from the isomer with the highest geometric mean DT50 of 19.6 days was chosen (isomer RSS with the geometric mean obtained from the values 51.8 and 7.4 days in total system).
Fate and behaviour in air (Regulation (EU) N° 283/2013, Annex Part A, point 7.3.1)

Direct photolysis in air
Not studied

Photochemical oxidative degradation in air
DT50 of 5.99 hours derived by the Atkinson model (AOPWIN version 4.11). OH (12 h) concentration assumed = 1.5 \times 10^6 \text{ OH/cm}^3

Volatilisation
from plant surfaces (BBA guideline): not submitted, not required
The vapour pressure of 6.78 \times 10^{-6} \text{ Pa} at 20 °C of Cypermethrin is below the trigger for volatilisation of 1 \times 10^{-5} \text{ Pa} for plants

from soil surfaces (BBA guideline): no volatilisation
The vapour pressure of 6.78 \times 10^{-6} \text{ Pa} at 20 °C of Cypermethrin is below the trigger for volatilisation of 1 \times 10^{-4} \text{ Pa} for soil.

Metabolites
Not submitted

Residues requiring further assessment (Regulation (EU) N° 283/2013, Annex Part A, point 7.4.1)

Environmental occurring residues requiring further assessment by other disciplines (toxicology and ecotoxicology) and or requiring consideration for groundwater exposure
Soil: Cypermethrin, DCVA, 3-PBA, Carboxamide
Surface water: Cypermethrin, DCVA, 3-PBA, Carboxamide*, Unk1
Sediment: Cypermethrin, DCVA, 3-PBA, Carboxamide*, Unk1
Ground water: Cypermethrin, DCVA, 3-PBA, Carboxamide*
Air: Cypermethrin (by default)

* Possible occurrence in water and sediment via runoff and drainage

Definition of the residue for monitoring (Regulation (EU) N° 283/2013, Annex Part A, point 7.4.2)

See section 5, Ecotoxicology
Soil: cypermethrin (by default)
Surface water: cypermethrin (by default)
Sediment: cypermethrin (by default)
Groundwater: cypermethrin (by default)
Air: cypermethrin (by default)
## Monitoring data, if available (Regulation (EU) N° 283/2013, Annex Part A, point 7.5)

| Location and Type of Study | Description |
|----------------------------|-------------|
| **Soil** (indicate location and type of study) | One monitoring dataset in sediment in the “Comments on the cypermethrin dossier for EQS derivation, prepared by The Netherlands in the context of the prioritization process for the selection of new substances under the WFD (dated September 2010)” : 4th data set: Sediment (http://www.priority.substances.wfd.oieau.fr/)<br>The data set shows that from 2078 samples, none contained measurable concentrations of cypermethrin. |
| **Surface water** (indicate location and type of study) | 3 monitoring datasets in surface water in the “Comments on the cypermethrin dossier for EQS derivation, prepared by The Netherlands in the context of the prioritization process for the selection of new substances under the WFD (dated September 2010)” :<br>1st data set: Freshwater (http://www.priority.substances.wfd.oieau.fr/)<br>7818 measurements, 2993 analyses >LOQ<br>No phase separation<br>2nd data set: Freshwater (http://www.priority.substances.wfd.oieau.fr/)<br>Contains analytical information from samples, where a phase separation has been conducted before analysis (21665 samples). Of all samples, only 2 showed concentrations >LOQ, cypermethrin was not measurable/detectable in 99.99% of analysed surface water samples.<br>3rd data set: Freshwater (http://www.bestrijdingsmiddelenatlas.nl/)<br>Data set from The Netherlands, cypermethrin was never present in water samples at analytically measurable levels. |
| **Ground water** (indicate location and type of study) | No data available |
| **Air** (indicate location and type of study) | No data available |

## PEC soil (Regulation (EU) N° 284/2013, Annex Part A, points 9.1.3 / 9.3.1)

| Parameter | Value |
|-----------|-------|
| Parent | DT$_{50}$ (d): 271 days (worst-case isomer-based) |
| Method of calculation | Kinetics: SFO<br>Field or Lab: representative worst case from lab study (Yeomans and Kelly, 2015, Vol. 3 CA – B.8) |
### Application data

| Crops: cereals (winter and summer), oil seed rape (winter and summer), potatoes (whole season) |
|-----------------------------------------------|
| Depth of soil layer: 5 cm |
| Soil bulk density: 1.5 g/cm³ |

### % plant interception:

| Crop                     | Period of application | Growth stage (BBCH) | Number of applications (Interval) | Application rate per treatment [kg a.s./ha] | Intercept [ % ] |
|--------------------------|-----------------------|---------------------|----------------------------------|--------------------------------------------|----------------|
| Cereals winter           | See BBCH              | 10-31 31-69         | 1                                | 0.025                                      | 0 80           |
| Cereals summer           | See BBCH              | 10-31 31-69         | 1                                | 0.025                                      | 0 80           |
| Oil seed rape winter     | 1) Autumn + spring    | 0-30 + 31-35        | 2 (90)                           | 0.025 0.025                               | 0 + 40 0 + 80 |
|                          | 2) Autumn + spring    | 0-30 + 50-55        |                                  | 0.025                                      | 0 + 80        |
|                          | 3) Autumn + summer    | 0-30 + 70-77        |                                  | 0.025                                      | 0 + 80        |
| Oil seed rape summer     | See BBCH              | 0-30 50-55 or 70-77 | 1                                | 0.025                                      | 0 80           |
| Potato whole season      | Whole season          | 0-09 10-19 40-59    | 1                                | 0.050                                      | 0 15 85       |

Number of applications: 1 for cereals, oil seed rape in summer and potatoes, 2 for oil seed rape in winter

Interval (d): not applicable for cereals, oil seed rape in summer and potatoes, 90 days for oil seed rape in winter

Application rate(s): 0.025 kg a.s./ha for cereals, oil seed rape (2 applications for OSR in winter), 0.050 kg a.s./ha for potatoes

### Summary of the initial and plateau PEC_{soil} for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA

| Cypermethrin | Carboxamide | DCVA | 3-PBA | Interception |
|--------------|-------------|------|-------|--------------|
| Plateau concentration [mg/kg] |

| Crop                     | Cypermethrin | Carboxamide | DCVA | 3-PBA | Interception |
|--------------------------|--------------|-------------|------|-------|--------------|
| Cereals winter           | 0.0346 0.0069 | 0.0068 0.0014 | -    | -     | 0 80         |
| Cereals summer           | 0.0346 0.0069 | 0.0068 0.0014 | -    | -     | 0 80         |
| Oil seed rape winter     | 0.0358       | 0.0069      | -    | -     | 0 40         |
| Oil seed rape winter     | 0.0350       | 0.0068      | -    | -     | 0 80         |
| Oil seed rape summer     | 0.0346       | 0.0068      | -    | -     | 0 80         |
### Maximal annual total soil concentration/Initial concentration [mg/kg]

|                       | Cereals winter | OIL seed rape winter | OIL seed rape summer | Potato whole season |
|-----------------------|----------------|----------------------|----------------------|--------------------|
|                       | Initial conc. | TWA                  | Initial conc.        | TWA                |
| Cereals winter        | 0.0333         | 0.0065               | 0.0111               | 0.0017             |
|                       | 0.0067         | 0.0013               | 0.0022               | 0.0003             |
| Cereals summer        | 0.0333         | 0.0065               | 0.0111               | 0.0017             |
|                       | 0.0067         | 0.0013               | 0.0022               | 0.0003             |
| OIL seed rape winter  | 0.0333         | 0.0111               | 0.0017               | 0.0017             |
|                       | 0.0065         | 0.0111               | 0.0017               | 0.0017             |
| OIL seed rape summer  | 0.0333         | 0.0065               | 0.0111               | 0.0017             |
|                       | 0.0067         | 0.0013               | 0.0022               | 0.0003             |
| Potato whole season   | 0.0667         | 0.0132               | 0.0221               | 0.0035             |
|                       | 0.0067         | 0.0112               | 0.0188               | 0.0029             |
|                       | 0.0100         | 0.0016               | 0.0033               | 0.0005             |

### Carboxamide

- **Method of calculation:**
  - Molecular weight relative to the parent: 1.04
  - $DT_{50}$ (d): 2.9 days
  - Maximum occurrence: 18.9% (at day 9, Swales, 2003)
  - Kinetics: FOMC (not normalised worst case, alpha:0.2921 beta 0.3001)
  - Field or Lab: lab study (Cashmore and Lewis, 2014)

- **Application data:**
  - Application rate assumed: 4.9 g/ha for cereals and OSR, 9.9 g/ha for potatoes

### Annual and accumulation PEC\textsubscript{soil} values for carboxamide for cereals summer/winter and OSR summer application BBCH 10-31 using worst case $DT_{50}$ (FOMC) (no interception)

| PEC\textsubscript{soil} | Cereals summer/winter and OSR summer BBCH 10-31 |
|--------------------------|-----------------------------------------------|
|                          | Single                                      | Accumulation$^a$ |
|                          | Actual | TWA   | Actual | TWA   |
| Initial concentration    | 0.0065 | -     | 0.0068$^a$ | -     |
| 1 [d]                    | 0.0043 | 0.0054 | 0.0045 | 0.0056 |
| 2 [d]                    | 0.0036 | 0.0047 | 0.0038 | 0.0049 |
| 4 [d]                    | 0.0030 | 0.0040 | 0.0032 | 0.0042 |
| 7 [d]                    | 0.0026 | 0.0035 | 0.0028 | 0.0037 |
| 14[d]                    | 0.0021 | 0.0029 | 0.0023 | 0.0031 |
| 21[d]                    | 0.0019 | 0.0026 | 0.0021 | 0.0028 |
### Cereals summer/winter and OSR summer BBCH 10-31

| PEC_{soil} | Single | Accumulation$^a$ |
|------------|--------|------------------|
| 28 [d]     | 0.0017 | 0.0024           |
| 42[d]      | 0.0015 | 0.0021           |
| 50 [d]     | 0.0015 | 0.0020           |
| 100 [d]    | 0.0012 | 0.0017           |
| Final background concentration | - | - |

$^a$ Cypermethrin plateau PEC_{soil} after 10 years

### Cereals summer/winter and OSR summer BBCH 31-69

| PEC_{soil} | Single | Accumulation$^a$ |
|------------|--------|------------------|
| Actual TWA |        | Actual TWA      |
| Initial concentration | 0.0013 | - |
| 1 [d]      | 0.0009 | 0.0011           |
| 2 [d]      | 0.0007 | 0.0009           |
| 4 [d]      | 0.0006 | 0.0008           |
| 7 [d]      | 0.0005 | 0.0007           |
| 14[d]      | 0.0004 | 0.0006           |
| 21[d]      | 0.0004 | 0.0005           |
| 28 [d]     | 0.0003 | 0.0005           |
| 42[d]      | 0.0003 | 0.0004           |
| 50 [d]     | 0.0003 | 0.0004           |
| 100 [d]    | 0.0002 | 0.0003           |
| Final background concentration | - | <0.0001 |

$^a$ Cypermethrin plateau PEC_{soil} after 10 years

### OSR winter BBCH 0-30

| PEC_{soil} | Single | Accumulation$^a$ |
|------------|--------|------------------|
| Actual TWA |        | Actual TWA      |
| Initial concentration | 0.0065 | - |
| 1 [d]      | 0.0043 | 0.0054           |
| 2 [d]      | 0.0036 | 0.0047           |
| 4 [d]      | 0.0030 | 0.0040           |
| 7 [d]      | 0.0026 | 0.0035           |

$^a$ Plateau concentration

### Annual and accumulation PEC_{soil} values for carboxamide for cereals summer/winter and OSR summer application BBCH 31-69 using worst case DT_{50} (FOMC) (interception 80%)

### Annual and accumulation PEC_{soil} values for carboxamide for OSR winter applications BBCH 0-30 using worst case DT_{50} (FOMC) (interception 0%/40%)
### OSR winter BBCH 0-30

| PEC_{soil} | Single | Accumulation$^a$ |
|------------|--------|------------------|
| 14[d]      | 0.0021 | 0.0025           |
| 21[d]      | 0.0019 | 0.0023           |
| 28[d]      | 0.0017 | 0.0021           |
| 42[d]      | 0.0015 | 0.0019           |
| 50[d]      | 0.0015 | 0.0019           |
| 100[d]     | 0.0027 | 0.0031           |
| Final background concentration | -     | 0.0004           |

$^a$ Cypermethrin plateau PEC_{soil} after 10 years

### Annual and accumulation PEC_{soil} values for carboxamide for OSR winter applications BBCH 50-55 and BBCH 70-77 using worst case DT\textsubscript{50} (FOMC) (interception 0%/80%)

| PEC_{soil} | OSR winter BBCH 50-55 and 70-77 |
|------------|----------------------------------|
|            | Single                          | Accumulation$^a$ |
|            | Actual | TWA | Actual | TWA |
| Initial concentration | 0.0065 | - | 0.0068$^b$ | - |
| 1[d]       | 0.0043 | 0.0054 | 0.0045 | 0.0057 |
| 2[d]       | 0.0036 | 0.0047 | 0.0039 | 0.0049 |
| 4[d]       | 0.0030 | 0.0040 | 0.0033 | 0.0043 |
| 7[d]       | 0.0026 | 0.0035 | 0.0029 | 0.0037 |
| 14[d]      | 0.0021 | 0.0029 | 0.0024 | 0.0032 |
| 21[d]      | 0.0019 | 0.0026 | 0.0022 | 0.0029 |
| 28[d]      | 0.0017 | 0.0024 | 0.0020 | 0.0027 |
| 42[d]      | 0.0015 | 0.0021 | 0.0018 | 0.0024 |
| 50[d]      | 0.0015 | 0.0020 | 0.0017 | 0.0023 |
| 100[d]     | 0.0017 | 0.0017 | 0.0020 | 0.0020 |
| Final background concentration | -     | - | 0.0003 | - |

$^a$ Cypermethrin plateau PEC_{soil} after 10 years

$^b$ Plateau concentration

### Annual and accumulation PEC_{soil} values for carboxamide for Potatoes BBCH 00-09 using worst case DT\textsubscript{50} (FOMC) (no interception)

| PEC_{soil} | Potatoes BBCH 00-09 |
|------------|---------------------|
|            | Single              | Accumulation$^a$ |
|            | Actual | TWA | Actual | TWA |
| Initial concentration | 0.0132 | - | 0.0137$^b$ | - |
| 1[d]       | 0.0086 | 0.0109 | 0.0091 | 0.0114 |
| 2[d]       | 0.0073 | 0.0094 | 0.0078 | 0.0099 |
### Annual and accumulation PEC\textsubscript{soil} values for carboxamide for Potatoes BBCH 40-59 using worst case DT\textsubscript{50} (FOMC) (interception 85%)

| PEC\textsubscript{soil} | Potatoes BBCH 40-59 |
|--------------------------|----------------------|
|                          | Single | Accumulation\(^{a)}\) |
|                          | Actual | TWA | Actual | TWA |
| Initial concentration    | 0.0020 | -   | 0.0021\(^{b)}\) | -   |
| 1 [d]                    | 0.0013 | 0.0016 | 0.0014 | 0.0017 |

\(^{a)}\) Cypermethrin plateau PEC\textsubscript{soil} after 10 years  
\(^{b)}\) Plateau concentration
### PEC\textsubscript{soil} for Potatoes BBCH 40-59

|       | Single | Accumulation\textsuperscript{a} |
|-------|--------|---------------------------------|
| 2 [d] | 0.0011 | 0.0014                          |
| 4 [d] | 0.0009 | 0.0012                          |
| 7 [d] | 0.0008 | 0.0010                          |
| 14[d] | 0.0006 | 0.0009                          |
| 21[d] | 0.0006 | 0.0008                          |
| 28[d] | 0.0005 | 0.0007                          |
| 42[d] | 0.0005 | 0.0006                          |
| 50 [d]| 0.0004 | 0.0005                          |
| 100 [d]| -     | 0.0004                          |

\textsuperscript{a} Cypermethrin plateau PEC\textsubscript{soil} after 10 years

### DCVA

**Method of calculation**

- Molecular weight relative to the parent: 0.50
- DT\textsubscript{50} (d): 23.0 days (the correct value is 18.1 d)
- Maximum occurrence: 66.2% (max at day 14, aerobic soil degradation study by Yeomans & Kelly (2015) CA 7.1.2.1.1/05)
- Kinetics: SFO
- Field or Lab: lab study (Not normalised worst case (worst case from consolidated data Cyper RAR, EFSA conclusion Beta-cypermethrin and EFSA conclusion Zeta-cypermethrin n=14))

**Application data**

Application rate assumed: 8.3 g/ha for cereals and OSR, 16.6 g/ha for potatoes

### Annual and accumulation PEC\textsubscript{soil} values for DCVA for cereals summer/winter and OSR summer application BBCH 10-31 using worst case DT\textsubscript{50} (SFO) (no interception)

|       | Cereals summer/winter and OSR summer BBCH 10-31 |
|-------|-----------------------------------------------|
|       | Single | Accumulation\textsuperscript{a} |
|       | Actual | TWA | Actual | TWA |
| Initial concentration | 0.0111 | - | 0.0111\textsuperscript{b} | - |
| 1 [d]  | 0.0107 | 0.0109 | 0.0107 | 0.0109 |
| 2 [d]  | 0.0103 | 0.0107 | 0.0103 | 0.0107 |
| 4 [d]  | 0.0095 | 0.0103 | 0.0095 | 0.0103 |
| 7 [d]  | 0.0085 | 0.0097 | 0.0085 | 0.0097 |
| 14[d]  | 0.0065 | 0.0086 | 0.0065 | 0.0086 |
| 21[d]  | 0.0050 | 0.0076 | 0.0050 | 0.0076 |
| 28[d]  | 0.0038 | 0.0068 | 0.0038 | 0.0068 |
| 42[d]  | 0.0022 | 0.0055 | 0.0022 | 0.0055 |
| 50 [d]| 0.0016 | 0.0049 | 0.0016 | 0.0049 |
### PEC_{soil} values for DCVA for cereals summer/winter and OSR summer application BBCH 31-69 using worst case DT_{50} (SFO) (interception 80\%)

| PEC_{soil} | Cereals summer/winter and OSR summer BBCH 31-69 | Accumulation$^{a}$ |
|------------|-----------------------------------------------|------------------|
| 100 [d]    | 0.0002                                         | 0.0028           |
| Final background concentration | -                                              | <0.0001          |

$^{a}$ Cypermethrin plateau PEC_{soil} after 10 years

### PEC_{soil} values for DCVA for cereals summer/winter and OSR summer application BBCH 31-69 using worst case DT_{50} (SFO) (interception 0%/80\%)

| PEC_{soil} | Cereals summer/winter and OSR summer BBCH 31-69 | Accumulation$^{a}$ |
|------------|-----------------------------------------------|------------------|
| Initial concentration | 0.0022                                         | 0.0022$^{b}$ |
| 1 [d]      | 0.0021                                         | 0.0021           |
| 2 [d]      | 0.0021                                         | 0.0021           |
| 4 [d]      | 0.0019                                         | 0.0019           |
| 7 [d]      | 0.0017                                         | 0.0017           |
| 14 [d]     | 0.0013                                         | 0.0013           |
| 21 [d]     | 0.0010                                         | 0.0010           |
| 28 [d]     | 0.0008                                         | 0.0008           |
| 42 [d]     | 0.0004                                         | 0.0004           |
| 50 [d]     | 0.0003                                         | 0.0003           |
| 100 [d]    | <0.0001                                        | <0.0001          |
| Final background concentration | -                                              | <0.0001          |

$^{a}$ Cypermethrin plateau PEC_{soil} after 10 years

### Annual and accumulation PEC_{soil} values for DCVA for OSR winter applications BBCH 50-55 and BBCH 70-77 using worst case DT_{50} (SFO) (interception 0%/80\%)

| PEC_{soil} | OSR winter BBCH 50-55 and 70-77 | Accumulation$^{a}$ |
|------------|---------------------------------|------------------|
| Initial concentration | 0.0111                          | 0.0111$^{b}$ |
| 1 [d]      | 0.0107                          | 0.0107           |
| 2 [d]      | 0.0103                          | 0.0103           |
| 4 [d]      | 0.0095                          | 0.0095           |
| 7 [d]      | 0.0085                          | 0.0085           |
| 14 [d]     | 0.0065                          | 0.0065           |
| 21 [d]     | 0.0050                          | 0.0050           |
| 28 [d]     | 0.0038                          | 0.0038           |
### PECsoil

#### OSR winter BBCH 50-55 and 70-77

|          | Single | Accumulation\(^a\) |
|----------|--------|--------------------|
| 42 [d]   | 0.0022 | 0.0055             |
| 50 [d]   | 0.0016 | 0.0049             |
| 100 [d]  | 0.0018 | 0.0030             |
| Final background concentration | - | <0.0001 |

\(^a\) Cypermethrin plateau PECsoil after 10 years

---

#### Annual and accumulation PECsoil values for DCVA for Potatoes applications BBCH 00-09 using worst case DT\(_{50}\) (SFO) (no interception)

|          | PECsoil Potatoes BBCH 00-09 |          |          |
|----------|-----------------------------|----------|
|          | Initial concentration | Single | TWA | Accumulation\(^a\) | Single | TWA |
|          | Actual | TWA       | Actual | TWA |
| 1 [d]    | 0.0221 | -        | 0.0221 | - |
| 2 [d]    | 0.0213 | 0.0217   | 0.0213 | 0.0217 |
| 4 [d]    | 0.0205 | 0.0213   | 0.0205 | 0.0213 |
| 7 [d]    | 0.0190 | 0.0205   | 0.0190 | 0.0205 |
| 14 [d]   | 0.0169 | 0.0194   | 0.0169 | 0.0194 |
| 21 [d]   | 0.0129 | 0.0171   | 0.0129 | 0.0171 |
| 28 [d]   | 0.0099 | 0.0152   | 0.0099 | 0.0152 |
| 42 [d]   | 0.0076 | 0.0136   | 0.0076 | 0.0136 |
| 50 [d]   | 0.0044 | 0.0110   | 0.0044 | 0.0110 |
| 100 [d]  | 0.0033 | 0.0099   | 0.0033 | 0.0099 |
| Final background concentration | - | - | <0.0001 | - |

\(^a\) Cypermethrin plateau PECsoil after 10 years

---

#### Annual and accumulation PECsoil values for DCVA for Potatoes BBCH 10-19 using worst case DT\(_{50}\) (SFO) (interception 15%)

|          | PECsoil Potatoes BBCH 10-19 |          |          |
|----------|-----------------------------|----------|
|          | Initial concentration | Single | TWA | Accumulation\(^a\) | Single | TWA |
|          | Actual | TWA       | Actual | TWA |
| 1 [d]    | 0.0188 | -        | 0.0188 | - |
| 2 [d]    | 0.0181 | 0.0185   | 0.0181 | 0.0185 |
| 4 [d]    | 0.0174 | 0.0181   | 0.0174 | 0.0181 |
| 7 [d]    | 0.0161 | 0.0174   | 0.0161 | 0.0174 |
| 14 [d]   | 0.0144 | 0.0165   | 0.0144 | 0.0165 |
| 21 [d]   | 0.0110 | 0.0146   | 0.0110 | 0.0146 |
### Annual and accumulation PEC\(_{\text{soil}}\) values for DCVA for Potatoes BBCH 40-59 using worst case DT\(_{50}\) (SFO) (interception 85%)

| PEC\(_{\text{soil}}\) | Potatoes BBCH 40-59 |
|----------------------|---------------------|
|                      | Single | Accumulation\(^a\) |
|                      | TWA    | Actual | TWA    |
| Initial concentration| 0.0033 | -      | 0.0033 \(^b\) | -      |
| 1 [d]                | 0.0032 | 0.0033 | 0.0032 | 0.0033 |
| 2 [d]                | 0.0031 | 0.0032 | 0.0031 | 0.0032 |
| 4 [d]                | 0.0028 | 0.0031 | 0.0028 | 0.0031 |
| 7 [d]                | 0.0025 | 0.0029 | 0.0025 | 0.0029 |
| 14[d]                | 0.0019 | 0.0026 | 0.0019 | 0.0026 |
| 21[d]                | 0.0015 | 0.0023 | 0.0015 | 0.0023 |
| 28 [d]               | 0.0011 | 0.0020 | 0.0011 | 0.0020 |
| 42[d]                | 0.0007 | 0.0017 | 0.0007 | 0.0017 |
| 50 [d]               | 0.0005 | 0.0015 | 0.0005 | 0.0015 |
| 100 [d]              | 0.0001 | 0.0008 | 0.0001 | 0.0008 |
| Final background concentration | -      | -      | <0.0001 | -      |

\(^a\) Cypermethrin plateau PEC\(_{\text{soil}}\) after 10 years  
\(^b\) Plateau concentration

---

### 3-PBA

**Method of calculation**

- Molecular weight relative to the parent: 0.51
- DT\(_{50}\) (d): 9.9 days (the correct value is 5.0 d)
- Maximum occurrence: 10.2% (max at day 7, aerobic soil degradation study by Brice & Cooke (2006) CA 7.1.1.1/12)
- Kinetics: SFO
- Field or Lab: Not normalised worst case (worst case form consolidated data Cyper RAR, EFSA concl Beta-cyper and EFSA conclusion Zeta-cyper n=7)

**Application data**

Application rate assumed: 1.3 g/ha for cereals and OSR,
### Annual and accumulation PEC\textsubscript{soil} values for 3-PBA for cereals summer/winter and OSR summer application BBCH 10-31 using worst case DT\textsubscript{50} (7d) (no interception)

| PEC\textsubscript{soil} | Cereals summer/winter and OSR summer BBCH 10-31 | 
|--------------------------|--------------------------------------------------|
|                          | Single                                           | Accumulation\(^a\) |
|                          | Actual | TWA | Actual | TWA | 
| Initial concentration | 0.0017 | - | 0.0017\(^b\) | - |
| 1 [d] | 0.0016 | 0.0017 | 0.0016 | 0.0017 |
| 2 [d] | 0.0014 | 0.0016 | 0.0014 | 0.0016 |
| 4 [d] | 0.0012 | 0.0014 | 0.0012 | 0.0014 |
| 7 [d] | 0.0009 | 0.0013 | 0.0009 | 0.0013 |
| 14[d] | 0.0004 | 0.0009 | 0.0004 | 0.0009 |
| 21[d] | 0.0002 | 0.0007 | 0.0002 | 0.0007 |
| 28[d] | 0.0001 | 0.0006 | 0.0001 | 0.0006 |
| 42[d] | <0.0001 | 0.0004 | <0.0001 | 0.0004 |
| 50[d] | <0.0001 | 0.0003 | <0.0001 | 0.0003 |
| 100[d] | <0.0001 | 0.0002 | <0.0001 | 0.0002 |
| Final background concentration | - | - | <0.0001 | - |

\(^a\) Cypermethrin plateau PEC\textsubscript{soil} after 10 years
\(^b\) Plateau concentration

### Annual and accumulation PEC\textsubscript{soil} values for 3-PBA for cereals summer/winter and OSR summer application BBCH 31-69 using worst case DT\textsubscript{50} (7d) (interception 80%)

| PEC\textsubscript{soil} | Cereals summer/winter and OSR summer BBCH 31-69 | 
|--------------------------|--------------------------------------------------|
|                          | Single                                           | Accumulation\(^a\) |
|                          | Actual | TWA | Actual | TWA | 
| Initial concentration | 0.0003 | - | 0.0003\(^b\) | - |
| 1 [d] | 0.0003 | 0.0003 | 0.0003 | 0.0003 |
| 2 [d] | 0.0003 | 0.0003 | 0.0003 | 0.0003 |
| 4 [d] | 0.0002 | 0.0003 | 0.0002 | 0.0003 |
| 7 [d] | 0.0002 | 0.0003 | 0.0002 | 0.0003 |
| 14[d] | 0.0001 | 0.0002 | 0.0001 | 0.0002 |
| 21[d] | <0.0001 | 0.0001 | <0.0001 | 0.0001 |
| 28[d] | <0.0001 | 0.0001 | <0.0001 | 0.0001 |
| 42[d] | <0.0001 | 0.0001 | <0.0001 | 0.0001 |
| 50[d] | <0.0001 | 0.0001 | <0.0001 | 0.0001 |
| 100[d] | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Final background concentration | - | - | <0.0001 | - |

\(^a\) Cypermethrin plateau PEC\textsubscript{soil} after 10 years
\(^b\) Plateau concentration

---

2.6 g/ha for potatoes
### Annual and accumulation PEC<sub>soil</sub> values for 3-PBA for OSR winter applications BBCH 0-30 using worst case DT<sub>50</sub> (7d) (interception 0%/40%)

| PEC<sub>soil</sub> | OSR winter BBCH 0-30 |  |  |
|------------------|----------------------|--|--|
|                  | **Actual**          | **TWA** | **Actual** | **TWA** |
| Initial concentration | 0.0017        | -         | 0.0017<sup>b</sup> | -         |
| 1 [d]            | 0.0016              | 0.0017    | 0.0016      | 0.0017    |
| 2 [d]            | 0.0014              | 0.0016    | 0.0014      | 0.0016    |
| 4 [d]            | 0.0012              | 0.0014    | 0.0012      | 0.0014    |
| 7 [d]            | 0.0009              | 0.0013    | 0.0009      | 0.0013    |
| 14[d]            | 0.0004              | 0.0009    | 0.0004      | 0.0009    |
| 21[d]            | 0.0002              | 0.0007    | 0.0002      | 0.0007    |
| 28[d]            | 0.0001              | 0.0006    | 0.0001      | 0.0006    |
| 42[d]            | <0.0001             | 0.0004    | <0.0001     | 0.0004    |
| 50 [d]           | <0.0001             | 0.0003    | <0.0001     | 0.0003    |
| 100 [d]          | 0.0005              | 0.0002    | 0.0005      | 0.0002    |
| Final background concentration | -         | -         | <0.0001     | -         |

<sup>a</sup> Cypermethrin plateau PEC<sub>soil</sub> after 10 years
<sup>b</sup> Plateau concentration

### Annual and accumulation PEC<sub>soil</sub> values for 3-PBA for OSR winter applications BBCH 50-55 and BBCH 70-77 using worst case DT<sub>50</sub> (7d) (interception 0%/80%)

| PEC<sub>soil</sub> | OSR winter BBCH 50-55 and 70-77 |  |  |
|------------------|----------------------|--|--|
|                  | **Actual**          | **TWA** | **Actual** | **TWA** |
| Initial concentration | 0.0017        | -         | 0.0017<sup>b</sup> | -         |
| 1 [d]            | 0.0016              | 0.0017    | 0.0016      | 0.0017    |
| 2 [d]            | 0.0014              | 0.0016    | 0.0014      | 0.0016    |
| 4 [d]            | 0.0012              | 0.0014    | 0.0012      | 0.0014    |
| 7 [d]            | 0.0009              | 0.0013    | 0.0009      | 0.0013    |
| 14[d]            | 0.0004              | 0.0009    | 0.0004      | 0.0009    |
| 21[d]            | 0.0002              | 0.0007    | 0.0002      | 0.0007    |
| 28[d]            | 0.0001              | 0.0006    | 0.0001      | 0.0006    |
| 42[d]            | <0.0001             | 0.0004    | <0.0001     | 0.0004    |
| 50 [d]           | <0.0001             | 0.0003    | <0.0001     | 0.0003    |
| 100 [d]          | <0.0001             | 0.0002    | <0.0001     | 0.0002    |
| Final background concentration | -         | -         | <0.0001     | -         |

<sup>a</sup> Cypermethrin plateau PEC<sub>soil</sub> after 10 years
<sup>b</sup> Plateau concentration
### Annual and accumulation PEC<sub>soil</sub> values for PBA for Potatoes applications BBCH 00-09 using worst case DT<sub>50</sub> (7d) (no interception)

| PEC<sub>soil</sub> | Potatoes BBCH 00-09 |  |
|-------------------|---------------------|--|
|                   | Single              | Accumulation<sup>a)</sup> |
|                   | Actual | TWA | Actual | TWA |
| Initial concentration | 0.0035 | - | 0.0035<sup>b)</sup> | - |
| 1 [d] | 0.0031 | 0.0033 | 0.0031 | 0.0033 |
| 2 [d] | 0.0028 | 0.0031 | 0.0028 | 0.0031 |
| 4 [d] | 0.0023 | 0.0029 | 0.0023 | 0.0029 |
| 7 [d] | 0.0017 | 0.0025 | 0.0017 | 0.0025 |
| 14[d] | 0.0009 | 0.0019 | 0.0009 | 0.0019 |
| 21[d] | 0.0004 | 0.0015 | 0.0004 | 0.0015 |
| 28 [d] | 0.0002 | 0.0012 | 0.0002 | 0.0012 |
| 42[d] | 0.0001 | 0.0008 | 0.0001 | 0.0008 |
| 50 [d] | <0.0001 | 0.0007 | <0.0001 | 0.0007 |
| 100 [d] | <0.0001 | 0.0004 | <0.0001 | 0.0004 |
| Final background concentration | - | - | <0.0001 | - |

<sup>a</sup>Cypermethrin plateau PEC<sub>soil</sub> after 10 years  
<sup>b</sup>Plateau concentration

### Annual and accumulation PEC<sub>soil</sub> values for 3-PBA for Potatoes BBCH 10-19 using worst case DT<sub>50</sub> (7d) (interception 15%)

| PEC<sub>soil</sub> | Potatoes BBCH 10-19 |  |
|-------------------|---------------------|--|
|                   | Single              | Accumulation<sup>a)</sup> |
|                   | Actual | TWA | Actual | TWA |
| Initial concentration | 0.0029 | - | 0.0029<sup>b)</sup> | - |
| 1 [d] | 0.0027 | 0.0028 | 0.0027 | 0.0028 |
| 2 [d] | 0.0024 | 0.0027 | 0.0024 | 0.0027 |
| 4 [d] | 0.0020 | 0.0024 | 0.0020 | 0.0024 |
| 7 [d] | 0.0015 | 0.0021 | 0.0015 | 0.0021 |
| 14[d] | 0.0007 | 0.0016 | 0.0007 | 0.0016 |
| 21[d] | 0.0004 | 0.0012 | 0.0004 | 0.0012 |
| 28 [d] | 0.0002 | 0.0010 | 0.0002 | 0.0010 |
| 42[d] | <0.0001 | 0.0007 | <0.0001 | 0.0007 |
| 50 [d] | <0.0001 | 0.0006 | <0.0001 | 0.0006 |
| 100 [d] | <0.0001 | 0.0003 | <0.0001 | 0.0003 |
| Final background concentration | - | - | <0.0001 | - |

<sup>a</sup>Cypermethrin plateau PEC<sub>soil</sub> after 10 years  
<sup>b</sup>Plateau concentration

### Annual and accumulation PEC<sub>soil</sub> values for 3-PBA for Potatoes BBCH 40-59 using worst case DT<sub>50</sub> (7d) (interception 85%)

| PEC<sub>soil</sub> | Potatoes BBCH 40-59 |  |
|-------------------|---------------------|--|
|                   | Single              | Accumulation<sup>a)</sup> |
|                   | Actual | TWA | Actual | TWA |
| Initial concentration | 0.0029 | - | 0.0029<sup>b)</sup> | - |
| 1 [d] | 0.0027 | 0.0028 | 0.0027 | 0.0028 |
| 2 [d] | 0.0024 | 0.0027 | 0.0024 | 0.0027 |
| 4 [d] | 0.0020 | 0.0024 | 0.0020 | 0.0024 |
| 7 [d] | 0.0015 | 0.0021 | 0.0015 | 0.0021 |
| 14[d] | 0.0007 | 0.0016 | 0.0007 | 0.0016 |
| 21[d] | 0.0004 | 0.0012 | 0.0004 | 0.0012 |
| 28 [d] | 0.0002 | 0.0010 | 0.0002 | 0.0010 |
| 42[d] | <0.0001 | 0.0007 | <0.0001 | 0.0007 |
| 50 [d] | <0.0001 | 0.0006 | <0.0001 | 0.0006 |
| 100 [d] | <0.0001 | 0.0003 | <0.0001 | 0.0003 |
| Final background concentration | - | - | <0.0001 | - |

<sup>a</sup>Cypermethrin plateau PEC<sub>soil</sub> after 10 years  
<sup>b</sup>Plateau concentration
| PEC_{soil} | Potatoes BBCH 40-59 |
|------------|---------------------|
|            | Single              | Accumulation<sup>a</sup> |
|            | Actual | TWA | Actual | TWA |
| Initial concentration | 0.0005 | - | 0.0005<sup>b</sup> | - |
| 1 [d]      | 0.0005 | 0.0005 | 0.0005 | 0.0005 |
| 2 [d]      | 0.0004 | 0.0005 | 0.0004 | 0.0005 |
| 4 [d]      | 0.0003 | 0.0004 | 0.0003 | 0.0004 |
| 7 [d]      | 0.0003 | 0.0004 | 0.0003 | 0.0004 |
| 14 [d]     | 0.0001 | 0.0003 | 0.0001 | 0.0003 |
| 21 [d]     | 0.0001 | 0.0002 | 0.0001 | 0.0002 |
| 28 [d]     | <0.0001 | 0.0002 | <0.0001 | 0.0002 |
| 42 [d]     | <0.0001 | 0.0001 | <0.0001 | 0.0001 |
| 50 [d]     | <0.0001 | 0.0001 | <0.0001 | 0.0001 |
| 100 [d]    | <0.0001 | 0.0001 | <0.0001 | 0.0001 |
| Final background concentration | - | - | <0.0001 | - |

<sup>a</sup> Cypermethrin plateau PEC_{soil} after 10 years
<sup>b</sup> Plateau concentration
PEC ground water (Regulation (EU) N° 284/2013, Annex Part A, point 9.2.4.1)

Method of calculation and type of study (e.g. modelling, field leaching, lysimeter)

For FOCUSgw modelling, values used –
Modelling using FOCUS model(s), with appropriate FOCUSgw scenarios, according to FOCUS guidance.

Model(s) used: FOCUS PELMO 5.5.3, FOCUS PEARL 4.4.4, FOCUS MACRO 5.5.4
Crops: cereals (summer and winter), oil seed rape (summer and winter), potatoes (whole season)
Crop uptake factor: /

Cypermethrin:
Water solubility (mg/L): < 29.2 x 10^{-3} at 20°C
Vapour pressure: 6.78 x 10^{-6} Pa at 20°C
Geometric mean parent DT_{50}: 11.6 and 33.0 days (isomer-specific shortest and longest geomean DT_{50}, Yeomans and Kelly, 2015)

K_{OC}: parent, geometric mean 194,425 mL/g, 1/n = 1 (default value).

Carboxamide:
Water solubility (mg/L): < 29.2 x 10^{-3} at 20°C (value of parent)
Vapour pressure: 6.78 x 10^{-6} Pa at 20°C (value of parent)
Geometric mean DT_{50,lab} 35.0 d (n=3, pseudo-single first order from FOMC, Cashmore and Lewis, 2014).

K_{OC}: geometric mean 29966 (geomean, n = 3), 1/n = 1 (default value).
Precursor: cypermethrin
Formation fraction: 0.66

DCVA:
Water solubility (mg/L): 1000 at 20°C (default)
Vapour pressure: 0 Pa at 20°C (default)
Geometric mean DT_{50,lab} 5.5 d (geometric mean based on total DCVA for 11 soils, consolidated data from EFSA conclusion Zeta cypermethrin included).

K_{OC}: geometric mean 18.75 (geometric mean based on total DCVA for 10 soils, consolidated data from EFSA conclusion Zeta cypermethrin included), 1/n = 0.783 (arithmetic mean, n = 10)
Precursor: cypermethrin
Formation fraction: 0.60

3-PBA:
Water solubility (mg/L): 1000 at 20°C (default)
Vapour pressure: 0 Pa at 20°C (default)
Application rate

Gross application rate: 0.025 g/ha for cereals and OSR (1-2 applications), 0.050 g/ha for potatoes

Time of application (absolute or relative application dates): please refer to table B.8.2.4-2 to B.8.2.4-4 in Vol. 3 CP B.8

* Only relevant after implementation of the published EFSA guidance.

### Representative GAP for Cypermethrin 500 EC

| Crop               | Period of application | Growth stage (BBCH) | Number of applications (Interval) | Application rate per treatment [kg a.s./ha] | Interception [%] | Effective soil exposure rate [kg a.s./ha] |
|--------------------|-----------------------|---------------------|----------------------------------|-------------------------------------------|------------------|------------------------------------------|
| Cereals winter     | See BBCH              | 10-31               | 31-69                            | 1 0.025                                   | 0 80             | 0.025 0.005                              |
| Cereals summer     | See BBCH              | 10-31               | 31-69                            | 1 0.025                                   | 0 80             | 0.025 0.005                              |
| Oil seed rape winter | 1) Autumn + spring | 1) 0-30 + 31-35 and 50-55 or 70-77 | 2 (90)                           | 0.025 0.025                               | 0 + 40           | 0 + 80 1 0.025 + 0.015 2 0.025 + 0.005 |
| Oil seed rape spring |                      | 0-30                | 50-55 or 70-77                   | 1 0.025                                   | 0 80             | 0.025 0.005                              |
| Potato whole season | Whole season          | 0-09                | 40-59                            | 1 0.050                                   | 0 85             | 0.050 0.008                              |

**PECgw** at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA, based on a DT50 of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for cereals in summer and winter application with BBCH 10-31

| Crop               | Scenario            | Cypermethrin [µg/L] | Carboxamide [µg/L] | DCVA [µg/L] | 3-PBA [µg/L] |
|--------------------|---------------------|---------------------|---------------------|-------------|--------------|
| Winter cereals     | Châteaudun (C)      | <0.001              | <0.001              | <0.001      | <0.001       |
|                    | Hamburg (H)         | <0.001              | <0.001              | <0.001      | <0.001       |
|                    | Jokioinen (J)       | <0.001              | <0.001              | <0.001      | <0.001       |
|                    | Kremsmünster (K)    | <0.001              | <0.001              | <0.001      | <0.001       |
### PEC$_{gw}$ at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA, based on a DT$_{50}$ of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for cereals in summer and winter application with BBCH 10-31

| Crop | Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|------|-------------------|--------------|-------------|-------|-------|
|      |                   | [µg/L]       |             |       |       |
| **Summer cereals** |                   |              |             |       |       |
|      | Châteaudun (C)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Hamburg (H)       | <0.001       | <0.001      | <0.001| <0.001|
|      | Jokioinen (J)     | <0.001       | <0.001      | <0.001| <0.001|
|      | Kremsmünster (K)  | <0.001       | <0.001      | <0.001| <0.001|
|      | Okehampton (N)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Porto (O)         | <0.001       | <0.001      | <0.001| <0.001|
| **Winter cereals** |                   |              |             |       |       |
|      | Châteaudun (C)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Hamburg (H)       | <0.001       | <0.001      | <0.001| <0.001|
|      | Jokioinen (J)     | <0.001       | <0.001      | <0.001| <0.001|
|      | Kremsmünster (K)  | <0.001       | <0.001      | <0.001| <0.001|
|      | Okehampton (N)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Piacenza (P)      | <0.001       | <0.001      | <0.001| <0.001|
|      | Porto (O)         | <0.001       | <0.001      | <0.001| <0.001|
|      | Sevilla (S)       | <0.001       | <0.001      | <0.001| <0.001|
|      | Thiva (T)         | <0.001       | <0.001      | <0.001| <0.001|

PEC$_{gw}$ at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT$_{50}$ of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for cereals in summer and winter application with BBCH 10-31

| Crop | Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|------|-------------------|--------------|-------------|-------|-------|
|      |                   | [µg/L]       |             |       |       |
| **Summer cereals** |                   |              |             |       |       |
|      | Châteaudun (C)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Hamburg (H)       | <0.001       | <0.001      | <0.001| <0.001|
|      | Jokioinen (J)     | <0.001       | <0.001      | <0.001| <0.001|
|      | Kremsmünster (K)  | <0.001       | <0.001      | <0.001| <0.001|
|      | Okehampton (N)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Porto (O)         | <0.001       | <0.001      | <0.001| <0.001|
| **Winter cereals** |                   |              |             |       |       |
|      | Châteaudun (C)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Hamburg (H)       | <0.001       | <0.001      | <0.001| <0.001|
|      | Jokioinen (J)     | <0.001       | <0.001      | <0.001| <0.001|
|      | Kremsmünster (K)  | <0.001       | <0.001      | <0.001| <0.001|
|      | Okehampton (N)    | <0.001       | <0.001      | <0.001| <0.001|
|      | Piacenza (P)      | <0.001       | <0.001      | <0.001| <0.001|
|      | Porto (O)         | <0.001       | <0.001      | <0.001| <0.001|
|      | Sevilla (S)       | <0.001       | <0.001      | <0.001| <0.001|
|      | Thiva (T)         | <0.001       | <0.001      | <0.001| <0.001|
PECgw at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT50 of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for cereals in summer and winter application with BBCH 10-31

| Crop | Scenario | Cypermethrin | Carboxamide | DCVA | 3-PBA |
|------|----------|--------------|-------------|------|-------|
|      |          | [µg/L]       |             |      |       |
| Winter cereals | Châteaudun (C) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Hamburg (H) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Jokioinen (J) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Kremsmünster (K) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Okehampton (N) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Piacenza (P) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Porto (O) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Sevilla (S) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Thiva (T) | <0.001 | <0.001 | <0.001 | <0.001 |
| Summer cereals | Châteaudun (C) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Hamburg (H) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Jokioinen (J) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Kremsmünster (K) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Okehampton (N) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Porto (O) | <0.001 | <0.001 | <0.001 | <0.001 |

PECgw at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT50 of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for cereals in summer and winter application with BBCH 31-69

| Crop | Scenario | Cypermethrin | Carboxamide | DCVA | 3-PBA |
|------|----------|--------------|-------------|------|-------|
|      |          | [µg/L]       |             |      |       |
| Winter cereals | Châteaudun (C) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Hamburg (H) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Jokioinen (J) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Kremsmünster (K) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Okehampton (N) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Piacenza (P) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Porto (O) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Sevilla (S) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Thiva (T) | <0.001 | <0.001 | <0.001 | <0.001 |
| Summer cereals | Châteaudun (C) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Hamburg (H) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Jokioinen (J) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Kremsmünster (K) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Okehampton (N) | <0.001 | <0.001 | <0.001 | <0.001 |
|      | Porto (O) | <0.001 | <0.001 | <0.001 | <0.001 |

PECgw at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT50 of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for cereals in summer and winter application with BBCH 31-69

| Crop | Scenario | Cypermethrin | Carboxamide | DCVA | 3-PBA |
|------|----------|--------------|-------------|------|-------|
| Winter | Châteaudun (C) | <0.001 | <0.001 | <0.001 | <0.001 |
PEC\textsubscript{gw} at 1 m soil depth in µg/L (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for cereals in summer and winter application with BBCH 31-69

| Crop                     | Scenario        | Cypermethrin [µg/L] | Carboxamide [µg/L] | DCVA [µg/L] | 3-PBA [µg/L] |
|--------------------------|-----------------|---------------------|--------------------|-------------|--------------|
| Winter cereals           | Châteaudun (C)  | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Hamburg (H)     | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Jokioinen (J)   | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Kremsmünster (K)| <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Okehampton (N)  | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Piacenza (P)    | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Porto (O)       | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Sevilla (S)     | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Thiva (T)       | <0.001              | <0.001             | <0.001      | <0.001       |
| Summer cereals           | Châteaudun (C)  | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Hamburg (H)     | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Jokioinen (J)   | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Kremsmünster (K)| <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Okehampton (N)  | <0.001              | <0.001             | <0.001      | <0.001       |

PEC\textsubscript{gw} at 1 m soil depth in µg/L (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for cereals in summer and winter application with BBCH 31-69

| Crop                     | Scenario        | Cypermethrin [µg/L] | Carboxamide [µg/L] | DCVA [µg/L] | 3-PBA [µg/L] |
|--------------------------|-----------------|---------------------|--------------------|-------------|--------------|
| Winter cereals           | Châteaudun (C)  | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Hamburg (H)     | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Jokioinen (J)   | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Kremsmünster (K)| <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Okehampton (N)  | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Piacenza (P)    | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Porto (O)       | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Sevilla (S)     | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Thiva (T)       | <0.001              | <0.001             | <0.001      | <0.001       |
| Summer cereals           | Châteaudun (C)  | <0.001              | <0.001             | <0.001      | <0.001       |
|                          | Hamburg (H)     | <0.001              | <0.001             | <0.001      | <0.001       |
PEC\textsubscript{gw} at 1 m soil depth in µg/L (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for winter oilseed rape in autumn/spring application at BBCH 00-30 and 31-35 and autumn/summer application at BBCH 00-30 and 70-77, covering 50-55

| Crop                  | Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|-----------------------|-------------------|--------------|-------------|-------|-------|
|                       |                   | [µg/L]       |             |       |       |
| Châteaudun (C)        | Autumn and spring | <0.001       | <0.001      | <0.001| <0.001|
|                       | application       |              |             |       |       |
| Hamburg (H)           | <0.001            |              |             |       |       |
| Kremsmünster (K)      | <0.001            |              |             | <0.001| <0.001|
| Okehampton (N)        | <0.001            |              |             | <0.001| <0.001|
| Piacenza (P)          | <0.001            |              |             | <0.001| <0.001|
| Porto (O)             | <0.001            |              |             | <0.001| <0.001|
|                       | Autumn and summer | <0.001       | <0.001      | <0.001| <0.001|
|                       | application       |              |             |       |       |
|                       |                   | <0.001       | <0.001      | <0.001| <0.001|

PEC\textsubscript{gw} at 1 m soil depth in µg/L (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for winter oilseed rape in autumn/spring application at BBCH 00-30 and 31-35 and autumn/summer application at BBCH 00-30 and 70-77, covering 50-55

| Crop                  | Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|-----------------------|-------------------|--------------|-------------|-------|-------|
|                       |                   | [µg/L]       |             |       |       |
| Châteaudun (C)        | Autumn and spring | <0.001       | <0.001      | <0.001| <0.001|
|                       | application       |              |             |       |       |
| Hamburg (H)           | <0.001            |              |             | <0.001| <0.001|
| Kremsmünster (K)      | <0.001            |              |             | <0.001| <0.001|
| Okehampton (N)        | <0.001            |              |             | <0.001| <0.001|
| Piacenza (P)          | <0.001            |              |             | <0.001| <0.001|
| Porto (O)             | <0.001            |              |             | <0.001| <0.001|
|                       | Autumn and summer | <0.001       | <0.001      | <0.001| <0.001|
|                       | application       |              |             |       |       |
|                       |                   | <0.001       | <0.001      | <0.001| <0.001|

PEC\textsubscript{gw} at 1 m soil depth in µg/L (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for winter oilseed rape in autumn/spring application at BBCH 00-30 and 31-35 and autumn/summer application at BBCH 00-30 and 70-77, covering 50-55

| Crop                  | Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|-----------------------|-------------------|--------------|-------------|-------|-------|
|                       |                   | [µg/L]       |             |       |       |
| Châteaudun (C)        | Autumn and spring | <0.001       | <0.001      | <0.001| <0.001|
|                       | application       |              |             |       |       |
| Hamburg (H)           | <0.001            |              |             | <0.001| <0.001|
| Kremsmünster (K)      | <0.001            |              |             | <0.001| <0.001|
| Okehampton (N)        | <0.001            |              |             | <0.001| <0.001|
| Piacenza (P)          | <0.001            |              |             | <0.001| <0.001|
| Porto (O)             | <0.001            |              |             | <0.001| <0.001|
|                       | Autumn and summer | <0.001       | <0.001      | <0.001| <0.001|
|                       | application       |              |             |       |       |
|                       |                   | <0.001       | <0.001      | <0.001| <0.001|

www.efsa.europa.eu/efsajournal 73 EFSA Journal 2018;16(8):5402
PEC<sub>gw</sub> at 1 m soil depth in µg/L (80<sup>th</sup> percentile) for cypermethrin and its metabolites carboxamid, DCVA and 3-PBA based on a DT<sub>50</sub> of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for winter oilseed rape in autumn/spring application at BBCH 00-30 and 31-35 and autumn/summer application at BBCH 00-30 and 70-77, covering 50-55

| Crop Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|------------------------|--------------|-------------|-------|-------|
| Châteaudun (C)         | <0.001       | <0.001      | <0.001| <0.001|
| Hamburg (H)            | <0.001       | <0.001      | <0.001| <0.001|
| Kremsmünster (K)       | <0.001       | <0.001      | <0.001| <0.001|
| Okehampton (N)         | <0.001       | <0.001      | <0.001| <0.001|
| Piacenza (P)           | <0.001       | <0.001      | <0.001| <0.001|
| Porto (O)              | <0.001       | <0.001      | <0.001| <0.001|

PEC<sub>gw</sub> at 1 m soil depth in µg/L (80<sup>th</sup> percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT<sub>50</sub> of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for summer oilseed rape, spring application at BBCH 00-30, covering 31-35 and summer application at BBCH 70-77, covering 50-55

| Crop Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|------------------------|--------------|-------------|-------|-------|
| Châteaudun (C)         | <0.001       | <0.001      | <0.001| <0.001|
| Hamburg (H)            | <0.001       | <0.001      | <0.001| <0.001|
| Kremsmünster (K)       | <0.001       | <0.001      | <0.001| <0.001|
| Okehampton (N)         | <0.001       | <0.001      | <0.001| <0.001|
| Piacenza (P)           | <0.001       | <0.001      | <0.001| <0.001|
| Porto (O)              | <0.001       | <0.001      | <0.001| <0.001|

PEC<sub>gw</sub> at 1 m soil depth in µg/L (80<sup>th</sup> percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT<sub>50</sub> of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for summer oilseed rape, spring application at BBCH 00-30, covering 31-35 and summer application at BBCH 70-77, covering 50-55

| Crop Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|------------------------|--------------|-------------|-------|-------|
| Jokioinen (J)          | <0.001       | <0.001      | <0.001| <0.001|
| Okehampton (N)         | <0.001       | <0.001      | <0.001| <0.001|
| Porto (O)              | <0.001       | <0.001      | <0.001| <0.001|

PEC<sub>gw</sub> at 1 m soil depth in µg/L (80<sup>th</sup> percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT<sub>50</sub> of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for summer oilseed rape, spring application at BBCH 00-30, covering 31-35 and summer application at BBCH 70-77, covering 50-55

| Crop Scenario          | Cypermethrin | Carboxamide | DCVA  | 3-PBA |
|------------------------|--------------|-------------|-------|-------|
| Jokioinen (J)          | <0.001       | <0.001      | <0.001| <0.001|
| Okehampton (N)         | <0.001       | <0.001      | <0.001| <0.001|
| Porto (O)              | <0.001       | <0.001      | <0.001| <0.001|
PECgw at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT50 of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for summer oilseed rape, spring application at BBCH 00-30, covering 31-35 and summer application at BBCH 70-77, covering 50-55

| Crop          | Scenario       | Cypermethrin | Carboxamide | DCVA   | 3-PBA   |
|---------------|----------------|--------------|-------------|--------|---------|
|               |                | [µg/L]       |             |        |         |
| Spring        | Jokioinen (J)  | <0.001       | <0.001      | <0.001 | <0.001  |
| application   | Okehampton (N) | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Porto (O)      | <0.001       | <0.001      | <0.001 | <0.001  |
| Summer        | Jokioinen (J)  | <0.001       | <0.001      | <0.001 | <0.001  |
| application   | Okehampton (N) | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Porto (O)      | <0.001       | <0.001      | <0.001 | <0.001  |

PECgw at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT50 of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for summer oilseed rape, spring application at BBCH 00-30, covering 31-35 and summer application at BBCH 70-77, covering 50-55

| Crop          | Scenario       | Cypermethrin | Carboxamide | DCVA   | 3-PBA   |
|---------------|----------------|--------------|-------------|--------|---------|
|               |                | [µg/L]       |             |        |         |
| Spring        | Jokioinen (J)  | <0.001       | <0.001      | <0.001 | <0.001  |
| application   | Okehampton (N) | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Porto (O)      | <0.001       | <0.001      | <0.001 | <0.001  |
| Summer        | Jokioinen (J)  | <0.001       | <0.001      | <0.001 | <0.001  |
| application   | Okehampton (N) | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Porto (O)      | <0.001       | <0.001      | <0.001 | <0.001  |

PECgw at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT50 of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for potatoes at BBCH 00-09 and BBCH 40-59

| Crop          | Scenario       | Cypermethrin | Carboxamide | DCVA   | 3-PBA   |
|---------------|----------------|--------------|-------------|--------|---------|
|               |                | [µg/L]       |             |        |         |
| Potatoes      | Châteaudun (C) | <0.001       | <0.001      | <0.001 | <0.001  |
| BBCH 00-09    | Hamburg (H)    | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Jokioinen (J)  | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Kremsmünster (K)| <0.001     | <0.001      | <0.001 | <0.001  |
|               | Okehampton (N) | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Piacenza (P)   | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Porto (O)      | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Sevilla (S)    | <0.001       | <0.001      | <0.001 | <0.001  |
|               | Thiva (T)      | <0.001       | <0.001      | <0.001 | <0.001  |
| Potatoes      | Châteaudun (C) | <0.001       | <0.001      | <0.001 | <0.001  |
| BBCH          | Hamburg (H)    | <0.001       | <0.001      | <0.001 | <0.001  |
PEC_{gw} at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT_{50} of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PELMO 5.5.3 for potatoes at BBCH 00-09 and BBCH 40-59

| Crop | Scenario | Cypermethrin [µg/L] | Carboxamide | DCVA | 3-PBA |
|------|----------|---------------------|-------------|------|-------|
| Potatoes BBCH 00-09 | Châteaudun (C) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Hamburg (H) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Jokioinen (J) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Kremsmünster (K) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Okehampton (N) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Piacenza (P) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Porto (O) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Sevilla (S) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Thiva (T) | <0.001 | <0.001 | <0.001 | <0.001 |

PEC_{gw} at 1 m soil depth in µg/L (80th percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT_{50} of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for for potatoes at BBCH 00-09 and BBCH 40-59

| Crop | Scenario | Cypermethrin [µg/L] | Carboxamide | DCVA | 3-PBA |
|------|----------|---------------------|-------------|------|-------|
| Potatoes BBCH 40-59 | Châteaudun (C) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Hamburg (H) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Jokioinen (J) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Kremsmünster (K) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Okehampton (N) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Piacenza (P) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Porto (O) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Sevilla (S) | <0.001 | <0.001 | <0.001 | <0.001 |
| | Thiva (T) | <0.001 | <0.001 | <0.001 | <0.001 |
PEC\textsubscript{gw} at 1 m soil depth in \(\mu g/L\) (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting, calculated with the leaching simulation model FOCUS PEARL 4.4.4 for potatoes at BBCH 00-09 and BBCH 40-59

| Crop          | Scenario            | Cypermethrin | Carboxamide | DCVA | 3-PBA |
|---------------|---------------------|--------------|-------------|------|-------|
| Potatoes      | BBCH 00-09          |              |             |      |       |
|               | Châteaudun (C)      | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Hamburg (H)         | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Jokioinen (J)       | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Kremsmünster (K)    | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Okehampton (N)      | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Piacenza (P)        | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Porto (O)           | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Sevilla (S)         | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Thiva (T)           | <0.001       | <0.001      | <0.001 | <0.001 |
| Potatoes      | BBCH 40-59          |              |             |      |       |
|               | Châteaudun (C)      | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Hamburg (H)         | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Jokioinen (J)       | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Kremsmünster (K)    | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Okehampton (N)      | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Piacenza (P)        | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Porto (O)           | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Sevilla (S)         | <0.001       | <0.001      | <0.001 | <0.001 |
|               | Thiva (T)           | <0.001       | <0.001      | <0.001 | <0.001 |

PEC\textsubscript{gw} in \(\mu g/L\) (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 33.0 days and using the requested Koc and 1/n values discussed in the Expert meeting calculated for scenario Châteaudun (with MACRO 5.5.4)

| Scenario     | g/ha | BBCH Application day | Cypermethrin | Carboxamide | DCVA | 3-PBA |
|--------------|------|----------------------|--------------|-------------|------|-------|
| Winter Cereals | 25   | 10-31 299            | <0.001       | <0.001      | <0.001 | <0.001 |
|              | 5    | 31-69 168            | <0.001       | <0.001      | <0.001 | <0.001 |
| Spring Cereals | 25   | 10-31 69             | <0.001       | <0.001      | <0.001 | <0.001 |
|              | 5    | 31-69 173            | <0.001       | <0.001      | <0.001 | <0.001 |
| Winter oil seed rape | 25   | 0-30 + 305           | <0.001       | <0.001      | <0.001 | <0.001 |
|              | 15   | 31-35 30             |              |             |      |       |
|              | 25   | 0-30 + 305           | <0.001       | <0.001      | <0.001 | <0.001 |
|              | 5    | 50-55 or 70-77 142   |              |             |      |       |
| Potato       | 50   | 0-09 120             | <0.001       | <0.001      | <0.001 | <0.001 |
|              | 8    | 40-59 241            | <0.001       | <0.001      | <0.001 | <0.001 |

PEC\textsubscript{gw} in \(\mu g/L\) (80\textsuperscript{th} percentile) for cypermethrin and its metabolites carboxamide, DCVA and 3-PBA based on a DT\textsubscript{50} of the parent compound of 11.6 days and using the requested Koc and 1/n values discussed in the Expert meeting calculated for scenario Châteaudun (with MACRO 5.5.4)
### Table: Scenario, g/ha, BBCH, Application day, Cypermethrin, Carbofuran, DCVA, 3-PBA

| Scenario                | g/ha | BBCH   | Application day | Cypermethrin | Carbofuran | DCVA | 3-PBA |
|-------------------------|------|--------|-----------------|--------------|------------|------|-------|
| Winter Cereals          | 25   | 10-31  | 299             | <0.001       | <0.001     | <0.001| <0.001|
|                         | 5    | 31-69  | 168             | <0.001       | <0.001     | <0.001| <0.001|
| Spring Cereals          | 25   | 10-31  | 69              | <0.001       | <0.001     | <0.001| <0.001|
|                         | 5    | 31-69  | 173             | <0.001       | <0.001     | <0.001| <0.001|
| Winter oil seed rape    | 25   | 0-30 + | 305             | <0.001       | <0.001     | <0.001| <0.001|
|                         | 15   | 31-35  | 30              |              |            |      |       |
|                         | 25   | 0-30 + | 305             | <0.001       | <0.001     | <0.001| <0.001|
|                         | 5    | 50-55 or 70-77 | 142    |              |            |      |       |
| Potato                  | 50   | 0-09   | 120             | <0.001       | <0.001     | <0.001| <0.001|
|                         | 8    | 40-59  | 241             | <0.001       | <0.001     | <0.001| <0.001|

### PEC(gw) From lysimeter / field studies

| Parent | 1st year | 2nd year | 3rd year |
|--------|----------|----------|----------|
| Annual average (µg/L) | No data available |          |          |

| Metabolite X | 1st year | 2nd year | 3rd year |
|--------------|----------|----------|----------|
| Annual average (µg/L) | No data available |          |          |

### PEC surface water and PEC sediment (Regulation (EU) N° 284/2013, Annex Part A, points 9.2.5 / 9.3.1)

- **Parent**
  - Parameters used in FOCUSsw step 1 and 2
  - Version control no. of FOCUS calculator: FOCUS 3.2
  - Molecular weight cypermethrin (g/mol): 416.3
  - K<sub>OC</sub>/K<sub>OM</sub> (mL/g): 194.425/112.775
  - DT<sub>30</sub> soil (d): 33.0 d (Lab study, Doc. No. 721-003 (n=4), mean worst-case isomer-based geometric mean (SFO kinetics: 3 soils, DFOP kinetics, k2: 1 soil))
  - DT<sub>30</sub> water/sediment system (d): 19.6 d (worst-case isomer based geomean from sediment water study)
  - DT<sub>30</sub> water (d): step 2: 19.6 (worst-case isomer based geomean of whole system)
  - DT<sub>30</sub> sediment (d): step 2: 19.6 (worst-case isomer based geomean of whole system)
  - Crop interception (%):
    - summer/winter cereals: 25, 50, 70%
    -summer/winter oil seed rape: 40, 70, 75%
Parameters used in FOCUSsw step 3 (if performed)

| Version control no.’s of FOCUS software: FOCUS SWASH v5.1.0, FOCUS PRZM v1.5.2, FOCUS MACRO, FOCUS TOXSWA v3.3.4, SWAN 4.0.1 |
| Water solubility (mg/L): 29.2 x 10^{-3} at 20°C, < 3.5163 x 10^{-2} at 25°C |
| Vapour pressure: 6.78 x 10^{-6} Pa at 20°C |
| Kom/Koc (mL/g): 194.425/112.775 |
| 1/n: 1 (default value) |
| Q10=2.58, Walker equation coefficient 0.7 |
| Crop uptake factor: 0 (FOCUS recommendation for non-systemic compounds) |

Application rate

| Crop and growth stage: |
| - winter cereals |
| BBCH 10-31, 31-77, 31-75 and 31-69 |
| Number of applications: 1 |
| Interval (d): / |
| Application rate(s): 0.025 kg a.s./ha |

| Application window: |
| Winter cereals, BBCH 10+: |
| 1 x 0.025 kg/ha |
| 25.09 - 25.10. |
| 25.10 - 24.11. |
| 21.11 - 21.12. |
| 22.09 - 22.10. |
| 10.11 - 10.12. |
| 30.11 - 30.12. |
| 12.11 - 12.12. |
| 01.12 - 31.12. |
| 10.11 - 10.12. |

| Winter cereals, BBCH 31+: |
| 1 x 0.025 kg/ha |
| 23.05 - 22.06. |
| 04.05 - 03.06. |
| 12.05 - 11.06. |
| 18.05 - 17.06. |
| 11.04 - 11.05. |
| 12.06 - 12.07. |
| 27.04 - 27.05. |
| 28.03 - 27.04. |
| 11.04 - 11.05. |

| Winter cereals, BBCH 69-77: |
| 1 x 0.025 kg/ha |
| 29.06 - 29.07. |
| 10.06 - 10.07. |
| 18.06 - 18.07. |
| 24.06 - 24.07. |
| 18.05 - 17.06. |
| 19.07 - 18.08. |
| 03.06 - 03.07. |
| 04.05 - 03.06. |
| 18.05 - 17.06. |

| - spring cereals |
| BBCH 10-31, 31-77, 31-75 and 31-69 |
| Number of applications: 1 |
| Interval (d): / |
Application rate(s): 0.025 kg a.s./ha
Application window:

| Spring cereals, BBCH 10+: | 0.025 kg/ha |
|---------------------------|-------------|
| 1 x 0.025 kg/ha           |             |
| BBCH 10+                  |             |
| 05.05. - 04.06.           |             |
| 01.04. - 01.05.           |             |
| 26.04. - 26.05.           |             |
| 15.03. - 14.04.           |             |
| 15.03. - 14.04.           |             |

| Spring cereals, BBCH 31+: | 0.025 kg/ha |
|---------------------------|-------------|
| 1 x 0.025 kg/ha           |             |
| BBCH 31+                  |             |
| 27.05. - 26.06.           |             |
| 12.05. - 11.06.           |             |
| 18.05. - 17.06.           |             |
| 27.03. - 26.04.           |             |
| 11.04. - 11.05.           |             |

| Spring cereals, BBCH 69-77: | 0.025 kg/ha |
|-----------------------------|-------------|
| 1 x 0.025 kg/ha             |             |
| BBCH 69-77                  |             |
| 08.07. - 07.08.             |             |
| 23.06. - 23.07.             |             |
| 29.06. - 29.07.             |             |
| 08.05. - 07.06.             |             |
| 23.05. - 22.06.             |             |

- winter oil seed rape

BBCH 09-30 and 31-35, 09-30 and 50-59, 09-30 and 70-77

Number of applications: 2
Interval (d): 90
Application rate(s): 0.025 kg a.s./ha
Application window:

| Winter oilseed rape, BBCH 9+: | 0.025 kg/ha |
|-------------------------------|-------------|
| 2 x 0.025 kg/ha               |             |
| (multiple application)        |             |
| BBCH 9+                       |             |
| 01.11. – 01.03.               |             |
| 01.11. – 01.03.               |             |
| 01.11. – 01.03.               |             |
| 01.11. – 01.03.               |             |
| 01.11. – 01.03.               |             |

| Winter oilseed rape, BBCH 9+: | 0.025 kg/ha |
|-------------------------------|-------------|
| 1 x 0.025 kg/ha               |             |
| (single application)          |             |
| BBCH 9+                       |             |
| 01.11. – 01.12.               |             |
| 01.11. – 01.12.               |             |
| 01.11. – 01.12.               |             |
| 01.11. – 01.12.               |             |
| 01.11. – 01.12.               |             |

| Winter oilseed rape, BBCH 31+: | 0.025 kg/ha |
|-------------------------------|-------------|
| 2 x 0.025 kg/ha               |             |
| (single application was calculated representing worst case scenario) | |
| BBCH 31+                      |             |
| 06.04. – 06.05.               |             |
| 11.04. – 11.05.               |             |
| 01.05. – 31.05.               |             |
| 27.03. – 26.04.               |             |
| 01.04. – 01.05.               |             |
| 25.02. – 27.03.               |             |

| Winter oilseed rape, BBCH 50-77: | 0.025 kg/ha |
|-------------------------------|-------------|
| 2 x 0.025 kg/ha               |             |
| (single application was calculated representing worst case scenario) | |
| BBCH 50-77                    |             |
| 20.04. – 27.05.               |             |
| 25.04. – 01.06.               |             |
| 15.04. – 21.06.               |             |
| 10.04. – 17.05.               |             |
| 15.04. – 22.05.               |             |
| 11.03. – 17.04.               |             |

- spring oil seed rape

BBCH 09-30, 31-35, 50-59 and 70-77
Number of applications: 1
Interval (d): /
Application rate(s): 0.025 kg a.s./ha

**Application window:**

| Crop Description       | Application Rate | Application Window       |
|------------------------|------------------|--------------------------|
| Spring oilseed rape,   | 1 x 0.025 kg/ha  | 19.05. – 18.06.          |
| BBCH 10+:              |                  | 10.04. – 10.05.          |
|                        |                  | 01.05. – 31.05.          |
|                        |                  | 15.03. – 14.04.          |
|                        |                  | 10.04. – 10.05.          |
| Spring oilseed rape,   | 1 x 0.025 kg/ha  | 31.05. – 30.06.          |
| BBCH 31+:              |                  | 17.05. – 16.06.          |
|                        |                  | 23.05. – 22.06.          |
|                        |                  | 21.04. – 21.05.          |
|                        |                  | 07.05. – 06.06.          |
| Spring oilseed rape,   | 1 x 0.025 kg/ha  | 14.06. – 21.07.          |
| BBCH 50-77             |                  | 31.05. – 07.07.          |
|                        |                  | 06.06. – 13.07.          |
|                        |                  | 05.05. – 11.06.          |
|                        |                  | 21.05. – 27.06.          |

- potatoes

Whole season (up to PHI)
Number of applications: 1
Interval (d): /
Application rate(s): 0.050 kg a.s./ha

**Application window:**

| Crop Description       | Application Rate | Application Window       |
|------------------------|------------------|--------------------------|
| Potatoes, early        | 1 x 0.050 kg/ha  | 10.05. – 09.06.          |
|                        |                  | 22.05. – 21.06.          |
|                        |                  | 10.04. – 10.05.          |
|                        |                  | 05.08. – 04.09.          |
|                        |                  | 05.05. – 04.06.          |
|                        |                  | 15.03. – 14.04.          |
|                        |                  | 10.04. – 10.05.          |
| Potatoes, late         | 1 x 0.050 kg/ha  | 13.08. – 12.09.          |
|                        |                  | 21.08. – 20.09.          |
|                        |                  | 12.06. – 12.07.          |
|                        |                  | 23.10. – 22.11.          |
|                        |                  | 06.08. – 05.09.          |
|                        |                  | 13.05. – 12.06.          |
|                        |                  | 30.07. – 29.08.          |
### Initial PECsw and PECsed values of cypermethrin for Step 1

| Crop               | Application rate [kg/ha] | PECsw [µg/L] | PECsed [µg/kg] |
|--------------------|--------------------------|--------------|----------------|
| **Cypermethrin**   |                          |              |                |
| Winter cereals     | 1 x 0.025                | 0.262        | 62.260         |
| Spring cereals     | 1 x 0.025                | 0.262        | 62.260         |
| Winter rape        | 2 x 0.025                | 0.262        | 62.260         |
| Spring rape        | 1 x 0.025                | 0.262        | 62.260         |
| Potatoes           | 1 x 0.050                | 0.524        | 124.520        |

### Initial PECsw and PECsed values of cypermethrin for Step 2

| Crop cover         | Season              | Northern Europe | Southern Europe |
|--------------------|---------------------|-----------------|-----------------|
|                    |                     | single | multiple | single | multiple | single | multiple | single | multiple |
|                    |                     | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] |
| **Winter cereals, 1 x 0.025 kg/ha** |                      |                 |                 |                 |                 |                 |                 |                 |
| minimal            | Oct - Feb           | 0.230           | 19.292          | -                | -                | 0.230           | 15.677          | -                | -                |
| average            | Mar - May           | 0.230           | 7.002           | -                | -                | 0.230           | 12.785          | -                | -                |
| full               | Jun - Sep           | 0.230           | 3.387           | -                | -                | 0.230           | 4.471           | -                | -                |
| **Spring cereals, 1 x 0.025 kg/ha** |                      |                 |                 |                 |                 |                 |                 |                 |
| minimal            | Mar - May           | 0.230           | 8.448           | -                | -                | 0.230           | 15.677          | -                | -                |
| average            | Mar - May           | 0.230           | 7.002           | -                | -                | 0.230           | 12.785          | -                | -                |
| full               | Jun - Sep           | 0.230           | 3.387           | -                | -                | 0.230           | 4.471           | -                | -                |
| **Winter oilseed rape, 2 x 0.025 kg/ha** |                      |                 |                 |                 |                 |                 |                 |                 |
| minimal            | Oct - Feb           | 0.230           | 12.062          | 0.203            | 11.922           | 0.230           | 9.893           | 0.203            | 9.753            |
| average            | Mar - May           | 0.230           | 3.387           | 0.203            | 3.246            | 0.230           | 5.556           | 0.203            | 5.415            |
| full               | Jun - Sep           | 0.230           | 3.025           | 0.203            | 2.884            | 0.230           | 3.929           | 0.203            | 3.788            |
| **Spring oilseed rape, 1 x 0.025 kg/ha** |                      |                 |                 |                 |                 |                 |                 |                 |
| minimal            | Mar - May           | 0.230           | 5.556           | -                | -                | 0.230           | 9.893           | -                | -                |
| average            | Mar - May           | 0.230           | 3.387           | -                | -                | 0.230           | 5.556           | -                | -                |
| full               | Jun - Sep           | 0.230           | 3.025           | -                | -                | 0.230           | 3.929           | -                | -                |
| **Potatoes, 1 x 0.050 kg/ha** |                      |                 |                 |                 |                 |                 |                 |                 |
| no                 | Mar - May           | 0.460           | 16.895          | -                | -                | 0.460           | 31.355          | -                | -                |
| minimal            | Mar - May           | 0.460           | 14.726          | -                | -                | 0.460           | 27.017          | -                | -                |
| average            | Mar - May           | 0.460           | 9.665           | -                | -                | 0.460           | 16.895          | -                | -                |
| full               | Jun - Sep           | 0.460           | 6.773           | -                | -                | 0.460           | 8.942           | -                | -                |

### Step 2 PECsw and PECsed for cypermethrin application on winter and spring cereals, winter and spring rape and potatoes

| Time after max. peak (d) | PECsw (µg/L) | PECsed (µg/kg dry sediment) |
|--------------------------|-------------|----------------------------|
| Actual                   |             |                            |
| TWA                      |             |                            |
| Time after max. peak (d) | PECsw (μg/L) | PECsed (μg/kg dry sediment) |
|--------------------------|--------------|-----------------------------|
|                          | Actual       | TWA                        | Actual        | TWA           |
| **Winter cereals (1 x 0.025 kg a.s./ha), Northern Europe** |              |                            |               |               |
| 0                        | 0.2299       | ---                        | 19.2924       | ---           |
| 1                        | 0.0711       | 0.1505                     | 17.7803       | 18.5364       |
| 2                        | 0.0225       | 0.0987                     | 16.372        | 17.8063       |
| 4                        | 0.0122       | 0.0556                     | 13.8813       | 16.4536       |
| 7                        | 0.0078       | 0.0357                     | 10.8372       | 14.675        |
| 14                       | 0.0044       | 0.0208                     | 6.0822        | 11.4559       |
| 21                       | 0.0024       | 0.015                      | 3.4135        | 9.1782        |
| 28                       | 0.0014       | 0.0117                     | 1.9158        | 7.5322        |
| 42                       | 0.0004       | 0.0081                     | 0.6034        | 5.4004        |
| 50                       | 0.0002       | 0.0068                     | 0.3118        | 4.607         |
| 100                      | <0.0001      | 0.0034                     | 0.005         | 2.3407        |
| **Spring cereals (1 x 0.025 kg a.s./ha), Southern Europe** |              |                            |               |               |
| 0                        | 0.2299       | ---                        | 15.6774       | ---           |
| 1                        | 0.0711       | 0.1505                     | 14.4517       | 15.0645       |
| 2                        | 0.0225       | 0.0987                     | 13.307        | 14.4719       |
| 4                        | 0.0104       | 0.0553                     | 11.2825       | 13.3729       |
| 7                        | 0.0063       | 0.0348                     | 8.8084        | 11.9275       |
| 14                       | 0.0035       | 0.0198                     | 4.9435        | 9.3111        |
| 21                       | 0.002       | 0.0141                     | 2.7745        | 7.4598        |
| 28                       | 0.0011       | 0.011                      | 1.5571        | 6.1221        |
| 42                       | 0.0004       | 0.0075                     | 0.4905        | 4.3893        |
| 50                       | 0.0002       | 0.0064                     | 0.2535        | 3.7445        |
| 100                      | <0.0001      | 0.0032                     | 0.0041        | 1.9025        |
| **Winter rape (2 x 0.025 kg a.s./ha), Northern Europe** |              |                            |               |               |
| 0                        | 0.2299       | ---                        | 12.0624       | ---           |
| 1                        | 0.0711       | 0.1505                     | 11.123        | 11.5927       |
| 2                        | 0.0225       | 0.0987                     | 10.242        | 11.1376       |
| 4                        | 0.0085       | 0.0551                     | 8.6838        | 10.2922       |
| 7                        | 0.0049       | 0.034                      | 6.7796        | 9.1799        |
| 14                       | 0.0027       | 0.0188                     | 3.8049        | 7.1663        |
| 21                       | 0.0015       | 0.0133                     | 2.1354        | 5.7415        |
| 28                       | 0.0009       | 0.0102                     | 1.1985        | 4.7119        |
| 42                       | 0.0003       | 0.007                      | 0.3775        | 3.3783        |
| 50                       | 0.0001       | 0.0059                     | 0.1951        | 2.882         |
| 100                      | <0.0001      | 0.003                      | 0.0032        | 1.4643        |
| **Spring rape (1 x 0.025 kg a.s./ha), Southern Europe** |              |                            |               |               |
| 0                        | 0.2299       | ---                        | 9.8934        | ---           |
| 1                        | 0.0711       | 0.1505                     | 9.1258        | 9.5096        |
| 2                        | 0.0225       | 0.0987                     | 8.403         | 9.137         |
| 4                        | 0.0074       | 0.055                      | 7.1246        | 8.4438        |
| 7                        | 0.004       | 0.0335                     | 5.5622        | 7.5314        |
| 14                       | 0.0022       | 0.0183                     | 3.1217        | 5.8795        |
| 21                       | 0.0013       | 0.0127                     | 1.752         | 4.7105        |
| 28                       | 0.0007       | 0.0098                     | 0.9833        | 3.8658        |
| 42                       | 0.0002       | 0.0067                     | 0.3097        | 2.7717        |
| 50                       | 0.0001       | 0.0056                     | 0.1601        | 2.3645        |
| 100                      | <0.0001      | 0.0028                     | 0.0026        | 1.2013        |
| **Potatoes (1 x 0.050 kg a.s./ha), Southern Europe** |              |                            |               |               |
| 0                        | 0.4598       | ---                        | 31.3548       | ---           |
| Time after max. peak (d) | PECsw (µg/L) | PECsed (µg/kg dry sediment) |
|--------------------------|--------------|------------------------------|
|                          | Actual       | TWA                          | Actual       | TWA                          |
| 1                        | 0.1422       | 0.301                        | 28.9033      | 30.1291                      |
| 2                        | 0.045        | 0.1973                       | 26.6141      | 28.9439                      |
| 4                        | 0.0208       | 0.1107                       | 22.5651      | 26.7459                      |
| 7                        | 0.0126       | 0.0697                       | 17.6168      | 23.8549                      |
| 14                       | 0.0071       | 0.0396                       | 9.8871       | 18.6222                      |
| 21                       | 0.004        | 0.0282                       | 5.5489       | 14.9197                      |
| 28                       | 0.0022       | 0.0219                       | 3.1142       | 12.2441                      |
| 42                       | 0.0007       | 0.0151                       | 0.9809       | 8.7786                       |
| 50                       | 0.0004       | 0.0127                       | 0.5069       | 7.489                        |
| 100                      | <0.0001      | 0.0064                       | 0.0082       | 3.805                        |

Step 3 – Cypermethrin

Initial PECsw and PECsed of cypermethrin after single application in winter cereals (Step 3)

| Scenario       | Water body type | Initial PECsw [µg/L] | Main route          | Initial PECsed [µg/kg] | Main route          |
|----------------|-----------------|----------------------|---------------------|------------------------|---------------------|
| **BBCH 10+**   |                 |                      |                     |                        |                     |
| D1 (Lanna)     | ditch           | 0.139                | Spray drift         | 0.902                  | Drainage            |
| D1 (Lanna)     | stream          | 0.122                | Spray drift         | 0.530                  | Drainage            |
| D2 (Brimstone) | ditch           | 0.138                | Spray drift         | 0.784                  | Drainage            |
| D2 (Brimstone) | stream          | 0.112                | Spray drift         | 0.166                  | Drainage            |
| D3 (Vreedepeel)| ditch           | 0.137                | Spray drift         | 0.524                  | Drainage            |
| D4 (Skousbo)   | pond            | 0.005                | Spray drift         | 0.073                  | Drainage            |
| D4 (Skousbo)   | stream          | 0.119                | Spray drift         | 0.347                  | Drainage            |
| D5 (La Jailliere)| pond             | 0.005                | Spray drift         | 0.076                  | Drainage            |
| D5 (La Jailliere)| stream          | 0.128                | Spray drift         | 0.411                  | Drainage            |
| D6 (Thiva)     | ditch           | 0.139                | Spray drift         | 0.867                  | Drainage            |
| R1 (Weiherbach)| pond            | 0.005                | Spray drift         | 0.086                  | Runoff              |
| R1 (Weiherbach)| stream          | 0.090                | Spray drift         | 0.450                  | Runoff              |
| R3 (Bologna)   | stream          | 0.127                | Spray drift         | 0.348                  | Runoff              |
| R4 (Roujan)    | stream          | 0.091                | Spray drift         | 0.544                  | Runoff              |
| **BBCH 31+**   |                 |                      |                     |                        |                     |
| D1 (Lanna)     | ditch           | 0.139                | Spray drift         | 0.861                  | Drainage            |
| D1 (Lanna)     | stream          | 0.122                | Spray drift         | 0.528                  | Drainage            |
| D2 (Brimstone) | ditch           | 0.139                | Spray drift         | 0.868                  | Drainage            |
| D2 (Brimstone) | stream          | 0.123                | Spray drift         | 0.769                  | Drainage            |
| D3 (Vreedepeel)| ditch           | 0.138                | Spray drift         | 0.583                  | Drainage            |
| D4 (Skousbo)   | pond            | 0.005                | Spray drift         | 0.068                  | Drainage            |
| D4 (Skousbo)   | stream          | 0.115                | Spray drift         | 0.211                  | Drainage            |
| D5 (La Jailliere)| pond             | 0.005                | Spray drift         | 0.074                  | Drainage            |
| D5 (La Jailliere)| stream          | 0.116                | Spray drift         | 0.129                  | Drainage            |
| D6 (Thiva)     | ditch           | 0.139                | Spray drift         | 0.765                  | Drainage            |
| R1 (Weiherbach)| pond            | 0.005                | Spray drift         | 0.074                  | Runoff              |
| R1 (Weiherbach)| stream          | 0.091                | Spray drift         | 0.366                  | Runoff              |
### Initial PECsw and PECsed of cypermethrin after single application in spring cereals (Step 3)

| Scenario       | Water body type | Initial PECsw [µg/L] | Main route      | Initial PECsed [µg/kg] | Main route      |
|----------------|-----------------|-----------------------|-----------------|-------------------------|-----------------|
| **BBCH 10+**   |                 |                       |                 |                         |                 |
| D1 (Lanna)     | ditch           | 0.138                 | Spray drift     | 0.710                   | Drainage        |
| D1 (Lanna)     | stream          | 0.111                 | Spray drift     | 0.146                   | Drainage        |
| D3 (Vreedepeel)| ditch           | 0.138                 | Spray drift     | 0.559                   | Drainage        |
| D4 (Skousbo)   | pond            | 0.005                 | Spray drift     | 0.072                   | Drainage        |
| D4 (Skousbo)   | stream          | 0.108                 | Spray drift     | 0.121                   | Drainage        |
| D5 (La Jailliere)| pond          | 0.005                 | Spray drift     | 0.074                   | Drainage        |
| D5 (La Jailliere)| stream       | 0.109                 | Spray drift     | 0.082                   | Drainage        |
| R4 (Roujan)    | stream          | 0.091                 | Spray drift     | 0.803                   | Runoff          |
| **BBCH 31+**   |                 |                       |                 |                         |                 |
| D1 (Lanna)     | ditch           | 0.139                 | Spray drift     | 0.861                   | Drainage        |
| D1 (Lanna)     | stream          | 0.122                 | Spray drift     | 0.528                   | Drainage        |
| D3 (Vreedepeel)| ditch           | 0.138                 | Spray drift     | 0.584                   | Drainage        |
| D4 (Skousbo)   | pond            | 0.005                 | Spray drift     | 0.068                   | Drainage        |
| D4 (Skousbo)   | stream          | 0.113                 | Spray drift     | 0.170                   | Drainage        |
| D5 (La Jailliere)| pond          | 0.005                 | Spray drift     | 0.074                   | Drainage        |
| D5 (La Jailliere)| stream       | 0.109                 | Spray drift     | 0.082                   | Drainage        |
| R4 (Roujan)    | stream          | 0.091                 | Spray drift     | 0.825                   | Runoff          |
| **BBCH 69-77** |                 |                       |                 |                         |                 |
| D1 (Lanna)     | ditch           | 0.139                 | Spray drift     | 0.828                   | Drainage        |
| Scenario          | Water body type | Initial PECsw [µg/L] | Main route         | Initial PECsed [µg/kg] | Main route      |
|------------------|----------------|----------------------|--------------------|------------------------|----------------|
| D1 (Lanna)       | stream         | 0.122                | Spray drift        | 0.525                  | Drainage       |
| D3 (Vreedepeel)  | ditch          | 0.138                | Spray drift        | 0.617                  | Drainage       |
| D4 (Skousbo)     | pond           | 0.005                | Spray drift        | 0.065                  | Drainage       |
| D4 (Skousbo)     | stream         | 0.119                | Spray drift        | 0.330                  | Drainage       |
| D5 (La Jailliere)| pond           | 0.005                | Spray drift        | 0.069                  | Drainage       |
| D5 (La Jailliere)| stream         | 0.120                | Spray drift        | 0.169                  | Drainage       |
| R4 (Roujan)      | stream         | 0.091                | Spray drift        | 0.374                  | Runoff         |

**Initial PECsw and PECsed of cypermethrin after single application in winter oilseed rape (Step 3)**

| Scenario          | Water body type | Initial PECsw [µg/L] | Main route         | Initial PECsed [µg/kg] | Main route      |
|------------------|----------------|----------------------|--------------------|------------------------|----------------|
| **BBCH 9+**      |                |                      |                    |                        |                |
| D2 (Brimstone)   | ditch          | 0.138                | Spray drift        | 0.680                  | Drainage       |
| D2 (Brimstone)   | stream         | 0.107                | Spray drift        | 0.112                  | Drainage       |
| D3 (Vreedepeel)  | ditch          | 0.138                | Spray drift        | 0.577                  | Drainage       |
| D4 (Skousbo)     | pond           | 0.005                | Spray drift        | 0.079                  | Drainage       |
| D4 (Skousbo)     | stream         | 0.116                | Spray drift        | 0.253                  | Drainage       |
| D5 (La Jailliere)| pond           | 0.005                | Spray drift        | 0.076                  | Drainage       |
| D5 (La Jailliere)| stream         | 0.128                | Spray drift        | 0.411                  | Drainage       |
| R1 (Weiherbach)  | pond           | 0.005                | Spray drift        | 0.083                  | Runoff         |
| R1 (Weiherbach)  | stream         | 0.090                | Spray drift        | 0.378                  | Runoff         |
| R3 (Bologna)     | stream         | 0.124                | Spray drift        | 1.152                  | Runoff         |
| **BBCH 31+**     |                |                      |                    |                        |                |
| D2 (Brimstone)   | ditch          | 0.139                | Spray drift        | 0.796                  | Drainage       |
| D2 (Brimstone)   | stream         | 0.115                | Spray drift        | 0.215                  | Drainage       |
| D3 (Vreedepeel)  | ditch          | 0.138                | Spray drift        | 0.574                  | Drainage       |
| D4 (Skousbo)     | pond           | 0.005                | Spray drift        | 0.068                  | Drainage       |
| D4 (Skousbo)     | stream         | 0.116                | Spray drift        | 0.241                  | Drainage       |
| D5 (La Jailliere)| pond           | 0.005                | Spray drift        | 0.074                  | Drainage       |
| D5 (La Jailliere)| stream         | 0.111                | Spray drift        | 0.091                  | Drainage       |
| R1 (Weiherbach)  | pond           | 0.005                | Spray drift        | 0.072                  | Runoff         |
| R1 (Weiherbach)  | stream         | 0.090                | Spray drift        | 0.339                  | Runoff         |
| R3 (Bologna)     | stream         | 0.128                | Spray drift        | 0.404                  | Runoff         |
| **BBCH 50-77**   |                |                      |                    |                        |                |
| D2 (Brimstone)   | ditch          | 0.139                | Spray drift        | 0.870                  | Drainage       |
| D2 (Brimstone)   | stream         | 0.124                | Spray drift        | 0.774                  | Drainage       |
| D3 (Vreedepeel)  | ditch          | 0.138                | Spray drift        | 0.599                  | Drainage       |
| D4 (Skousbo)     | pond           | 0.005                | Spray drift        | 0.068                  | Drainage       |
| D4 (Skousbo)     | stream         | 0.116                | Spray drift        | 0.241                  | Drainage       |
| D5 (La Jailliere)| pond           | 0.005                | Spray drift        | 0.074                  | Drainage       |
| D5 (La Jailliere)| stream         | 0.117                | Spray drift        | 0.140                  | Drainage       |
### Initial PECsw and PECsed of cypermethrin after multiple applications in winter oilseed rape (Step 3)

| Scenario                  | Water body type | Initial PECsw [µg/L] | Main route       | Initial PECsed [µg/kg] | Main route       |
|---------------------------|-----------------|----------------------|------------------|------------------------|------------------|
| BBCH 9+                   |                 |                      |                  |                        |                  |
| D2 (Brimstone)            | ditch           | 0.122                | Spray drift      | 0.784                  | Drainage         |
| D2 (Brimstone)            | stream          | 0.107                | Spray drift      | 0.691                  | Drainage         |
| D3 (Vreedepeel)           | ditch           | 0.120                | Spray drift      | 0.504                  | Drainage         |
| D4 (Skousbo)              | pond            | 0.004                | Spray drift      | 0.100                  | Drainage         |
| D4 (Skousbo)              | stream          | 0.101                | Spray drift      | 0.219                  | Drainage         |
| D5 (La Jailliere)         | pond            | 0.004                | Spray drift      | 0.095                  | Drainage         |
| D5 (La Jailliere)         | stream          | 0.111                | Spray drift      | 0.355                  | Drainage         |
| R1 (Weiherbach)           | pond            | 0.004                | Spray drift      | 0.111                  | Runoff           |
| R1 (Weiherbach)           | stream          | 0.078                | Spray drift      | 0.445                  | Spray drift      |
| R3 (Bologna)              | stream          | 0.111                | Spray drift      | 1.150                  | Runoff           |
| BBCH 31+                  |                 |                      |                  |                        |                  |
| D2 (Brimstone)            | ditch           | 0.121                | Spray drift      | 0.594                  | Drainage         |
| D2 (Brimstone)            | stream          | 0.096                | Spray drift      | 0.133                  | Drainage         |
| D3 (Vreedepeel)           | ditch           | 0.120                | Spray drift      | 0.543                  | Drainage         |
| D4 (Skousbo)              | pond            | 0.004                | Spray drift      | 0.087                  | Drainage         |
| D4 (Skousbo)              | stream          | 0.101                | Spray drift      | 0.219                  | Drainage         |
| D5 (La Jailliere)         | pond            | 0.004                | Spray drift      | 0.076                  | Drainage         |
| D5 (La Jailliere)         | stream          | 0.111                | Spray drift      | 0.355                  | Drainage         |
| R1 (Weiherbach)           | pond            | 0.004                | Spray drift      | 0.100                  | Runoff           |
| R1 (Weiherbach)           | stream          | 0.078                | Spray drift      | 0.445                  | Runoff           |
| R3 (Bologna)              | stream          | 0.111                | Spray drift      | 1.150                  | Runoff           |
| BBCH 50-77                |                 |                      |                  |                        |                  |
| D2 (Brimstone)            | ditch           | 0.122                | Spray drift      | 0.772                  | Drainage         |
| D2 (Brimstone)            | stream          | 0.104                | Spray drift      | 0.403                  | Drainage         |
| D3 (Vreedepeel)           | ditch           | 0.121                | Spray drift      | 0.554                  | Drainage         |
| D4 (Skousbo)              | pond            | 0.004                | Spray drift      | 0.082                  | Drainage         |
| D4 (Skousbo)              | stream          | 0.101                | Spray drift      | 0.219                  | Drainage         |
| D5 (La Jailliere)         | pond            | 0.004                | Spray drift      | 0.069                  | Drainage         |
| D5 (La Jailliere)         | stream          | 0.111                | Spray drift      | 0.355                  | Drainage         |
| R1 (Weiherbach)           | pond            | 0.004                | Spray drift      | 0.081                  | Runoff           |
| R1 (Weiherbach)           | stream          | 0.078                | Spray drift      | 0.420                  | Runoff           |
| R3 (Bologna)              | stream          | 0.111                | Spray drift      | 1.150                  | Runoff           |
### Initial PEC$_{sw}$ and PEC$_{sed}$ of cypermethrin after application in spring oilseed rape (Step 3)

| Scenario | Water body type | Initial PEC$_{sw}$ | Main route | Initial PEC$_{sed}$ | Main route |
|----------|----------------|--------------------|------------|---------------------|------------|
| BBCH 10+ |                |                    |            |                     |            |
| D1 (Lanna) ditch | 0.139 | Spray drift | 0.861 | Drainage |
| D1 (Lanna) stream | 0.122 | Spray drift | 0.528 | Drainage |
| D3 (Vreedepeel) ditch | 0.138 | Spray drift | 0.570 | Drainage |
| D4 (Skousbo) pond | 0.005 | Spray drift | 0.068 | Drainage |
| D4 (Skousbo) stream | 0.113 | Spray drift | 0.173 | Drainage |
| D5 (La Jailliere) pond | 0.005 | Spray drift | 0.074 | Drainage |
| D5 (La Jailliere) stream | 0.109 | Spray drift | 0.082 | Drainage |
| R1 (Weiherbach) pond | 0.005 | Spray drift | 0.077 | Runoff |
| R1 (Weiherbach) stream | 0.091 | Spray drift | 0.470 | Runoff |
| BBCH 31+ |                |                    |            |                     |            |
| D1 (Lanna) ditch | 0.139 | Spray drift | 0.861 | Drainage |
| D1 (Lanna) stream | 0.122 | Spray drift | 0.528 | Drainage |
| D3 (Vreedepeel) ditch | 0.138 | Spray drift | 0.595 | Drainage |
| D4 (Skousbo) pond | 0.005 | Spray drift | 0.068 | Drainage |
| D4 (Skousbo) stream | 0.113 | Spray drift | 0.173 | Drainage |
| D5 (La Jailliere) pond | 0.005 | Spray drift | 0.071 | Drainage |
| D5 (La Jailliere) stream | 0.120 | Spray drift | 0.165 | Drainage |
| R1 (Weiherbach) pond | 0.005 | Spray drift | 0.085 | Runoff |
| R1 (Weiherbach) stream | 0.090 | Spray drift | 0.550 | Runoff |
| BBCH 50-77 |                |                    |            |                     |            |
| D1 (Lanna) ditch | 0.139 | Spray drift | 0.861 | Drainage |
| D1 (Lanna) stream | 0.122 | Spray drift | 0.528 | Drainage |
| D3 (Vreedepeel) ditch | 0.138 | Spray drift | 0.632 | Drainage |
| D4 (Skousbo) pond | 0.005 | Spray drift | 0.065 | Drainage |
| D4 (Skousbo) stream | 0.119 | Spray drift | 0.346 | Drainage |
| D5 (La Jailliere) pond | 0.005 | Spray drift | 0.069 | Drainage |
| D5 (La Jailliere) stream | 0.120 | Spray drift | 0.172 | Drainage |
| R1 (Weiherbach) pond | 0.005 | Spray drift | 0.076 | Runoff |
| R1 (Weiherbach) stream | 0.091 | Spray drift | 0.524 | Runoff |

### Initial PEC$_{sw}$ and PEC$_{sed}$ of cypermethrin after early and late single application in potatoes (Step 3)

| Scenario | Water body type | Initial PEC$_{sw}$ | Main route | Initial PEC$_{sed}$ | Main route |
|----------|----------------|--------------------|------------|---------------------|------------|
| Early application |            |                    |            |                     |            |
| D3 (Vreedepeel) ditch | 0.228 | Spray drift | 0.965 | Drainage |
| D4 (Skousbo) pond | 0.009 | Spray drift | 0.135 | Drainage |
| D4 (Skousbo) stream | 0.191 | Spray drift | 0.245 | Drainage |
| D6 (Thiva), 1st crop ditch | 0.224 | Spray drift | 0.675 | Drainage |
### Scenario 1: Water body type

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------|----------------|----------------------|------------|------------------------|------------|
| D6 (Thiva), 2nd crop | ditch | 0.223 | Spray drift | 0.612 | Drainage |
| R1 (Weiherbach) | pond | 0.009 | Spray drift | 0.173 | Runoff |
| R1 (Weiherbach) | stream | 0.155 | Spray drift | 1.130 | Runoff |
| R2 (Porto) | stream | 0.208 | Spray drift | 1.474 | Runoff |
| R3 (Bologna) | stream | 0.222 | Spray drift | 0.716 | Runoff |

**Late application**

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------|----------------|----------------------|------------|------------------------|------------|
| D3 (Vreedepeel) | ditch | 0.228 | Spray drift | 0.989 | Drainage |
| D4 (Skousbo) | pond | 0.009 | Spray drift | 0.130 | Drainage |
| D4 (Skousbo) | stream | 0.171 | Spray drift | 0.121 | Drainage |
| D6 (Thiva), 1st crop | ditch | 0.226 | Spray drift | 0.803 | Drainage |
| D6 (Thiva), 2nd crop | ditch | 0.227 | Spray drift | 0.862 | Drainage |
| R1 (Weiherbach) | pond | 0.009 | Spray drift | 0.190 | Runoff |
| R2 (Porto) | stream | 0.212 | Spray drift | 0.793 | Runoff |
| R3 (Bologna) | stream | 0.222 | Spray drift | 2.973 | Runoff |

### Step 4 – Cypermethrin

#### Winter cereals – 20 m no spray buffer zone

**Initial PECsw and PECsed of cypermethrin after single application on winter cereals (Step 4, 20 m buffer)**

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------|----------------|----------------------|------------|------------------------|------------|
| D1 (Lanna) | ditch | 0.0104 | Spray drift | 0.0611 | Drainage |
| D1 (Lanna) | stream | 0.0122 | Spray drift | 0.0526 | Drainage |
| D2 (Brimstone) | ditch | 0.0104 | Spray drift | 0.0625 | Drainage |
| D2 (Brimstone) | stream | 0.0124 | Spray drift | 0.0747 | Drainage |
| D3 (Vreedepeel) | ditch | 0.0103 | Spray drift | 0.0449 | Drainage |
| D4 (Skousbo) | pond | 0.0020 | Spray drift | 0.0273 | Drainage |
| D4 (Skousbo) | stream | 0.0119 | Spray drift | 0.0347 | Drainage |
| D5 (La Jailliere) | pond | 0.0020 | Spray drift | 0.0283 | Drainage |
| D5 (La Jailliere) | stream | 0.0129 | Spray drift | 0.0411 | Drainage |
| D6 (Thiva) | ditch | 0.0104 | Spray drift | 0.0564 | Drainage |
| R1 (Weiherbach) | pond | 0.0020 | Spray drift | 0.0645 | Runoff |
| R1 (Weiherbach) | stream | 0.0091 | Spray drift | 1.1510 | Runoff |
| R3 (Bologna) | stream | 0.0128 | Spray drift | 0.0709 | Runoff |
| R4 (Roujan) | stream | 0.0091 | Spray drift | 0.3333 | Runoff |

### Winter cereals – 50 m no spray buffer zone

**Initial PECsw and PECsed of cypermethrin after single application on winter cereals (Step 4, 50 m buffer)**
## Scenario | Water body type | Initial PECsw \([\mu g/L]\) | Main route | Initial PECsed \([\mu g/kg]\) | Main route
---|---|---|---|---|---
BBCH 69-77
D1 (Lanna) | ditch | 0.0043 | Spray drift | 0.0255 | Drainage
D1 (Lanna) | stream | 0.0051 | Spray drift | 0.0220 | Drainage
D2 (Brimstone) | ditch | 0.0043 | Spray drift | 0.0261 | Drainage
D2 (Brimstone) | stream | 0.0052 | Spray drift | 0.0313 | Drainage
D3 (Vreedepeel) | ditch | 0.0043 | Spray drift | 0.0187 | Drainage
D4 (Skousbo) | pond | 0.0010 | Spray drift | 0.0142 | Drainage
D4 (Skousbo) | stream | 0.0050 | Spray drift | 0.0145 | Drainage
D5 (La Jailliere) | pond | 0.0010 | Spray drift | 0.0148 | Drainage
D5 (La Jailliere) | stream | 0.0054 | Spray drift | 0.0172 | Drainage
D6 (Thiva) | ditch | 0.0043 | Spray drift | 0.0235 | Drainage
R1 (Weiherbach) | pond | 0.0010 | Spray drift | 0.0539 | Runoff
R1 (Weiherbach) | stream | 0.0038 | Spray drift | 1.1510 | Runoff
R3 (Bologna) | stream | 0.0053 | Spray drift | 0.0706 | Runoff
R4 (Roujian) | stream | 0.0038 | Spray drift | 0.3333 | Runoff

### Spring cereals

#### Spring cereals – 20 m no-spray buffer zone

**Initial PECsw and PECsed of cypermethrin after single application on spring cereals (Step 4, 20 m buffer)**

| Scenario | Water body type | Initial PECsw \([\mu g/L]\) | Main route | Initial PECsed \([\mu g/kg]\) | Main route
---|---|---|---|---|---
BBCH 69-77
D1 (Lanna) | ditch | 0.0104 | Spray drift | 0.062 | Drainage
D1 (Lanna) | stream | 0.0122 | Spray drift | 0.053 | Drainage
D3 (Vreedepeel) | ditch | 0.0103 | Spray drift | 0.046 | Drainage
D4 (Skousbo) | pond | 0.0020 | Spray drift | 0.027 | Drainage
D4 (Skousbo) | stream | 0.0119 | Spray drift | 0.033 | Drainage
D5 (La Jailliere) | pond | 0.0020 | Spray drift | 0.029 | Drainage
D5 (La Jailliere) | stream | 0.0120 | Spray drift | 0.017 | Drainage
R4 (Roujian) | stream | 0.0091 | Spray drift | 0.374 | Runoff

#### Spring cereals – 50 m no-spray buffer zone

**Initial PECsw and PECsed of cypermethrin after single application on spring cereals (Step 4, 50 m buffer)**

| Scenario | Water body type | Initial PECsw \([\mu g/L]\) | Main route | Initial PECsed \([\mu g/kg]\) | Main route
---|---|---|---|---|---
BBCH 69-77
D1 (Lanna) | ditch | 0.0043 | Spray drift | 0.026 | Drainage
D1 (Lanna) | stream | 0.0051 | Spray drift | 0.022 | Drainage
Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route
--- | --- | --- | --- | --- | ---
D3 (Vreedepeel) | ditch | 0.0043 | Spray drift | 0.019 | Drainage
D4 (Skousbo) | pond | 0.0010 | Spray drift | 0.014 | Drainage
D4 (Skousbo) | stream | 0.0050 | Spray drift | 0.014 | Drainage
D5 (La Jailliere) | pond | 0.0010 | Spray drift | 0.015 | Drainage
D5 (La Jailliere) | stream | 0.0050 | Spray drift | 0.007 | Drainage
R4 (Roujan) | stream | 0.0038 | Spray drift | 0.374 | Runoff

**Winter oilseed rape**

**Winter oilseed rape – 20 m no-spray buffer zone**

Initial PECsw and PECsed of cypermethrin after single application on winter rape (Step 4, 20 m buffer)

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route
--- | --- | --- | --- | --- | ---
BBCH 9+ | | | | |
D2 (Brimstone) | ditch | 0.0103 | Spray drift | 0.051 | Drainage
D2 (Brimstone) | stream | 0.0107 | Spray drift | 0.011 | Drainage
D3 (Vreedepeel) | ditch | 0.0103 | Spray drift | 0.043 | Drainage
D4 (Skousbo) | pond | 0.0020 | Spray drift | 0.033 | Drainage
D4 (Skousbo) | stream | 0.0117 | Spray drift | 0.025 | Drainage
D5 (La Jailliere) | pond | 0.0020 | Spray drift | 0.032 | Drainage
D5 (La Jailliere) | stream | 0.0129 | Spray drift | 0.041 | Drainage
R1 (Weiherbach) | pond | 0.0020 | Spray drift | 0.043 | Runoff
R1 (Weiherbach) | stream | 0.0091 | Spray drift | 0.371 | Runoff
R3 (Bologna) | stream | 0.0124 | Spray drift | 1.133 | Runoff
BBCH 9-31 | | | | |
D2 (Brimstone) | ditch | 0.0104 | Spray drift | 0.059 | Drainage
D2 (Brimstone) | stream | 0.0115 | Spray drift | 0.022 | Drainage
D3 (Vreedepeel) | ditch | 0.0103 | Spray drift | 0.043 | Drainage
D4 (Skousbo) | pond | 0.0020 | Spray drift | 0.029 | Drainage
D4 (Skousbo) | stream | 0.0116 | Spray drift | 0.024 | Drainage
D5 (La Jailliere) | pond | 0.0020 | Spray drift | 0.031 | Drainage
D5 (La Jailliere) | stream | 0.0112 | Spray drift | 0.009 | Drainage
R1 (Weiherbach) | pond | 0.0020 | Spray drift | 0.035 | Runoff
R1 (Weiherbach) | stream | 0.0091 | Spray drift | 0.335 | Runoff
R3 (Bologna) | stream | 0.0129 | Spray drift | 0.346 | Runoff
BBCH 9-77 | | | | |
D2 (Brimstone) | ditch | 0.0104 | Spray drift | 0.065 | Drainage
D2 (Brimstone) | stream | 0.0124 | Spray drift | 0.078 | Drainage
D3 (Vreedepeel) | ditch | 0.0103 | Spray drift | 0.045 | Drainage
D4 (Skousbo) | pond | 0.0020 | Spray drift | 0.029 | Drainage
| Scenario           | Water body type | Initial PECsw [µg/L] | Main route     | Initial PECsed [µg/kg] | Main route     |
|--------------------|----------------|----------------------|----------------|------------------------|----------------|
| D4 (Skousbo)       | stream         | 0.0116               | Spray drift    | 0.024                  | Drainage       |
| D5 (La Jailliere)  | pond           | 0.0020               | Spray drift    | 0.031                  | Drainage       |
| D5 (La Jailliere)  | stream         | 0.0118               | Spray drift    | 0.014                  | Drainage       |
| R1 (Weiherbach)    | pond           | 0.0020               | Spray drift    | 0.035                  | Runoff         |
| R1 (Weiherbach)    | stream         | 0.0091               | Spray drift    | 0.335                  | Runoff         |
| R3 (Bologna)       | stream         | 0.0127               | Spray drift    | 0.241                  | Runoff         |

**Initial PECsw and PECsed of cypermethrin after multiple applications on winter rape (Step 4, 20 m buffer)**

| Scenario           | Water body type | Initial PECsw [µg/L] | Main route     | Initial PECsed [µg/kg] | Main route     |
|--------------------|----------------|----------------------|----------------|------------------------|----------------|
| **BBCH 9+**        |                |                      |                |                        |                |
| D2 (Brimstone)     | ditch          | 0.0084               | Spray drift    | 0.054                  | Drainage       |
| D2 (Brimstone)     | stream         | 0.0101               | Spray drift    | 0.065                  | Drainage       |
| D3 (Vreedepeel)    | ditch          | 0.0083               | Spray drift    | 0.035                  | Drainage       |
| D4 (Skousbo)       | pond           | 0.0017               | Spray drift    | 0.040                  | Drainage       |
| D4 (Skousbo)       | stream         | 0.0095               | Spray drift    | 0.021                  | Drainage       |
| D5 (La Jailliere)  | pond           | 0.0017               | Spray drift    | 0.038                  | Drainage       |
| D5 (La Jailliere)  | stream         | 0.0105               | Spray drift    | 0.034                  | Drainage       |
| R1 (Weiherbach)    | pond           | 0.0017               | Spray drift    | 0.053                  | Runoff         |
| R1 (Weiherbach)    | stream         | 0.0074               | Spray drift    | 0.380                  | Runoff         |
| R3 (Bologna)       | stream         | 0.0105               | Spray drift    | 1.133                  | Runoff         |
| **BBCH 9-31**      |                |                      |                |                        |                |
| D2 (Brimstone)     | ditch          | 0.0083               | Spray drift    | 0.041                  | Drainage       |
| D2 (Brimstone)     | stream         | 0.0091               | Spray drift    | 0.013                  | Drainage       |
| D3 (Vreedepeel)    | ditch          | 0.0083               | Spray drift    | 0.037                  | Drainage       |
| D4 (Skousbo)       | pond           | 0.0016               | Spray drift    | 0.035                  | Drainage       |
| D4 (Skousbo)       | stream         | 0.0095               | Spray drift    | 0.021                  | Drainage       |
| D5 (La Jailliere)  | pond           | 0.0016               | Spray drift    | 0.030                  | Drainage       |
| D5 (La Jailliere)  | stream         | 0.0105               | Spray drift    | 0.034                  | Drainage       |
| R1 (Weiherbach)    | pond           | 0.0016               | Spray drift    | 0.051                  | Runoff         |
| R1 (Weiherbach)    | stream         | 0.0074               | Spray drift    | 0.421                  | Runoff         |
| R3 (Bologna)       | stream         | 0.0104               | Spray drift    | 1.133                  | Runoff         |
| **BBCH 9-77**      |                |                      |                |                        |                |
| D2 (Brimstone)     | ditch          | 0.0084               | Spray drift    | 0.053                  | Drainage       |
| D2 (Brimstone)     | stream         | 0.0098               | Spray drift    | 0.038                  | Drainage       |
| D3 (Vreedepeel)    | ditch          | 0.0083               | Spray drift    | 0.038                  | Drainage       |
| D4 (Skousbo)       | pond           | 0.0016               | Spray drift    | 0.033                  | Drainage       |
| D4 (Skousbo)       | stream         | 0.0095               | Spray drift    | 0.021                  | Drainage       |
| D5 (La Jailliere)  | pond           | 0.0016               | Spray drift    | 0.027                  | Drainage       |
| D5 (La Jailliere)  | stream         | 0.0105               | Spray drift    | 0.034                  | Drainage       |
| R1 (Weiherbach)    | pond           | 0.0016               | Spray drift    | 0.038                  | Runoff         |
### Winter oilseed rape – 20 m no-spray buffer zone + 50 % DRN

Initial PEC<sub>sw</sub> and PEC<sub>sed</sub> of cypermethrin after single application on winter rape (Step 4, 20 m buffer + 50 % DRN)

| Scenario                  | Water body type | Initial PEC<sub>sw</sub> [µg/L] | Main route   | Initial PEC<sub>sed</sub> [µg/kg] | Main route |
|---------------------------|-----------------|---------------------------------|--------------|----------------------------------|------------|
| R1 (Weiherbach)          | stream          | 0.0074                          | Spray drift  | 0.384                            | Runoff     |
| R3 (Bologna)             | stream          | 0.0105                          | Spray drift  | 1.133                            | Runoff     |

| Scenario                  | Water body type | Initial PEC<sub>sw</sub> [µg/L] | Main route   | Initial PEC<sub>sed</sub> [µg/kg] | Main route |
|---------------------------|-----------------|---------------------------------|--------------|----------------------------------|------------|
| D2 (Brimstone)           | ditch           | 0.0052                          | Spray drift  | 0.025                            | Drainage   |
| D2 (Brimstone)           | stream          | 0.0055                          | Spray drift  | 0.006                            | Drainage   |
| D3 (Vreedepeel)          | ditch           | 0.0051                          | Spray drift  | 0.022                            | Drainage   |
| D4 (Skousbo)             | pond            | 0.0010                          | Spray drift  | 0.016                            | Drainage   |
| D4 (Skousbo)             | stream          | 0.0060                          | Spray drift  | 0.013                            | Drainage   |
| D5 (La Jailliere)        | pond            | 0.0010                          | Spray drift  | 0.015                            | Drainage   |
| D5 (La Jailliere)        | stream          | 0.0066                          | Spray drift  | 0.021                            | Drainage   |
| R1 (Weiherbach)          | pond            | 0.0010                          | Spray drift  | 0.028                            | Runoff     |
| R1 (Weiherbach)          | stream          | 0.0046                          | Spray drift  | 0.371                            | Runoff     |
| R3 (Bologna)             | stream          | 0.0064                          | Spray drift  | 1.132                            | Runoff     |

| Scenario                  | Water body type | Initial PEC<sub>sw</sub> [µg/L] | Main route   | Initial PEC<sub>sed</sub> [µg/kg] | Main route |
|---------------------------|-----------------|---------------------------------|--------------|----------------------------------|------------|
| D2 (Brimstone)           | ditch           | 0.0052                          | Spray drift  | 0.030                            | Drainage   |
| D2 (Brimstone)           | stream          | 0.0059                          | Spray drift  | 0.011                            | Drainage   |
| D3 (Vreedepeel)          | ditch           | 0.0051                          | Spray drift  | 0.021                            | Drainage   |
| D4 (Skousbo)             | pond            | 0.0010                          | Spray drift  | 0.014                            | Drainage   |
| D4 (Skousbo)             | stream          | 0.0059                          | Spray drift  | 0.012                            | Drainage   |
| D5 (La Jailliere)        | pond            | 0.0010                          | Spray drift  | 0.015                            | Drainage   |
| D5 (La Jailliere)        | stream          | 0.0057                          | Spray drift  | 0.005                            | Drainage   |
| R1 (Weiherbach)          | pond            | 0.0010                          | Spray drift  | 0.022                            | Runoff     |
| R1 (Weiherbach)          | stream          | 0.0046                          | Spray drift  | 0.335                            | Runoff     |
| R3 (Bologna)             | stream          | 0.0066                          | Spray drift  | 0.346                            | Runoff     |

| Scenario                  | Water body type | Initial PEC<sub>sw</sub> [µg/L] | Main route   | Initial PEC<sub>sed</sub> [µg/kg] | Main route |
|---------------------------|-----------------|---------------------------------|--------------|----------------------------------|------------|
| D2 (Brimstone)           | ditch           | 0.0052                          | Spray drift  | 0.032                            | Drainage   |
| D2 (Brimstone)           | stream          | 0.0064                          | Spray drift  | 0.040                            | Drainage   |
| D3 (Vreedepeel)          | ditch           | 0.0051                          | Spray drift  | 0.022                            | Drainage   |
| D4 (Skousbo)             | pond            | 0.0010                          | Spray drift  | 0.014                            | Drainage   |
| D4 (Skousbo)             | stream          | 0.0059                          | Spray drift  | 0.012                            | Drainage   |
| D5 (La Jailliere)        | pond            | 0.0010                          | Spray drift  | 0.015                            | Drainage   |
| D5 (La Jailliere)        | stream          | 0.0060                          | Spray drift  | 0.007                            | Drainage   |
| R1 (Weiherbach)          | pond            | 0.0010                          | Spray drift  | 0.022                            | Runoff     |
| R1 (Weiherbach)          | stream          | 0.0046                          | Spray drift  | 0.335                            | Runoff     |
| R3 (Bologna)             | stream          | 0.0065                          | Spray drift  | 0.240                            | Runoff     |
### Initial PECsw and PECsed of cypermethrin after multiple application on winter rape (Step 4, 20 m buffer + 50 % DRN)

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------|-----------------|----------------------|------------|------------------------|------------|
| BBCH 9+  |                 |                      |            |                        |            |
| D2 (Brimstone) | ditch      | 0.004                | Spray drift | 0.026                | Drainage   |
| D2 (Brimstone) | stream     | 0.0049               | Spray drift | 0.032                | Drainage   |
| D3 (Vreedepeel) | ditch    | 0.0040               | Spray drift | 0.017                | Drainage   |
| D4 (Skousbo) | pond        | 0.0008               | Spray drift | 0.020                | Drainage   |
| D4 (Skousbo) | stream      | 0.0046               | Spray drift | 0.010                | Drainage   |
| D5 (La Jailliere) | pond | 0.0008               | Spray drift | 0.019                | Drainage   |
| D5 (La Jailliere) | stream | 0.0051               | Spray drift | 0.016                | Drainage   |
| R1 (Weiherbach) | pond      | 0.0009               | Spray drift | 0.034                | Runoff     |
| R1 (Weiherbach) | stream    | 0.0036               | Spray drift | 0.379                | Runoff     |
| R3 (Bologna) | stream     | 0.0051               | Spray drift | 1.132                | Runoff     |
| BBCH 9-31 |                 |                      |            |                        |            |
| D2 (Brimstone) | ditch      | 0.0040               | Spray drift | 0.020                | Drainage   |
| D2 (Brimstone) | stream     | 0.0044               | Spray drift | 0.006                | Drainage   |
| D3 (Vreedepeel) | ditch     | 0.0040               | Spray drift | 0.018                | Drainage   |
| D4 (Skousbo) | pond        | 0.0008               | Spray drift | 0.017                | Drainage   |
| D4 (Skousbo) | stream      | 0.0046               | Spray drift | 0.010                | Drainage   |
| D5 (La Jailliere) | pond    | 0.0008               | Spray drift | 0.015                | Drainage   |
| D5 (La Jailliere) | stream | 0.0051               | Spray drift | 0.016                | Drainage   |
| R1 (Weiherbach) | pond      | 0.0008               | Spray drift | 0.034                | Runoff     |
| R1 (Weiherbach) | stream    | 0.0036               | Spray drift | 0.420                | Runoff     |
| R3 (Bologna) | stream     | 0.0051               | Spray drift | 1.132                | Runoff     |
| BBCH 9-77  |                 |                      |            |                        |            |
| D2 (Brimstone) | ditch      | 0.0040               | Spray drift | 0.026                | Drainage   |
| D2 (Brimstone) | stream     | 0.0048               | Spray drift | 0.018                | Drainage   |
| D3 (Vreedepeel) | ditch     | 0.0040               | Spray drift | 0.018                | Drainage   |
| D4 (Skousbo) | pond        | 0.0008               | Spray drift | 0.016                | Drainage   |
| D4 (Skousbo) | stream      | 0.0046               | Spray drift | 0.010                | Drainage   |
| D5 (La Jailliere) | pond    | 0.0008               | Spray drift | 0.014                | Drainage   |
| D5 (La Jailliere) | stream | 0.0051               | Spray drift | 0.016                | Drainage   |
| R1 (Weiherbach) | pond      | 0.0008               | Spray drift | 0.026                | Runoff     |
| R1 (Weiherbach) | stream    | 0.0036               | Spray drift | 0.384                | Runoff     |
| R3 (Bologna) | stream     | 0.0051               | Spray drift | 1.132                | Runoff     |

Winter oilseed rape – 50 m no-spray buffer zone
### Initial PEC\(_{sw}\) and PEC\(_{sed}\) of cypermethrin after single application on winter rape (Step 4, 50 m buffer)

| Scenario       | Water body type | Initial PEC\(_{sw}\) [µg/L] | Main route      | Initial PEC\(_{sed}\) [µg/kg] | Main route      |
|----------------|-----------------|------------------------------|-----------------|-----------------|-----------------|
| BBCH 9+        |                 |                              |                 |                              |                 |
| D2 (Brimstone) | ditch           | 0.0043                       | Spray drift     | 0.021           | Drainage        |
| D2 (Brimstone) | stream          | 0.0045                       | Spray drift     | 0.005           | Drainage        |
| D3 (Vreedepeel)| ditch           | 0.0043                       | Spray drift     | 0.018           | Drainage        |
| D4 (Skousbo)  | pond            | 0.0010                       | Spray drift     | 0.017           | Drainage        |
| D4 (Skousbo)  | stream          | 0.0049                       | Spray drift     | 0.011           | Drainage        |
| D5 (La Jailliere)| pond       | 0.0010                       | Spray drift     | 0.017           | Drainage        |
| D5 (La Jailliere)| stream     | 0.0054                       | Spray drift     | 0.017           | Drainage        |
| R1 (Weiherbach)| pond           | 0.0010                       | Spray drift     | 0.030           | Runoff          |
| R1 (Weiherbach)| stream         | 0.0038                       | Spray drift     | 0.371           | Runoff          |
| R3 (Bologna)  | stream          | 0.0052                       | Spray drift     | 1.132           | Runoff          |
| BBCH 9-31      |                 |                              |                 |                              |                 |
| D2 (Brimstone) | ditch           | 0.0043                       | Spray drift     | 0.025           | Drainage        |
| D2 (Brimstone) | stream          | 0.0048                       | Spray drift     | 0.009           | Drainage        |
| D3 (Vreedepeel)| ditch           | 0.0043                       | Spray drift     | 0.018           | Drainage        |
| D4 (Skousbo)  | pond            | 0.0010                       | Spray drift     | 0.015           | Drainage        |
| D4 (Skousbo)  | stream          | 0.0049                       | Spray drift     | 0.010           | Drainage        |
| D5 (La Jailliere)| pond       | 0.0010                       | Spray drift     | 0.016           | Drainage        |
| D5 (La Jailliere)| stream     | 0.0047                       | Spray drift     | 0.004           | Drainage        |
| R1 (Weiherbach)| pond           | 0.0010                       | Spray drift     | 0.023           | Runoff          |
| R1 (Weiherbach)| stream         | 0.0038                       | Spray drift     | 0.335           | Runoff          |
| R3 (Bologna)  | stream          | 0.0054                       | Spray drift     | 0.346           | Runoff          |
| BBCH 9-77      |                 |                              |                 |                              |                 |
| D2 (Brimstone) | ditch           | 0.0043                       | Spray drift     | 0.027           | Drainage        |
| D2 (Brimstone) | stream          | 0.0052                       | Spray drift     | 0.032           | Drainage        |
| D3 (Vreedepeel)| ditch           | 0.0043                       | Spray drift     | 0.019           | Drainage        |
| D4 (Skousbo)  | pond            | 0.0010                       | Spray drift     | 0.015           | Drainage        |
| D4 (Skousbo)  | stream          | 0.0049                       | Spray drift     | 0.010           | Drainage        |
| D5 (La Jailliere)| pond       | 0.0010                       | Spray drift     | 0.016           | Drainage        |
| D5 (La Jailliere)| stream     | 0.0049                       | Spray drift     | 0.006           | Drainage        |
| R1 (Weiherbach)| pond           | 0.0010                       | Spray drift     | 0.023           | Runoff          |
| R1 (Weiherbach)| stream         | 0.0038                       | Spray drift     | 0.335           | Runoff          |
| R3 (Bologna)  | stream          | 0.0053                       | Spray drift     | 0.240           | Runoff          |

### Initial PEC\(_{sw}\) and PEC\(_{sed}\) of cypermethrin after multiple applications on winter rape (Step 4, 50 m buffer)

| Scenario       | Water body type | Initial PEC\(_{sw}\) [µg/L] | Main route      | Initial PEC\(_{sed}\) [µg/kg] | Main route      |
|----------------|-----------------|------------------------------|-----------------|-----------------|-----------------|
| BBCH 9+        |                 |                              |                 |                              |                 |
| D2 (Brimstone) | ditch           | 0.0035                       | Spray drift     | 0.022           | Drainage        |
| D2 (Brimstone) | stream          | 0.0040                       | Spray drift     | 0.026           | Drainage        |
### Scenario

| Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------------|-----------------------|------------|------------------------|------------|
| D3 (Vreedepeel) ditch | 0.0034 | Spray drift | 0.014 | Drainage |
| D4 (Skousbo) pond | 0.0008 | Spray drift | 0.020 | Drainage |
| D4 (Skousbo) stream | 0.0038 | Spray drift | 0.008 | Drainage |
| D5 (La Jailliere) pond | 0.0008 | Spray drift | 0.019 | Drainage |
| D5 (La Jailliere) stream | 0.0042 | Spray drift | 0.013 | Drainage |
| R1 (Weiherbach) pond | 0.0009 | Spray drift | 0.034 | Runoff |
| R1 (Weiherbach) stream | 0.0030 | Spray drift | 0.379 | Runoff |
| R3 (Bologna) stream | 0.0042 | Spray drift | 1.132 | Runoff |

#### BBCH 9-31

| Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------------|-----------------------|------------|------------------------|------------|
| D2 (Brimstone) ditch | 0.0034 | Spray drift | 0.017 | Drainage |
| D2 (Brimstone) stream | 0.0036 | Spray drift | 0.005 | Drainage |
| D3 (Vreedepeel) ditch | 0.0034 | Spray drift | 0.015 | Drainage |
| D4 (Skousbo) pond | 0.0008 | Spray drift | 0.017 | Drainage |
| D4 (Skousbo) stream | 0.0038 | Spray drift | 0.008 | Drainage |
| D5 (La Jailliere) pond | 0.0008 | Spray drift | 0.015 | Drainage |
| D5 (La Jailliere) stream | 0.0042 | Spray drift | 0.013 | Drainage |
| R1 (Weiherbach) pond | 0.0008 | Spray drift | 0.034 | Runoff |
| R1 (Weiherbach) stream | 0.0030 | Spray drift | 0.420 | Runoff |
| R3 (Bologna) stream | 0.0042 | Spray drift | 1.132 | Runoff |

#### BBCH 9-77

| Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------------|-----------------------|------------|------------------------|------------|
| D2 (Brimstone) ditch | 0.0035 | Spray drift | 0.022 | Drainage |
| D2 (Brimstone) stream | 0.0039 | Spray drift | 0.015 | Drainage |
| D3 (Vreedepeel) ditch | 0.0034 | Spray drift | 0.016 | Drainage |
| D4 (Skousbo) pond | 0.0008 | Spray drift | 0.016 | Drainage |
| D4 (Skousbo) stream | 0.0038 | Spray drift | 0.008 | Drainage |
| D5 (La Jailliere) pond | 0.0008 | Spray drift | 0.014 | Drainage |
| D5 (La Jailliere) stream | 0.0042 | Spray drift | 0.013 | Drainage |
| R1 (Weiherbach) pond | 0.0008 | Spray drift | 0.026 | Runoff |
| R1 (Weiherbach) stream | 0.0030 | Spray drift | 0.384 | Runoff |
| R3 (Bologna) stream | 0.0042 | Spray drift | 1.132 | Runoff |

### Spring oilseed rape

#### Spring oilseed rape – 50 m no-spray buffer zone

| Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
|----------------|-----------------------|------------|------------------------|------------|
| D1 (Lanna) ditch | 0.0043 | Spray Drift | 0.027 | Drainage |
| D1 (Lanna) stream | 0.0051 | Spray Drift | 0.022 | Drainage |
| D3 (Vreedepeel) ditch | 0.0043 | Spray Drift | 0.020 | Drainage |
### Scenario

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
| --- | --- | --- | --- | --- | --- |
| D4 (Skousbo) | pond | 0.0010 | Spray Drift | 0.014 | Drainage |
| D4 (Skousbo) | stream | 0.0050 | Spray Drift | 0.015 | Drainage |
| D5 (La Jailliere) | pond | 0.0010 | Spray Drift | 0.007 | Drainage |
| D5 (La Jailliere) | stream | 0.0050 | Spray Drift | 0.025 | Runoff |
| R1 (Weiherbach) | pond | 0.0010 | Spray Drift | 0.524 | Runoff |
| R1 (Weiherbach) | stream | 0.0038 | Spray Drift | 0.524 | Runoff |

**Spring oilseed rape – 20 m no-spray buffer zone**

**Initial PECsw and PECsed of cypermethrin after single application on spring rape (Step 4, 20 m buffer)**

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
| --- | --- | --- | --- | --- | --- |
| D1 (Lanna) | ditch | 0.0104 | Spray Drift | 0.064 | Drainage |
| D1 (Lanna) | stream | 0.0122 | Spray Drift | 0.053 | Drainage |
| D3 (Vreedepeel) | ditch | 0.0103 | Spray Drift | 0.047 | Drainage |
| D4 (Skousbo) | pond | 0.0020 | Spray Drift | 0.027 | Drainage |
| D4 (Skousbo) | stream | 0.0119 | Spray Drift | 0.035 | Drainage |
| D5 (La Jailliere) | pond | 0.0020 | Spray Drift | 0.029 | Drainage |
| D5 (La Jailliere) | stream | 0.0121 | Spray Drift | 0.017 | Drainage |
| R1 (Weiherbach) | pond | 0.0020 | Spray Drift | 0.038 | Runoff |
| R1 (Weiherbach) | stream | 0.0091 | Spray Drift | 0.524 | Runoff |

**Potatoes**

**Potatoes – 20 m no-spray buffer zone**

**Initial PECsw and PECsed of cypermethrin after early application on potatoes (Step 4, 20 m buffer)**

| Scenario | Water body type | Initial PECsw [µg/L] | Main route | Initial PECsed [µg/kg] | Main route |
| --- | --- | --- | --- | --- | --- |
| D3 (Vreedepeel) | ditch | 0.0206 | Spray Drift | 0.087 | Drainage |
| D4 (Skousbo) | pond | 0.0206 | Spray Drift | 0.072 | Drainage |
| D4 (Skousbo) | stream | 0.0221 | Spray Drift | 0.028 | Drainage |
| D6 (Thiva), 1st crop | ditch | 0.0203 | Spray Drift | 0.051 | Drainage |
| D6 (Thiva), 2nd crop | ditch | 0.0202 | Spray Drift | 0.055 | Drainage |
| R1 (Weiherbach) | pond | 0.0039 | Spray Drift | 0.097 | Runoff |
| R1 (Weiherbach) | stream | 0.0179 | Spray Drift | 1.116 | Runoff |
| R2 (Porto) | stream | 0.0241 | Spray Drift | 1.460 | Runoff |
| R3 (Bologna) | stream | 0.0257 | Spray Drift | 0.618 | Runoff |
Initial PECsw and PECsed of cypermethrin after late application on potatoes (Step 4, 20 m buffer)

| Scenario                  | Water body type | Initial PECsw [µg/L] | Main route       | Initial PECsed [µg/kg] | Main route       |
|---------------------------|-----------------|----------------------|------------------|-------------------------|------------------|
| Late application          |                 |                      |                  |                         |                  |
| D3 (Vreedepeel)           | ditch           | 0.0206               | Spray Drift      | 0.089                   | Drainage         |
| D4 (Skousbo)              | pond            | 0.0039               | Spray Drift      | 0.055                   | Drainage         |
| D4 (Skousbo)              | stream          | 0.0198               | Spray Drift      | 0.014                   | Drainage         |
| D6 (Thiva), 1st crop     | ditch           | 0.0204               | Spray Drift      | 0.072                   | Drainage         |
| D6 (Thiva), 2nd crop     | ditch           | 0.0205               | Spray Drift      | 0.078                   | Drainage         |
| R1 (Weiherbach)           | pond            | 0.0039               | Spray Drift      | 0.170                   | Runoff           |
| R1 (Weiherbach)           | stream          | 0.0182               | Spray Drift      | 4.064                   | Runoff           |
| R2 (Porto)                | stream          | 0.0245               | Spray Drift      | 0.778                   | Runoff           |
| R3 (Bologna)              | stream          | 0.0256               | Spray Drift      | 2.971                   | Runoff           |

Metabolite DCVA

Parameters used in FOCUSsw step 1 and 2

- Molecular weight: 209.1 g/L
- Soil or water metabolite: soil and water metabolite
- Water solubility (mg/L): 1000 mg/L at 20°C
- $K_{fc}$ (mL/g): 18.75
- $DT_{50}$ soil (d): 5.5 days
- $DT_{50}$ water/sediment system (d): 93.0 d (geomean, Study No. 714-002, n=2)
- $DT_{50}$ water (d): 93.0 d
- $DT_{50}$ sediment (d): 93.0 d
- Maximum occurrence observed (% molar basis with respect to the parent)
- Total Water and Sediment: 66.1%
- Soil: 53.7%

Parameters used in FOCUSsw step 3 (if performed)

Not performed

Application rate

- Crop interception (%): - summer/winter cereals: 25, 50, 70% -summer/winter oil seed rape: 40, 70, 75% -potato: 0, 15, 50, 70%
- Crop and growth stage:
  - winter cereals
  - BBCH 10-31, 31-77, 31-75 and 31-69
  - Number of applications: 1
  - Interval (d): /
  - Application rate(s): 0.025 kg a.s./ha
  - Application window: Oct-Feb, Mar-May, Jun-Sep
| Crop Type          | Growth Stages                  | Number of Applications | Interval (d) | Application Rate(s) | Application Window          |
|-------------------|--------------------------------|------------------------|--------------|---------------------|-----------------------------|
| Spring cereals    | BBCH 10-31, 31-77, 31-75 and 31-69 | 1                      | /            | 0.025 kg a.s./ha     | Mar-May, Jun-Sep             |
| Winter oilseed rape | BBCH 09-30 and 31-35, 31-35 and 50-59, 09-30 and 70-77 | 2                      | 90           | 0.025 kg a.s./ha     | Oct-Feb, Mar-May, Jun-Sep    |
| Spring oilseed rape | BBCH 09-30, 31-35, 50-59 and 70-77 | 1                      | /            | 0.025 kg a.s./ha     | Mar-May, Jun-Sep             |
| Potatoes          | Whole season (up to PHI)       | 1                      | /            | 0.050 kg a.s./ha     | Mar-May, Jun-Sep             |

Main routes of entry /
### Metabolite 3-PBA

#### Parameters used in FOCUSsw step 1 and 2

| Parameter                                      | Value                          |
|------------------------------------------------|-------------------------------|
| Molecular weight                               | 214.22 g/L                    |
| Soil or water metabolite                       | soil and water metabolite     |
| Water solubility (mg/L)                        | 1000 mg/L at 20°C             |
| K<sub>foc</sub> (mL/g)                         | 100.9 (Note: the correct value to be used is 86.7) |
| DT<sub>50</sub> soil (d)                       | 3.1 days (Note: the correct value to be used is 2.0 d) |
| DT<sub>50</sub> water/sediment system (d)      | 16.9 d (geomean, Study No. 714-002, n=2) |
| DT<sub>50</sub> water (d)                      | 16.9 d (Note: the correct value to be used is 4.6) |
| DT<sub>50</sub> sediment (d)                   | 16.9 d (Note: the correct value to be used is 4.6) |
| Maximum occurrence observed (% molar basis with respect to the parent) |                               |
| Total Water and Sediment:                      | 25.4 %                        |
| Soil:                                          | 36.6 %                        |

#### Parameters used in FOCUSsw step 3 (if performed)

| Parameter                                      | Value                          |
|------------------------------------------------|-------------------------------|
| Application rate                               | Not performed                  |
| Crop interception (%)                          |                               |
| - summer/winter cereals                        | 25, 50, 70%                   |
| - summer/winter oil seed rape                  | 40, 70, 75%                   |
| - potato                                       | 0, 15, 50, 70%                |
| Crop and growth stage:                         |                               |
| - winter cereals                               | BBCH 10-31, 31-77, 31-75 and 31-69 |
| Number of applications:                        | 1                             |
| Interval (d):                                  | /                             |
| Application rate(s):                           | 0.025 kg a.s./ha              |
| Application window:                            | Oct-Feb, Mar-May, Jun-Sep     |
| - spring cereals                               | BBCH 10-31, 31-77, 31-75 and 31-69 |
| Number of applications:                        | 1                             |
| Interval (d):                                  | /                             |
| Application rate(s):                           | 0.025 kg a.s./ha              |
| Application window:                            | Mar-May, Jun-Sep               |
| - winter oil seed rape                          | BBCH 09-30 and 31-35, 09-30 and 50-59, 09-30 and 70-77 |
| Number of applications:                        | 2                             |
| Interval (d):                                  | 90                            |
| Application rate(s):                           | 0.025 kg a.s./ha              |
| Application window:                            | Oct-Feb, Mar-May, Jun-Sep     |
- spring oil seed rape  
  BBCH 09-30, 31-35, 50-59 and 70-77  
  Number of applications: 1  
  Interval (d): /  
  Application rate(s): 0.025 kg a.s./ha  
  Application window: Mar-May, Jun-Sep

- potatoes  
  Whole season (up to PHI)  
  Number of applications: 1  
  Interval (d): /  
  Application rate(s): 0.050 kg a.s./ha  
  Application window: Mar-May, Jun-Sep

### Main routes of entry

| Metabolite carboxamide | Parameters used in FOCUSsw step 1 and 2 |
|------------------------|---------------------------------------|
| Molecular weight: 434.32 g/L |
| Soil or water metabolite: soil and water metabolite |
| Water solubility (mg/L): 0.029 mg/L at 20°C (value of parent) |
| K<sub>foc</sub> (mL/g): 29966 (geomean, lab study) |
| DT<sub>50</sub> soil (d): 35.0 days (worst case of parent value) |
| DT<sub>50</sub> water/sediment system (d): 1000 d (worst case, default value) |
| DT<sub>50</sub> water (d): 1000 d (worst case, default value) |
| DT<sub>50</sub> sediment (d): 1000 d (worst case, default value) |
| Maximum occurrence observed (% molar basis with respect to the parent) |
| Total Water and Sediment: - % |
| Soil: 18.9 % |

### Parameters used in FOCUSsw step 3 (if performed)  
Not performed

### Application rate

| Crop interception (%) |
|------------------------|
| - summer/winter cereals: 25, 50, 70% |
| -summer/winter oil seed rape: 40, 70, 75% |
| -potato: 0, 15, 50, 70% |

| Crop and growth stage: |
|------------------------|
| - winter cereals  |
| BBCH 10-31, 31-77, 31-75 and 31-69 |
| Number of applications: 1  
  Interval (d): /  
  Application rate(s): 0.025 kg a.s./ha  
  Application window: Oct-Feb, Mar-May, Jun-Sep |
- spring cereals
  BBCH 10-31, 31-77, 31-75 and 31-69
  Number of applications: 1
  Interval (d): /
  Application rate(s): 0.025 kg a.s./ha
  Application window: Mar-May, Jun-Sep

- winter oil seed rape
  BBCH 09-30 and 31-35, 09-30 and 50-59, 09-30 and 70-77
  Number of applications: 2
  Interval (d): 90
  Application rate(s): 0.025 kg a.s./ha
  Application window: Oct-Feb, Mar-May, Jun-Sep

- spring oil seed rape
  BBCH 09-30, 31-35, 50-59 and 70-77
  Number of applications: 1
  Interval (d): /
  Application rate(s): 0.025 kg a.s./ha
  Application window: Mar-May, Jun-Sep

- potatoes
  Whole season (up to PHI)
  Number of applications: 1
  Interval (d): /
  Application rate(s): 0.050 kg a.s./ha
  Application window: Mar-May, Jun-Sep

Main routes of entry

Metabolite Unk1
Parameters used in FOCUSsw step 1 and 2

Data gap

Step 1

Initial PECsw and PECsed values of metabolites DCVA, 3-PBA and carboxamide for Step 1 based on a DT50 of the parent compound of 11.6 days

| Crop       | Application rate [kg/ha] | PECsw [µg/L] | PECsed [µg/kg] |
|------------|--------------------------|--------------|---------------|
| Carboxamide|                          |              |               |
| Winter cereals | 1 x 0.025              | 0.040        | 12.023        |
| Spring cereals | 1 x 0.025              | 0.040        | 12.023        |
| Winter rape | 2 x 0.025               | 0.080        | 24.046        |
| Spring rape | 1 x 0.025               | 0.040        | 12.023        |
| Potatoes                    | 1 x 0.050               | 0.080        | 24.046        |
### Initial PECsw and PECsed values of metabolites DCVA, 3-PBA and carboxamide for Step 1 based on a DT$_{50}$ of the parent compound of 33.0 days

| Crop       | Application rate [kg/ha] | PECsw [µg/L] | PECsed [µg/kg] |
|------------|--------------------------|--------------|----------------|
| **DCVA**   |                          |              |                |
| Winter cereals | 1 x 0.025               | 4.969        | 0.917          |
| Spring cereals | 1 x 0.025               | 4.969        | 0.917          |
| Winter rape   | 2 x 0.025               | 9.937        | 1.835          |
| Spring rape   | 1 x 0.025               | 4.969        | 0.917          |
| Potatoes     | 1 x 0.050               | 9.937        | 1.835          |
| **3-PBA**   |                          |              |                |
| Winter cereals | 1 x 0.025               | 2.374        | 2.365          |
| Spring cereals | 1 x 0.025               | 2.374        | 2.365          |
| Winter rape   | 2 x 0.025               | 2.374        | 2.365          |
| Spring rape   | 1 x 0.025               | 2.374        | 2.365          |
| Potatoes     | 1 x 0.050               | 4.747        | 4.729          |

### Step 2

Initial PECsw and PECsed values of carboxamide for Step 2 based on a DT$_{50}$ of the parent compound of 11.6 days

| Crop cover | Season | Northern Europe | Southern Europe |
|------------|--------|-----------------|-----------------|
| **Carboxamide** |        |                 |                 |
| Winter cereals | 1 x 0.025 | 0.040           | 12.023          |
| Spring cereals | 1 x 0.025 | 0.040           | 12.023          |
| Winter rape   | 2 x 0.025 | 0.080           | 24.046          |
| Spring rape   | 1 x 0.025 | 0.040           | 12.023          |
| Potatoes     | 1 x 0.050 | 0.080           | 24.046          |
| **DCVA**     |        |                 |                 |
| Winter cereals | 1 x 0.025 | 4.969           | 0.917           |
| Spring cereals | 1 x 0.025 | 4.969           | 0.917           |
| Winter rape   | 2 x 0.025 | 9.937           | 1.835           |
| Spring rape   | 1 x 0.025 | 4.969           | 0.917           |
| Potatoes     | 1 x 0.050 | 9.937           | 1.835           |
| **3-PBA**    |        |                 |                 |
| Winter cereals | 1 x 0.025 | 2.374           | 2.365           |
| Spring cereals | 1 x 0.025 | 2.374           | 2.365           |
| Winter rape   | 2 x 0.025 | 2.374           | 2.365           |
| Spring rape   | 1 x 0.025 | 2.374           | 2.365           |
| Potatoes     | 1 x 0.050 | 4.747           | 4.729           |
### Initial PECsw and PECsed values of carboxamide for Step 2 based on a DT$_{50}$ of the parent compound of 33.0 days

| Crop Cover | Season | Northern Europe | Southern Europe |
|------------|--------|-----------------|-----------------|
|            |        | single | multiple | single | multiple |
|            |        | PECsw  | PECsed  | PECsw  | PECsed  | PECsw  | PECsed  | PECsw  | PECsed  |
| Winter cereals, 1 x 0.025 kg/ha | | | | | | | | | |
| minimal | Oct - Feb | 0.019 | 5.554 | 0.015 | 4.443 | | | | |
| average | Mar - May | 0.006 | 1.777 | 0.020 | 3.554 | | | | |
| full | Jun - Sep | 0.002 | 0.666 | 0.003 | 0.100 | | | | |

| Spring cereals, 1 x 0.025 kg/ha | | | | | | | | | |
| minimal | Mar - May | 0.007 | 2.221 | 0.015 | 4.443 | | | | |
| average | Mar - May | 0.006 | 1.777 | 0.012 | 3.554 | | | | |
| full | Jun - Sep | 0.002 | 0.666 | 0.003 | 0.100 | | | | |

| Winter rape, 2 x 0.025 kg/ha | | | | | | | | | |
| minimal | Oct - Feb | 0.011 | 3.332 | 0.013 | 3.893 | 0.009 | 2.666 | 0.010 | 3.114 |
| average | Mar - May | 0.002 | 0.666 | 0.003 | 0.779 | 0.004 | 1.333 | 0.005 | 1.557 |
| full | Jun - Sep | 0.002 | 0.555 | 0.002 | 0.649 | 0.003 | 0.833 | 0.003 | 0.973 |

| Spring rape, 1 x 0.025 kg/ha | | | | | | | | | |
| minimal | Mar - May | 0.004 | 1.333 | 0.009 | 2.666 | | | | |
| average | Mar - May | 0.002 | 0.666 | 0.004 | 1.333 | | | | |
| full | Jun - Sep | 0.002 | 0.555 | 0.003 | 0.833 | | | | |

| Potatoes, 1 x 0.050 kg/ha | | | | | | | | | |
| no | Mar - May | 0.015 | 4.443 | 0.030 | 8.886 | | | | |
| minimal | Mar - May | 0.013 | 3.777 | 0.025 | 7.553 | | | | |
| average | Mar - May | 0.007 | 2.221 | 0.015 | 4.443 | | | | |
| full | Jun - Sep | 0.004 | 1.333 | 0.007 | 1.999 | | | | |

### Crop Cover and Season

| Crop Cover | Season | Northern Europe | Southern Europe |
|------------|--------|-----------------|-----------------|
|            |        | single | multiple | single | multiple |
|            |        | PECsw  | PECsed  | PECsw  | PECsed  | PECsw  | PECsed  | PECsw  | PECsed  |
| Winter cereals, 1 x 0.025 kg/ha | | | | | | | | | |
| minimal | Oct - Feb | 0.019 | 5.554 | 0.015 | 4.443 | | | | |
| average | Mar - May | 0.006 | 1.777 | 0.012 | 3.554 | | | | |
| full | Jun - Sep | 0.002 | 0.666 | 0.003 | 0.100 | | | | |

| Spring cereals, 1 x 0.025 kg/ha | | | | | | | | | |
| minimal | Mar - May | 0.007 | 2.221 | 0.015 | 4.443 | | | | |
| average | Mar - May | 0.006 | 1.777 | 0.012 | 3.554 | | | | |
| full | Jun - Sep | 0.002 | 0.666 | 0.003 | 0.100 | | | | |

| Winter rape, 2 x 0.025 kg/ha | | | | | | | | | |
| minimal | Oct - Feb | 0.011 | 3.332 | 0.013 | 3.893 | 0.009 | 2.666 | 0.010 | 3.114 |
| average | Mar - May | 0.002 | 0.666 | 0.003 | 0.779 | 0.004 | 1.333 | 0.005 | 1.557 |
| full | Jun - Sep | 0.002 | 0.555 | 0.002 | 0.649 | 0.003 | 0.833 | 0.003 | 0.973 |

| Spring rape, 1 x 0.025 kg/ha | | | | | | | | | |
| no | Mar - May | 0.015 | 4.443 | 0.030 | 8.886 | | | | |
| minimal | Mar - May | 0.013 | 3.777 | 0.025 | 7.553 | | | | |
| average | Mar - May | 0.007 | 2.221 | 0.015 | 4.443 | | | | |
| full | Jun - Sep | 0.004 | 1.333 | 0.007 | 1.999 | | | | |
### Initial PECsw and PECsed values of DCVA for Step 2 based on a DT₅₀ of the parent compound of 11.6 days

| Crop cover | Season       | Northern Europe | Southern Europe |
|------------|--------------|-----------------|-----------------|
|            |              | single | multiple | single | multiple |
|            |              | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] |
| Winter cereals, 1 x 0.025 kg/ha | minimal | Oct - Feb | 1.798 | 0.335 | 1.453 | 0.270 | - | - |
| | average | Mar - May | 0.625 | 0.116 | 1.177 | 0.219 | - | - |
| | full | Jun - Sep | 0.280 | 0.052 | 0.383 | 0.071 | - | - |
| Spring cereals, 1 x 0.025 kg/ha | minimal | Mar - May | 0.763 | 0.142 | 1.453 | 0.270 | - | - |
| | average | Mar - May | 0.625 | 0.116 | 1.177 | 0.219 | - | - |
| | full | Jun - Sep | 0.280 | 0.052 | 0.383 | 0.071 | - | - |
| Winter rape, 2 x 0.025 kg/ha | minimal | Oct - Feb | 1.108 | 0.206 | 1.315 | 0.211 | 0.901 | 0.168 | 0.928 | 0.173 |
| | average | Mar - May | 0.280 | 0.052 | 0.305 | 0.057 | 0.487 | 0.091 | 0.513 | 0.095 |
| | full | Jun - Sep | 0.245 | 0.046 | 0.270 | 0.050 | 0.332 | 0.062 | 0.357 | 0.066 |
| Spring rape, 1 x 0.025 kg/ha | minimal | Mar - May | 0.487 | 0.091 | 0.901 | 0.168 | - | - |
| | average | Mar - May | 0.280 | 0.052 | 0.487 | 0.091 | - | - |
| | full | Jun - Sep | 0.245 | 0.046 | 0.332 | 0.062 | - | - |
| Potatoes, 1 x 0.050 kg/ha | no | Mar - May | 1.526 | 0.284 | 2.906 | 0.541 | - | - |
| | minimal | Mar - May | 1.319 | 0.245 | 2.492 | 0.464 | - | - |
| | average | Mar - May | 0.836 | 0.155 | 1.526 | 0.284 | - | - |
| | full | Jun - Sep | 0.560 | 0.104 | 0.767 | 0.143 | - | - |

### Initial PECsw and PECsed values of DCVA for Step 2 based on a DT₅₀ of the parent compound of 33.0 days

| Crop cover | Season | Northern Europe | Southern Europe |
|------------|--------|-----------------|-----------------|
|            |        | single | multiple | single | multiple |
|            |        | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] | PECsw [µg/L] | PECsed [µg/kg] |
| Winter cereals, 1 x 0.025 kg/ha | Minimal | Oct - Feb | 1.798 | 0.335 | 1.453 | 0.270 | - | - |
| | Average | Mar - May | 0.625 | 0.116 | 1.177 | 0.219 | - | - |
| | Full | Jun - Sep | 0.280 | 0.052 | 0.383 | 0.071 | - | - |

---

www.efsa.europa.eu/efsajournal 105 EFSA Journal 2018;16(8):5402
| Crop cover          | Season | Northern Europe | Southern Europe |
|---------------------|--------|-----------------|-----------------|
|                     |        | single | multiple | single | multiple | single | multiple | single | multiple |
|                     |        | PECsw  | PECsed  | PECsw  | PECsed  | PECsw  | PECsed  | PECsw  | PECsed  |
| Winter cereals, 1 x 0.025 kg/ha | minimal | Oct - Feb | 1.976 | 0.368 | 1.595 | 0.297 | - | -  
|                     | average | Mar - May | 0.682 | 0.127 | 1.291 | 0.240 | - | -  
|                     | full    | Jun - Sep | 0.301 | 0.056 | 0.415 | 0.077 | - | -  
|                     | Spring cereals, 1 x 0.025 kg/ha | minimal | Mar - May | 0.834 | 0.155 | 1.595 | 0.297 | - | -  
|                     | average | Mar - May | 0.682 | 0.127 | 1.291 | 0.240 | - | -  
|                     | full    | Jun - Sep | 0.301 | 0.056 | 0.415 | 0.077 | - | -  
|                     | Winter rape, 2 x 0.025 kg/ha | minimal | Oct - Feb | 1.215 | 0.226 | 1.352 | 0.251 | 0.986 | 0.184 | 1.101 | 0.205  
|                     | average | Mar - May | 0.280 | 0.052 | 0.305 | 0.057 | 0.530 | 0.099 | 0.599 | 0.111  
|                     | full    | Jun - Sep | 0.263 | 0.049 | 0.306 | 0.057 | 0.358 | 0.067 | 0.411 | 0.076  
|                     | Spring rape, 1 x 0.025 kg/ha | minimal | Mar - May | 0.530 | 0.099 | 0.986 | 0.184 | - | -  
|                     | average | Mar - May | 0.301 | 0.056 | 0.530 | 0.099 | - | -  
|                     | full    | Jun - Sep | 0.263 | 0.049 | 0.358 | 0.067 | - | -  
|                     | Potatoes, 1 x 0.050 kg/ha | no      | Mar - May | 1.668 | 0.310 | 3.191 | 0.594 | - | -  
|                     | minimal | Mar - May | 1.440 | 0.268 | 2.734 | 0.509 | - | -  
|                     | average | Mar - May | 0.907 | 0.169 | 1.668 | 0.310 | - | -  
|                     | full    | Jun - Sep | 0.603 | 0.112 | 0.831 | 0.154 | - | -  

Initial PECsw and PECsed values of 3-PBA for Step 2 based on a DT<sub>50</sub> of the parent compound of 11.6 days
Initial PEC<sub>sw</sub> and PEC<sub>sed</sub> values of 3-PBA for Step 2 based on a DT<sub>50</sub> of the parent compound of 33.0 days

| Crop cover | Season    | Northern Europe |          | Southern Europe |          |
|------------|-----------|-----------------|----------|-----------------|----------|
|            |           | single          | multiple | single          | multiple |
|            |           | PEC<sub>sw</sub> | PEC<sub>sw</sub> | PEC<sub>sed</sub> | PEC<sub>sed</sub> | PEC<sub>sw</sub> | PEC<sub>sw</sub> | PEC<sub>sed</sub> | PEC<sub>sed</sub> |
| minimal    | Mar - May | 0.575           | 0.565    | 1.104           | 1.098    | 0.496           | 0.485    | 0.946           | 0.938    | -                | -                |
| average    | Mar - May | 0.311           | 0.300    | 0.575           | 0.565    | 0.311           | 0.300    | 0.575           | 0.565    | -                | -                |
| full       | Jun - Sep | 0.205           | 0.197    | 0.285           | 0.274    | 0.205           | 0.197    | 0.285           | 0.274    | -                | -                |

Estimation of concentrations from other routes of exposure (Regulation (EU) N° 284/2013, Annex Part A, point 9.4)

| Method of calculation | Not applicable |
|-----------------------|----------------|

PEC

| Maximum concentration | Not relevant |
Ecotoxicology

**Effects on birds and other terrestrial vertebrates (Regulation (EU) N° 283/2013, Annex Part A, point 8.1 and Regulation (EU) N° 284/2013, Annex Part A, point 10.1)**

| Species               | Test substance | Time scale | End point | Toxicity (mg/kg bw per day) |
|-----------------------|----------------|------------|-----------|-----------------------------|
| **Birds**             |                |            |           |                             |
| Pigeon                | a.s.           | Acute      | LD<sub>50</sub> | > 2000 mg a.s./kg bw         |
| *Columba livia*       |                |            |           |                             |
| Japanese quail        | a.s.           | Acute      | LD<sub>50</sub> | 1420 mg a.s./kg bw          |
| *Coturnix coturnix japonica* |            |            |           |                             |
| Bobwhite quail        | a.s.           | Long-term  | NOEL      | 92.0 mg a.s./kg bw/day      |
| *Colinus virginianus* |                |            |           |                             |
| Bobwhite quail        | a.s.           | Long-term  | NOEL      | 93.5 mg a.s./kg bw/day      |
| *Colinus virginianus* |                |            |           |                             |
| Bobwhite quail        | a.s.           | Long-term  | NOEL      | 4.29 mg a.s./kg bw/day<sup>1</sup> |
| *Colinus virginianus* |                |            |           |                             |
| Mallard duck          | a.s.           | Long-term  | NOEL      | 5.58 mg a.s./kg bw/day<sup>1</sup> |
| *Anas platyrhynchos*  |                |            |           |                             |
| **Mammals**           |                |            |           |                             |
| Rat                   | a.s.           | Acute      | LD<sub>50</sub> | 500 mg a.s./kg bw           |
| Rat                   | a.s.           | Acute      | LD<sub>50</sub> | 238 mg a.s./kg bw           |
| Rat                   | a.s.           | Acute      | LD<sub>50</sub> | 301 mg a.s./kg bw           |
| Rat                   | Preparation (Cypermethrin 500 EC) | Acute | LD<sub>50</sub> | > 2000 mg prep./kg bw (< 1000 mg a.s./kg bw) |
| Rat                   | a.s.           | Long-term  | NOAEL     | 5 mg a.s./kg bw/day         |

**Endocrine disrupting properties (Annex Part A, points 8.1.5)**

Based on reproductive studies with birds and mammals, there are no indications that alpha-cypermethrin has endocrine disruptive potential.

Overall, based on all available data, there is no convincing evidence for a potential of endocrine activity of cypermethrin in vivo up to dose levels not also causing significant systemic toxicity and therefore it can be concluded that cypermethrin has no potential endocrine effects in birds, fish or amphibians.
Additional higher tier studies (Annex Part A, points 10.1.1.2):
No additional higher tier studies have been provided.

Terrestrial vertebrate wildlife (birds, mammals, reptile and amphibians) (Annex Part A, points 8.1.4, 10.1.3):
A number of public literature studies are available, which investigate the potential effects of cypermethrin on different amphibian species. These data show that toxicity of cypermethrin towards amphibians and fish is comparable. As the risk assessment for fish is based on the conservative endpoints for acute and chronic exposure in Tier 1 and on the geomean endpoints in Tier 2 (acute), RMS concludes that the risk to amphibians is covered by the risk assessment for fish.

No data on reptiles are available.

1 highest concentration tested

Toxicity/exposure ratios for terrestrial vertebrates (Regulation (EU) N° 284/2013, Part A, Annex point 10.1)

Cereals (winter and spring) at BBCH 10-77, 1 x 25 g a.s./ha

| Growth stage            | Indicator or focal species | Time scale | DDD (mg/kg bw per day) | TER       | Trigger |
|-------------------------|----------------------------|------------|------------------------|-----------|---------|
| Screening Step (Birds)  |                            |            |                        |           |         |
| All                     | Small omnivorous bird      | Acute      | 3.97                   | 424       | 10      |
| All                     | Small omnivorous bird      | Long-term  | 0.859                  | 107       | 5       |
| Screening Step (Mammals)|                            |            |                        |           |         |
| All                     | Small herbivorous mammal   | Acute      | 2.96                   | 90.5      | 10      |
| All                     | Small herbivorous mammal   | Long-term  | 0.64                   | 7.81      | 5       |

1 a geomean LD50 of 1685 mg a.s./kg bw, calculated from the LD50 for Pigeon (Columba livia) and Japanese quail (Coturnix coturnix japonica), was used in the risk assessment to calculate this TER value.

2 a geomean LD50 value of 268 mg a.s./kg bw, calculated based on the available and relevant acute toxicity studies on male rats (3), was used in the risk assessment to calculate this TER value.

Risk from bioaccumulation and food chain behaviour [indicate when not relevant i.e if Log kow ≤3]

| Indicator or focal species            | Time scale | DDD (mg/kg bw per day) | TER       | Trigger |
|---------------------------------------|------------|------------------------|-----------|---------|
| Earthworm-eating birds (cypermethrin) | Long-term  | 0.085                  | 1077      | 5       |
| Earthworm-eating birds (carboxamide)  | Long-term  | 0.0738                 | 125       | 5       |
| Earthworm-eating mammals (cypermethrin)| Long-term  | 0.104                  | 48.0      | 5       |
| Earthworm-eating mammals (carboxamide)| Long-term  | 0.090                  | 5.56      | 5       |
| Fish-eating birds (cypermethrin)      | Long-term  | 0.014                  | 6672      | 5       |
| Fish-eating birds (carboxamide)       | Long-term  | 0.00139                | 6636      | 5       |
| Fish-eating mammals (cypermethrin)    | Long-term  | 0.012                  | 406       | 5       |
| Fish-eating mammals (carboxamide)     | Long-term  | 0.00124                | 404       | 5       |

Risk from consumption of contaminated water

| Scenarios           | Indicator or focal species | Time scale | PEC_{dw}xDWR | TER | Trigger |
|---------------------|----------------------------|------------|--------------|-----|---------|
| Leaf scenario       | Birds                      | Acute      | Not relevant |     |         |

Puddle scenario, Screening step

1) Application rate (g a.s./ha)/relevant endpoint <50 (koc<500 L/kg), TER calculation not needed
2) Application rate (g a.s./ha)/relevant endpoint <3000 (koc≥500 L/kg), TER calculation not needed
### Growth stage

| Indicator or focal species | Time scale | DDD (mg/kg bw per day) | TER | Trigger |
|---------------------------|------------|------------------------|-----|---------|
| Puddle scenario Birds     | Long-term  | Not needed             | Case 2 (<0.27) | 5      |
| Puddle scenario Mammals   | Long-term  | Not needed             | Case 2 (< 5)    | 5      |

#### Winter oilseed rape at BBCH 9-77, 2 x 25 g a.s./ha (interval 90 days) / Spring oilseed rape at BBCH 9-77, 1 x 25 g a.s./ha

| Growth stage | Indicator or focal species | Time scale | DDD (mg/kg bw per day) | TER | Trigger |
|--------------|---------------------------|------------|------------------------|-----|---------|
| Screening Step (Birds) | All Small omnivorous bird | Acute      | 3.97                   | 424 | 10      |
|                | All Small omnivorous bird | Long-term  | 0.859                  | 107 | 5       |
| Screening Step (Mammals) | All Small herbivorous mammal | Acute   | 2.96                   | 90.5 | 10      |
|                | All Small herbivorous mammal | Long-term | 0.64                   | 7.81 | 5       |

1 a geomean LD$_{50}$ of 1685 mg a.s./kg bw, calculated from the LD$_{50}$ for Pigeon (Columba livia) and Japanese quail (Coturnix coturnix japonica), was used in the risk assessment to calculate this TER value.

2 a geomean LD$_{50}$ value of 268 mg a.s./kg bw, calculated based on the available and relevant acute toxicity studies on male rats (3), was used in the risk assessment to calculate this TER value.

### Risk from bioaccumulation and food chain behaviour

| Indicator or focal species | Time scale | DDD (mg/kg bw per day) | TER | Trigger |
|---------------------------|------------|------------------------|-----|---------|
| Earthworm-eating birds (cypermethrin) | Long-term | 0.118                  | 778 | 5       |
| Earthworm-eating birds (carboxamide) | Long-term | 0.0738                 | 125 | 5       |
| Earthworm-eating mammals (cypermethrin) | Long-term | 0.144                  | 34.7| 5       |
| Earthworm-eating mammals (carboxamide) | Long-term | 0.090                  | 5.6 | 5       |
| Fish-eating birds (cypermethrin) | Long-term | 0.014                  | 6672| 5       |
| Fish-eating birds (carboxamide) | Long-term | 0.00139                | 6636| 5       |
| Fish-eating mammals (cypermethrin) | Long-term | 0.012                  | 406 | 5       |
| Fish-eating mammals (carboxamide) | Long-term | 0.00124                | 404 | 5       |

### Risk from consumption of contaminated water

| Scenarios | Indicator or focal species | Time scale | PEC$_{aq}$xDWR | TER | Trigger |
|-----------|---------------------------|------------|----------------|-----|---------|
| Leaf scenario Birds | Acute | Not relevant | 10 |

**Puddle scenario, Screening step**

1) Application rate (g a.s./ha)/relevant endpoint <50 (koc<500 L/kg), TER calculation not needed

2) Application rate (g a.s./ha)/relevant endpoint <3000 (koc≥500 L/kg), TER calculation not needed
**Potato (whole season), 1 x 50 g a.s./ha**

| Growth stage | Indicator or focal species | Time scale | DDD (mg/kg bw per day) | TER | Trigger |
|--------------|---------------------------|------------|------------------------|-----|---------|
| Screening Step (Birds) | | | | | |
| All | Small omnivorous bird | Acute | 7.94 | 212\(^1\) | 10 |
| All | Small omnivorous bird | Long-term | 1.717 | 54 | 5 |
| Screening Step (Mammals) | | | | | |
| All | Small herbivorous mammal | Acute | 5.92 | 45.3\(^2\) | 10 |
| All | Small herbivorous mammal | Long-term | 1.28 | 3.91 | 5 |
| Tier 1 (Mammals) | | | | | |
| BBCH 10-19 | Small insectivorous mammal “shrew” | Long-term | 0.111 | 44.92 | 5 |
| BBCH ≥ 20 | Small insectivorous mammal “shrew” | Long-term | 0.050 | 99.30 | 5 |
| BBCH ≥ 40 | Small herbivorous mammal “vole” | Long-term | 0.575 | 8.69 | 5 |
| BBCH 10-40 | Large herbivorous mammal “lagomorph” | Long-term | 0.379 | 13.19 | 5 |
| BBCH ≥ 40 | Large herbivorous mammal “lagomorph” | Long-term | 0.114 | 43.87 | 5 |
| BBCH 10-40 | Small omnivorous mammal “mouse” | Long-term | 0.207 | 24.19 | 5 |
| BBCH ≥ 40 | Small omnivorous mammal “mouse” | Long-term | 0.061 | 82.03 | 5 |

\(^1\) a geometric mean LD\(_{50}\) of 1685 mg a.s./kg bw, calculated from the LD\(_{50}\) for Pigeon (Columba livia) and Japanese quail (Coturnix coturnix japonica), was used in the risk assessment to calculate this TER value.

\(^2\) a geometric mean LD\(_{50}\) value of 268 mg a.s./kg bw, calculated based on the available and relevant acute toxicity studies on male rats (3), was used in the risk assessment to calculate this TER value.

### Risk from bioaccumulation and food chain behaviour

| Indicator or focal species | Time scale | DDD (mg/kg bw per day) | TER | Trigger |
|---------------------------|------------|------------------------|-----|---------|
| Earthworm-eating birds (cypermethrin) | Long-term | 0.171 | 538 | 5 |
| Earthworm-eating birds (carboxamide) | Long-term | 0.0738 | 125 | 5 |
| Earthworm-eating mammals (cypermethrin) | Long-term | 0.208 | 24.0 | 5 |
| Earthworm-eating mammals (carboxamide) | Long-term | 0.090 | 5.56 | 5 |
| Fish-eating birds (cypermethrin) | Long-term | 0.028 | 3336 | 5 |
| Fish-eating birds (carboxamide) | Long-term | 0.00139 | 6636 | 5 |
| Fish-eating mammals (cypermethrin) | Long-term | 0.025 | 203 | 5 |
| Fish-eating mammals (carboxamide) | Long-term | 0.00124 | 404 | 5 |

### Risk from consumption of contaminated water

| Scenarios | Indicator or focal species | Time scale | PEC\(_{dw}\)xDWR | TER | Trigger |
|-----------|----------------------------|------------|-----------------|-----|---------|
| Leaf scenario | Birds | Acute | Not relevant | 5 | |

**Puddle scenario, Screening step**

1) Application rate (g a.s./ha)/relevant endpoint <50 (koc<500 L/kg), TER calculation not needed
2) Application rate (g a.s./ha)/relevant endpoint <3000 (koc≥500 L/kg), TER calculation not needed
Toxicity data for all aquatic tested species (Regulation (EU) N° 283/2013, Annex Part A, points 8.2 and Regulation (EU) N° 284/2013 Annex Part A, point 10.2)*

| Group                                   | Test substance | Time-scale (Test type) | End point                      | Toxicity¹ |
|-----------------------------------------|----------------|------------------------|--------------------------------|-----------|
| **Laboratory tests**                    |                |                        |                                |           |
| Fish                                    |                |                        |                                |           |
| Rainbow trout (Oncorhynchus mykiss)     | Cypemethrin technical | Acute 96 hr (semi-static) | Mortality, LC₅₀                | 2.83 µg a.s./L (mm) |
| Rainbow trout (Oncorhynchus mykiss)     | Cypemethrin 500 EC | Acute 96 hr (semi-static) | Mortality, LC₅₀                | 5.06 µg prep./L (nom) |
| Rainbow trout (Oncorhynchus mykiss)     | Cypemethrin 500 EC | Acute 96 hr (static) (sediment) | Mortality, LC₅₀                | 133 µg prep./L (mm) |
| Sheephead minnow (Cyprinodon variegatus)| Cypemethrin technical | Acute 96 hr (flow-through) | Mortality, LC₅₀                | 3.45 µg a.s./L (mm) |
| Fathead minnow (Pimephales promelas)³  | Cypemethrin technical | Chronic 34 days (flow-through) | Larval survival, NOEC          | N/A       |
| Fathead minnow (Pimephales promelas)⁴  | Cypemethrin technical | Chronic 31 days ELS (flow-through) | Larval survival, Growth, NOEC | 0.32 µg a.s./L (nom) |
| Fathead minnow (Pimephales promelas)    | Cypemethrin technical | Chronic 34 days ELS (flow-through) | Larval survival, Growth, NOEC | 0.463 µg a.s./L (mm) |
| Fathead minnow (Pimephales promelas)⁴  | Cypemethrin technical | Chronic 300 days FFLC (flow-through) | Survival, NOEC                | 0.077 µg a.s./L (mm) |
| Rainbow trout (Oncorhynchus mykiss)     | Cis-DCVA       | Acute 96 hr (static)    | Mortality, LC₅₀                | > 1 mg/L (nom) |
| Rainbow trout (Oncorhynchus mykiss)     | Trans-DCVA     | Acute 96 hr (static)    | Mortality, LC₅₀                | > 1 mg/L (nom) |
| Rainbow trout (Oncorhynchus mykiss)     | mPBAcid²       | Acute 96 hr (static)    | Mortality, LC₅₀                | > 1 mg/L (nom) |
| **Aquatic invertebrates**               |                |                        |                                |           |
| Water flea (Daphnia magna)              | Cypemethrin technical | Acute 48 hr (static) | Mortality, EC₅₀                | 4.71 µg a.s./L (mm) |
| Group                              | Test substance | Time-scale (Test type) | End point                        | Toxicity$^1$ |
|-----------------------------------|----------------|------------------------|----------------------------------|--------------|
| Water flea (*Daphnia magna*)      | Cypermethrin 500 EC | Acute 48 hr (static)   | Mortality, EC$_{50}$             | 9.67 µg a.s./L (mm) |
| Midge (*Chironomus riparius*)      | Cypermethrin technical | Acute 48 hr (static)   | Mortality, EC$_{50}$, 1$^{st}$ instar, Mortality, EC$_{50}$, 4$^{th}$ instar | 0.0069 µg a.s./L (mm), > 2.9 µg a.s./L (mm) |
| *Hyalella azteca*                  | Cypermethrin technical | Acute 48 hr (static)   | Mortality, EC$_{50}$             | 0.0053 µg a.s./L (mm) |
| Water flea (*Daphnia magna*)      | Cypermethrin technical | Chronic 21 d (semi-static) | Reproduction, development, NOEC | 0.05 µg a.s./L (mm) |
| Water flea (*Daphnia magna*)      | Cypermethrin technical | Chronic 21 d (semi-static) | Reproduction, NOEC EC$_{10}$, EC$_{20}$ | 53.15 ng a.s./L (mm), 87.99 ng a.s./L (im), 148.38 ng a.s./L (im) |
| Midge (*Chironomus riparius*)      | Cypermethrin technical | Chronic 28 d (static)  | Emergence, NOEC EC$_{10}$        | 63.6 ng a.s./L (im)$^*$ (162 ng a.s./kg im)$^*$, 76.1 ng a.s./L (im)$^*$ |
| Midge (*Chironomus riparius*)      | Cypermethrin technical | Chronic 10 days (static) | NOEC$_{weight}$                 | 4.9 µg a.s./kg dw (mm) |
| Water flea (*Daphnia magna*)      | Cis-DCVA        | Acute 48 hr (static)   | Mortality, EC$_{50}$             | > 1 mg/L (nom) |
| Water flea (*Daphnia magna*)      | Trans-DCVA      | Acute 48 hr (static)   | Mortality, EC$_{50}$             | > 1 mg/L (nom) |
| Water flea (*Daphnia magna*)      | mPBAcid         | Acute 48 hr (static)   | Mortality, EC$_{50}$             | > 1 mg/L (nom) |
| Water flea (*Daphnia magna*)      | PBAldehyde      | Acute 48 hr (semi-static) | Mortality, EC$_{50}$             | 0.162 mg/L (mm) |
| Water flea (*Daphnia magna*)      | Carboxamide     | Acute 48 hr (static)   | Mortality, EC$_{50}$             | > 22.4 µg/L (mm) |
| Algae                             |                 |                        |                                  |              |
| Green microalgae (*Pseudokichneriella subcapitata*) | Cypermethrin technical | Chronic 96 h (static) | Growth rate: E$_{c}$, NOEC       | ≥ 66.7 µg a.s./L (mm), 66.7 µg a.s./L (mm) |

$^1$ Toxicity values are expressed as concentration that causes 50% effect (EC$_{50}$) or that causes no effect (NOEC).
| Group | Test substance | Time-scale (Test type) | End point | Toxicity¹ |
|-------|----------------|------------------------|-----------|-----------|
| Green microalgae *(Pseudokichneriella subcapitata)* | Cypermethrin technical | Chronic 96 h (static) | Growth rate, Yield: EᵣC₅₀, EᵣC₂₀, EᵣC₁₀ | > 33.0 µg a.s./L (mm) > 33.0 µg a.s./L (mm) > 33.0 µg a.s./L (mm) |
| | | | NOEC | 33.0 µg a.s./L (mm) |
| Green microalgae *(Pseudokichneriella subcapitata)* | Cypermethrin 500 EC | Chronic 72 h (static) | Growth rate: EᵣC₅₀ | > 143 mg a.s./L (mm) |
| | | | Biomass: EᵣC₅₀, EᵣC₂₀, EᵣC₁₀ | 78.0 mg a.s./L (mm) 25.4 mg a.s./L (mm) 14.9 mg a.s./L (mm) |
| | | | Yield: EᵣC₅₀, EᵣC₂₀, EᵣC₁₀ | 51.4 mg a.s./L (mm) 21.4 mg a.s./L (mm) 13.6 mg a.s./L (mm) |
| | | | NOEC | 14.9 mg a.s./L (mm) |
| Green microalgae *(Pseudokichneriella subcapitata)* | Cis-DCVA | Chronic 72 h (static) | Growth rate: EᵣC₅₀ | > 1 mg/L (nom) |
| | | | Biomass: EᵣC₅₀ | > 1 mg/L (nom) |
| Green microalgae *(Pseudokichneriella subcapitata)* | Trans-DCVA | Chronic 72 h (static) | Growth rate: EᵣC₅₀ | > 1 mg/L (nom) |
| | | | Biomass: EᵣC₅₀ | > 1 mg/L (nom) |
| Green microalgae *(Pseudokichneriella subcapitata)* | mPBAcid | Chronic 72 h (static) | Growth rate: EᵣC₅₀ | > 1 mg/L (nom) |
| | | | Biomass: EᵣC₅₀ | > 1 mg/L (nom) |
Further testing on aquatic organisms

Acute endpoint for fish:
LC50 (Onchorhynhus mykiss) = 2.83 µg a.s./L
LC50 (Cyprinodon variegatus) = 3.45 µg a.s./L
Geomean LC50 = 3.12 µg a.s./L

Chronic endpoint for fish:
NOEC (Pimphales promelas, FFLC) = 0.077 µg a.s./L

Mesocosm endpoints for aquatic invertebrates (study by Hommen U., 2015):
NOEC (class 2 effect) = 0.005 µg a.s./L
NOEAEc (class 3A effect) = 0.015 µg a.s./L
ETO: assessment factor of 3 for NOEC endpoint: ETO-RAC = 0.0017 µg a.s./L
ERO: assessment factor of 4 for NOEAEc endpoint: ERO-RAC = 0.0038 µg a.s./L

| Group | Test substance | Time-scale (Test type) | End point | Toxicity |
|-------|----------------|------------------------|-----------|----------|
| Natural populations of macroinvertebrates, emerging insects, zooplankton, phytoplankton, periphyton, macrophytes and filamental algae | Cyperkill 10 EC | Outdoor mesocosm (2 applications, 14 days interval) | NOEAEc | 0.05 µg a.s./L |
| Natural populations of macroinvertebrates, emerging insects, zooplankton, phytoplankton, periphyton, macrophytes and filamental algae | Sherpa 10 EC | Outdoor mesocosm (2 applications, 14 days interval) | NOEAEc | 0.1 µg a.s./L |
| Natural populations of macroinvertebrates, emerging insects, zooplankton, phytoplankton, periphyton, macrophytes and filamental algae | Cypermethrin 500 EC | Outdoor mesocosm (1 application) | NOEC (effect class 2) | 0.005 µg a.s./L | NOEAEc (effect class 3A) | 0.015 µg a.s./L |
| Natural populations of zooplankton and phytoplankton | Cypermethrin 500 EC | Indoor microcosm (2 applications) | NOEAEc (effect class 3A) | 0.100 µg a.s./L |
Potential endocrine disrupting properties (Annex Part A, point 8.2.3)

Based on an assessment of the available public literature regarding the potential for endocrine disruption of cypermethrin, it was concluded that there is no indication that cypermethrin has potential endocrine effects. Any toxic effects observed are in the range of acute and/or chronic toxicity.

The risk assessment for fish is based on the conservative endpoints for acute and chronic exposure in Tier 1 and on the geomean endpoint in Tier 2. The chronic risk assessment is based on the endpoint from a fish full life cycle test with *Pimephales promelas*, comprising two generations. The chronic endpoint was based on the effects on survival of the parent fish. RMS concludes that the risk for fish and amphibians is acceptable for the intended uses of cypermethrin, provided appropriate risk mitigation measures are applied (see B.9.4.3).

Considering the studies with birds, no effects on reproduction were observed at the highest dose tested. Overall, based on the available data, there is no convincing evidence for a potential of endocrine activity of cypermethrin *in vivo* up to dose levels not also causing significant systemic toxicity and therefore it can be concluded that cypermethrin has no potential endocrine effects in birds, fish or amphibians.

During the Pestides Peer Review Meeting 177 the potential endocrine properties of cypermethrin were discussed.

Some positive evidence for anti-androgenic activity (AR binding and transactivation) was available. Summaries of EPA studies, e.g. AMA test and FSTRA test were considered. In the available summary of the FSTRA study, effects have been observed in the male GSI at 0.12 µg a.s./L and tubercule score at 1.4 µg a.s./L as well as ovary atresia. In the AMA study, no evidence of a potential interaction with the T modality was observed. Since these AMA and FSTRA studies were not submitted in the EU dossier of cypermethrin a data gap was identified.

A FFLC study is available in the EU dossier of cypermethrin, however, not all relevant endocrine parameters were investigated. The NOEC was based on survival of F0 generation (NOEC = 0.077 µg a.s./L). It was considered that this endpoint covers any potential endocrine activity in the aquatic risk assessment.

The majority of experts agreed that pending on the outcome of the data gap in the mammalian toxicology section (male pubertal assay), further considerations may be needed on potential endocrine effects in non-target organisms.

1 (nom) nominal concentration; (m.m) mean measured concentration; (m) initial measured concentrations; prep.: preparation; a.s.: active substance

2 The toxicity studies on metabolites of cypermethrin were retrieved from the dossier of zeta-cypermethrin. The toxicity of the metabolite mPBA to *Oncorhynchus mykiss* is confirmed by the toxicity value retrieved from the dossier of beta-cypermethrin.

3 From the ELS study on *Pimephales promelas* (Stephenson, 1983) no reliable endpoint could be derived.

4 In the ELS study on *Pimephales promelas* (Knight and Murphy, 2005) one of the validity criteria (hatching success) was not met.

5 The mesocosm study by Schnöder and Kroos (2003) was assigned a reliability index of 2.

6 The mesocosm study by Hommen (2015) was assigned a reliability index of 1; consequently the endpoints are used in the aquatic risk assessment.

* A considerable degradation/dissipation was observed in the water phase, therefore the endpoint expressed on the basis of initial measured bears some considerable uncertainties.

Bioconcentration in fish (Annex Part A, point 8.2.2.3)

| Active substance | DCVA | 3-PBAcid | 3-PBAldehyde | Carboxamid e |
|------------------|------|----------|--------------|-------------|
| logP<sub>OW</sub> | 5.55-5.83 | 2.55-2.81 | 2..55 | 3.5 | 5.5 |
| Steady-state bioconcentration factor (BCF) (total wet weight/normalised to 5% lipid content)<sup>1</sup> | 266 - 331* | | | | |
| Uptake/depuration kinetics BCF (total wet weight/normalised to 5% lipid content) | | | | | |
### Regulatory acceptable concentrations used in the Tier 1 risk assessment

| Species group       | Endpoint                          | Assessment factor | RAC       |
|---------------------|-----------------------------------|-------------------|-----------|
| **Acute effect**    |                                   |                   |           |
| Fish                | LC₅₀ = 2.83 µg a.s./L              | 100               | 0.0283 µg a.s./L |
| *Daphnia magna*     | EC₅₀ = 4.71 µg a.s./L              | 100               | 0.0471 µg a.s./L |
| *Hyalella azeteca*  | EC₅₀ = 0.0053 µg a.s./L            | 100               | 0.000053 µg a.s./L |
| **Overall acute RAC** |                                   |                   | 0.000053 µg a.s./L |
| **Chronic effect**  |                                   |                   |           |
| Fish                | NOEC = 0.077 µg a.s./L             | 10                | 0.0077 µg a.s./L |
| *Daphnia magna*     | NOEC = 0.05 µg a.s./L              | 10                | 0.005 µg a.s./L |
| *Chironomus riparius* | NOEC = 0.0636 µg a.s./L         | 10                | 0.00636 µg a.s./L |
| *NOEC = 0.162 µg a.s./kg* |                     | 10                | 0.0162 µg a.s./kg |
| Algae               | E₅₀ > 33 µg a.s./L                 | 10                | > 3.3 µg a.s./L |
| **Overall chronic RAC (surface water)** |                     |                   | 0.005 µg a.s./L |
| **Overall chronic RAC (sediment)** |                     |                   | 0.0162 µg a.s./kg |

Notes: RAC = Regulatory Acceptable Concentration

### Metabolite: DCVA

| Species group       | Endpoint                          | Assessment factor | RAC |
|---------------------|-----------------------------------|-------------------|-----|
| **Acute effect assessment** |                                   |                   |     |
| Fish                | LC₅₀ > 1000 µg/L                   | 100               | 10 µg/L |
| Aquatic invertebrates | EC₅₀ > 1000 µg/L                   | 100               | 10 µg/L |
| **Overall acute RAC** |                                   |                   | 10 µg/L |
| **Chronic assessment** |                                   |                   |     |
| Algae               | E₅₀ > 1000 µg a.s./L               | 10                | 100 µg/L |
| **Overall chronic RAC** |                                   |                   | 100 µg/L |

### Metabolite: mPBAcid

---

1. Fish was exposed via water. Considering the relatively high bioconcentration potential, a test with exposure route via food could have been considered. Nevertheless, since the test concentrations were kept constant (and the total $^{14}$C content was followed), the study was considered as sufficient (Pesticides Peer Review Meeting 177).
|                       | Acute effect assessment | Chronic effect assessment | Metabolite: carboxamide |
|-----------------------|-------------------------|---------------------------|-------------------------|
| Fish                  | LC$_{50}$ > 1000 µg/L   | EC$_{50}$ > 1000 µg/L     |                         |
| Aquatic invertebrates | EC$_{50}$ > 1000 µg/L   |                           |                         |
| Overall acute RAC     | 10 µg/L                 |                           |                         |
| Algae                 | E$_{r}$C$_{50}$ > 1000 µg/L | 10 µg/L                    |                         |
| Overall chronic RAC   | 100 µg/L                |                           |                         |
|                       | Acute effect assessment |                           |                         |
| Aquatic invertebrates | EC$_{50}$ > 22.4 µg/L   | 100 µg/L                  |                         |
| Overall acute RAC     | > 0.224 µg/L            |                           |                         |

Notes: RAC = Regulatory Acceptable Concentration
Comparison of the RAC and endpoint for the most sensitive aquatic organisms (Regulation (EU) No 284/2013, Annex Part A, point 10.2)

**FOCUS\textsubscript{sw} step 1-3 - Comparison of RACs and global maximum PEC\textsubscript{sw} for cypermethrin – Winter cereals at 1 x 25 g a.s./ha**

| Scenario                  | Initial PECSW (µg/L) | Fish acute | Fish chronic | Aquatic invertebrates | Aquatic invertebrates prolonged | Sed. dweller prolonged | Algae                  |
|---------------------------|----------------------|------------|--------------|-----------------------|-------------------------------|------------------------|------------------------|
|                           | Oncorhynchus mykiss  | Pimephales promelas | Daphnia magna | Hyalella azteca | Daphnia magna | Chironomus riparius | Pseudokirchneriella subcapitata |
| Level of assessment       | LC\textsubscript{50} | NOEC (FFLC) | EC\textsubscript{50} | EC\textsubscript{50} | NOEC | NOEC | E\textsubscript{C50} |
|                           | 2.83 µg/L            | 0.077 µg/L | 4.71 µg/L    | 0.0053 µg/L         | 0.05 µg/L | 0.0636 µg/L | > 33 µg/L |
| RAC                      | 0.0283               | 0.0077     | 0.0471       | 0.000053            | 0.0050     | 0.00636     | > 3.3      |
| FOCUS Step 1             | 0.262                | 0.262      | 0.262        | 0.262                | 0.262      | 0.262 | 0.262 |

**FOCUS Step 2**

| Scenario | Initial PECSW (µg/L) | Fish acute | Fish chronic | Aquatic invertebrates | Aquatic invertebrates prolonged | Sed. dweller prolonged | Algae |
|----------|----------------------|------------|--------------|-----------------------|-------------------------------|------------------------|-------|
| North Europe | 0.230               | 0.230      | 0.230        | 0.230                 | 0.230                         | 0.230 | 0.230 |
| South Europe | 0.230               | 0.230      | 0.230        | 0.230                 | 0.230                         | 0.230 | 0.230 |

**FOCUS Step 3\textsuperscript{*}**

| D1 (Lanna) ditch | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 |
| D1 (Lanna) stream | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 |
| D2 (Brimstone) ditch | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 |
| D2 (Brimstone) stream | 0.124 | 0.124 | 0.124 | 0.124 | 0.124 | 0.124 | 0.124 |
| D3 (Vredepeel) ditch | 0.138 | 0.138 | 0.138 | 0.138 | 0.138 | 0.138 | 0.138 |
| D4 (Skousbo) pond | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| D4 (Skousbo) stream | 0.119 | 0.119 | 0.119 | 0.119 | 0.119 | 0.119 | 0.119 |
| D5 (La Jailleire) pond | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| D5 (La Jailleire) stream | 0.128 | 0.128 | 0.128 | 0.128 | 0.128 | 0.128 | 0.128 |
| D6 (Thiva) ditch | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 |
| R1 (Weiherbach) pond | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| R1 (Weiherbach) stream | 0.091 | 0.091 | 0.091 | 0.091 | 0.091 | 0.091 | 0.091 |
| R3 (Bologna) stream | 0.127 | 0.127 | 0.127 | 0.127 | 0.127 | 0.127 | 0.127 |
| R4 (Roujan) stream | 0.091 | 0.091 | 0.091 | 0.091 | 0.091 | 0.091 | 0.091 |

Notes: PEC values in bold indicate that the PEC\textsubscript{sw,SED}\textsubscript{eq} exceeds the RAC, and thus that further consideration is necessary.

FOCUS Step 3 values are based on BBCH 69-77, covering BBCH 10+ and BBCH 31+.

---

**FOCUS\textsubscript{sw} step 1-3 - Comparison of RACs and global maximum PEC\textsubscript{sw} for cypermethrin – Spring cereals at 1 x 25 g a.s./ha**

| Scenario | Initial PECSW (µg/L) | Fish acute | Fish chronic | Aquatic invertebrates | Aquatic invertebrates prolonged | Sed. dweller prolonged | Algae |
|----------|----------------------|------------|--------------|-----------------------|-------------------------------|------------------------|-------|

---

Notes: PEC values in bold indicate that the PEC\textsubscript{sw,SED}\textsubscript{eq} exceeds the RAC, and thus that further consideration is necessary.

FOCUS Step 3 values are based on BBCH 69-77, covering BBCH 10+ and BBCH 31+.
### Peer review of the pesticide risk assessment of the active substance cypermethrin

**PEC<sub>sw</sub>** (µg/L) | invertebrates | invertebrates | invertebrates | prolonged
---|---|---|---|---
| Oncorhynchus mykiss | Pimephales promelas | Daphnia magna | Hyalella azteca | Daphnia magna | Chironomus riparius | Pseudokirchneriella subcapitata

**Level of assessment**
- Tier 1

**LC<sub>50** | NOEC | EC<sub>50 | NOEC | NOEC | E<sub>r C<sub>50
---|---|---|---|---|---
2.83 µg/L | 0.077 µg/L | 4.71 µg/L | 0.0053 µg/L | 0.05 µg/L | 0.0636 µg/L | > 33 µg/L

**RAC**
- 0.0283
- 0.0077
- 0.0471
- 0.000053
- 0.005
- 0.00636
- > 3.3

**FOCUS Step 1**
- 0.262
- 0.262
- 0.262
- 0.262
- 0.262
- 0.262
- 0.262

**FOCUS Step 2**
- North Europe: 0.230
- South Europe: 0.230

**FOCUS Step 3**
- D1 (Lanna) ditch: 0.139
- D1 (Lana) stream: 0.122
- D3 (Vredepeel) ditch: 0.138
- D4 (Skousbo) pond: 0.005
- D4 (Skousbo) stream: 0.119
- D5 (La Jailliere) pond: 0.005
- D5 (La Jailliere) stream: 0.120
- R4 (Roujan) stream: 0.091

**R4 (Skousbo) stream**
- 0.119
- 0.120

**Notes:** PEC values in bold indicate that the PEC<sub>sw</sub> exceeds the RAC, and thus that further consideration is necessary.

**FOCUS Step 3 values** are based on BBCH 69-77, covering BBCH 10+ and BBCH 31+

---

**FOCUS<sub>sw</sub> step 1-3 - Comparison of RACs and global maximum PEC<sub>sw</sub> for cypermethrin – winter oilseed rape at 1 x 25 g a.s./ha**

**Scenario** | Initial PEC<sub>sw</sub> (µg/L) | Fish acute | Fish chronic | Aquatic invertebrates | Aquatic invertebrates | Aquatic invertebrates prolonged | Sed. dweller prolonged | Algae
---|---|---|---|---|---|---|---|---
| Oncorhynchus mykiss | Pimephales promelas | Daphnia magna | Hyalella azteca | Daphnia magna | Chironomus riparius | Pseudokirchneriella subcapitata

**Level of assessment**
- Tier 1

**LC<sub>50** | NOEC | EC<sub>50 | NOEC | NOEC | E<sub>r C<sub>50
---|---|---|---|---|---

---
### Peer review of the pesticide risk assessment of the active substance cypermethrin

#### Table: Comparison of RACs and global maximum PEC<sub>SW</sub> for cypermethrin – winter oilseed rape at 2 x 25 g a.s./ha

| Scenario | Initial PEC<sub>SW</sub> (µg/L) | Fish acute | Fish chronic | Aquatic invertebrates | Aquatic invertebrates prolonged | Sed. dweller prolonged | Algae |
|----------|--------------------------------|------------|--------------|----------------------|-------------------------------|------------------------|-------|
|          | Oncorhynchus mykiss | Pimephales promelas | Daphnia magna | Hyalella azteca | Daphnia magna | Chironomus riparius | Pseudokirchneriella subcapitata |
| Level of assessment | Tier 1 | Tier 1 | Tier 1 | Tier 1 | Tier 1 | Tier 1 | Tier 1 |
| LC<sub>50</sub> | 2.83 µg/L | 0.077 µg/L | 4.71 µg/L | 0.0053 µg/L | 0.05 µg/L | 0.0636 µg/L | > 33 µg/L |
| RAC | 0.0283 | 0.0077 | 0.0471 | 0.000053 | 0.005 | 0.00636 | > 3.3 |
| FOCUS Step 1 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 |

**Notes:** PEC values in bold indicate that the PEC<sub>SW/SED</sub> exceeds the RAC, and thus that further consideration is necessary. FOCUS Step 3 values are based on BBCH 50-77, covering BBCH 9+ (except scenario D5 stream: PEC<sub>sw</sub> = 0.128 µg a.s./L) and BBCH 31+

---

| 2.83 µg/L | 0.077 µg/L | 4.71 µg/L | 0.0053 µg/L | 0.05 µg/L | 0.0636 µg/L | > 33 µg/L |
|-----------|------------|-----------|-------------|-----------|-------------|------------|
| RAC       | 0.0283     | 0.0077    | 0.0471      | 0.000053  | 0.005       | 0.00636    | > 3.3     |
| FOCUS Step 1 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 |
### FOCUS Step 2

| Region          | PEC (µg/L) | PEC (µg/L) | PEC (µg/L) | PEC (µg/L) | PEC (µg/L) | PEC (µg/L) | PEC (µg/L) | PEC (µg/L) |
|-----------------|------------|------------|------------|------------|------------|------------|------------|------------|
| North Europe    | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      |
| South Europe    | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      | 0.230      |

### FOCUS Step 3

| Scenario          | Initial PEC<sub>SW</sub> (µg/L) | Fish acute | Fish chronic | Aquatic invertebrates | Aquatic invertebrates prolonged | Sed. dweller prolonged | Algae                  |
|--------------------|---------------------------------|------------|--------------|-----------------------|---------------------------------|------------------------|------------------------|
|                    |                                 | Oncorhynchus mykiss | Pimephales promelas | Daphnia magna | Hyalella azteca | Daphnia magna | Chironomus riparius | Pseudokirchneriella subcapitata |
| Level of assessment| Tier 1                          | LC<sub>50</sub> | NOEC (FFLC) | EC<sub>50</sub> | EC<sub>50</sub> | NOEC | NOEC | EC<sub>50</sub> |
|                    |                                 | 2.83 µg/L | 0.077 µg/L | 4.71 µg/L | 0.0053 µg/L | 0.05 µg/L | 0.0636 µg/L | > 33 µg/L |
| RAC                | 0.0283                           | 0.0077    | 0.0471      | 0.000053   | 0.005      | 0.00636 | > 3.3      |
| FOCUS Step 1       | 0.262                            | 0.262     | 0.262       | 0.262      | 0.262      | 0.262     | 0.262      | 0.262      |
| FOCUS Step 2       |                                 |           |             |           |            |           |           |            |
| North Europe       | 0.230                            | 0.230     | 0.230       | 0.230      | 0.230      | 0.230     | 0.230      | 0.230      |
| South Europe       | 0.230                            | 0.230     | 0.230       | 0.230      | 0.230      | 0.230     | 0.230      | 0.230      |
| FOCUS Step 3       |                                 |           |             |           |            |           |           |            |
### FOCUS<sub>sw</sub> step 1-3 - Comparison of RACs and global maximum PEC<sub>sw</sub> for cypermethrin – potato at 1 x 50 g a.s./ha

| Scenario         | Initial PEC<sub>sw</sub> (µg/L) | Fish acute | Fish chronic | Aquatic invertebrates | Aquatic invertebrates | Aquatic invertebrates prolonged | Sed. dweller prolonged | Algae |
|------------------|---------------------------------|------------|--------------|-----------------------|-----------------------|---------------------------------|------------------------|-------|
|                  |                                 | Oncorhynchus mykiss | Pimephales promelas | Daphnia magna | Hyalella azteca | Daphnia magna | Chironomus riparius | Pseudokirchneriella subcapitata |
| Level of assessment | Tier 1                           | Tier 1       | Tier 1         | Tier 1               | Tier 1                | Tier 1            | Tier 1                  | Tier 1          |
|                   | LC<sub>50</sub>                  | NOEC (FFLC) | EC<sub>50</sub> | EC<sub>50</sub> | NOEC                  | NOEC               | E<sub>50</sub>              |                 |
|                   | 2.83 µg/L                        | 0.077 µg/L   | 4.71 µg/L      | 0.0053 µg/L         | 0.05 µg/L            | 0.0636 µg/L       | > 33 µg/L               |                 |
| RAC               | 0.0283                           | 0.0077 µL    | 0.0471 µg/L    | 0.0000053 µg/L      | 0.005 µg/L          | 0.0636 µg/L       | > 3.3 µg/L              |                 |
| FOCUS Step 1      | 0.524                            | 0.524        | 0.524          | 0.524                | 0.524                | 0.524            | 0.524                   | 0.524           |
| FOCUS Step 2      |                                  |              |               |                       |                      |                  |                         |                 |
| North Europe      | 0.460                            | 0.460        | 0.460          | 0.460                | 0.460                | 0.460            | 0.460                   | 0.460           |
| South Europe      | 0.460                            | 0.460        | 0.460          | 0.460                | 0.460                | 0.460            | 0.460                   | 0.460           |
| FOCUS Step 3      |                                  |              |               |                       |                      |                  |                         |                 |
| D3 (Vredepeel) ditch | 0.228                           | 0.228        | 0.228          | 0.228                | 0.228                | 0.228            | 0.228                   | 0.228           |
| D4 (Skousbo) pond | 0.009                            | 0.009        | 0.009          | 0.009                | 0.009                | 0.009            | 0.009                   | 0.009           |
| D4 (Skousbo) stream | 0.171                          | 0.171        | 0.171          | 0.171                | 0.171                | 0.171            | 0.171                   | 0.171           |
| D6 (Thiva) ditch | 0.226                            | 0.226        | 0.226          | 0.226                | 0.226                | 0.226            | 0.226                   | 0.226           |
| 1st crop          | 0.226                            | 0.226        | 0.226          | 0.226                | 0.226                | 0.226            | 0.226                   | 0.226           |
| D6 (Thiva) ditch | 0.227                            | 0.227        | 0.227          | 0.227                | 0.227                | 0.227            | 0.227                   | 0.227           |

Notes: PEC values in bold indicate that the PEC<sub>SW/SED</sub> exceeds the RAC, and thus that further consideration is necessary. FOCUS Step 3 values are based on BBCH 31+, covering BBCH 10+.
Peer review of the pesticide risk assessment of the active substance cypermethrin

| Scenario | Initial PEC<sub>SED</sub> (µg/kg) | Sed. dweller prolonged | Initial PEC<sub>SED</sub> (µg/kg) | Sed. dweller prolonged | Initial PEC<sub>SED</sub> (µg/kg) | Sed. dweller prolonged |
|----------|----------------------------------|------------------------|----------------------------------|------------------------|----------------------------------|------------------------|
| Winter cereals | Chironomus riparius | Spring cereals | Chironomus riparius | Winter oilseed rape | Chironomus riparius |
| Level of assessment | Tier 1 | Tier 1 | Tier 1 | Tier 1 |
| NOEC | 0.162 µg/kg | 0.162 µg/kg | 0.162 µg/kg |
| RAC | 0.0162 | 0.0162 | 0.0162 |
| FOCUS Step 1 | 62.260 | 62.260 | 62.260 | 62.260 | 62.260 | 62.260 |
| FOCUS Step 2 | | | | | | |
| North Europe | 19.292 | 19.292 | 8.448 | 8.448 | 12.062 | 12.062 |
| South Europe | 15.677 | 15.677 | 15.677 | 15.677 | 9.893 | 9.893 |
| FOCUS Step 3* | | | | | | |
| D1 (Lanna) ditch | 0.902 | 0.902 | 0.828 | 0.828 | - | - |
| D1 (Lana) stream | 0.530 | 0.530 | 0.525 | 0.525 | - | - |
| D2 (Brimstone) ditch | 0.784 | 0.784 | - | - | 0.870 | 0.870 |
| D2 (Brimstone) stream | 0.166 | 0.166 | - | - | 0.774 | 0.774 |
| D3 (Vredepeel) ditch | 0.524 | 0.524 | 0.617 | 0.617 | 0.559 | 0.559 |
| D4 (Skousbo) pond | 0.073 | 0.073 | 0.065 | 0.065 | 0.068 | 0.068 |
| D4 (Skousbo) stream | 0.347 | 0.347 | 0.330 | 0.330 | 0.241 | 0.241 |
| D5 (La Jailliere) pond | 0.076 | 0.076 | 0.069 | 0.069 | 0.074 | 0.074 |
| D5 (La Jailliere) stream | 0.411 | 0.411 | 0.169 | 0.169 | 0.140 | 0.140 |
| D6 (Thiva) ditch | 0.867 | 0.867 | - | - | - | - |

Notes: PEC values in bold indicate that the PEC<sub>SW/SED</sub> exceeds the RAC, and thus that further consideration is necessary.

FOCUS Step 3 values are based on late application, covering early application (except scenario D4 stream: PEC<sub>sw</sub> = 0.191 µg a.s./L).
### FOCUS\textsubscript{sw} step 1-3 - Comparison of RACs and global maximum PEC\textsubscript{SED} for cypermethrin – winter oilseed rape at 2 x 25 g a.s./ha / spring oilseed rape at 1 x 25 g a.s./ha / Potato at 1 x 50 g a.s./ha

| Scenario                      | Initial PEC\textsubscript{SED} (µg/kg) | Sed. dweller prolonged | Initial PEC\textsubscript{SED} (µg/kg) | Sed. dweller prolonged | Initial PEC\textsubscript{SED} (µg/kg) | Sed. dweller prolonged |
|-------------------------------|----------------------------------------|------------------------|----------------------------------------|------------------------|----------------------------------------|------------------------|
| Winter oilseed rape           | Chironomus riparius                    | Chironomus riparius    | Chironomus riparius                    | Chironomus riparius    | Potatoes                               | Chironomus riparius    |
| Level of assessment           | Tier 1                                 | Tier 1                 | Tier 1                                 | Tier 1                 | Tier 1                                 | Tier 1                 |
|                               | NOEC                                   | NOEC                   | NOEC                                   | NOEC                   | NOEC                                   | NOEC                   |
|                               | 0.162 µg/kg                            | 0.162 µg/kg            | 0.162 µg/kg                            | 0.162 µg/kg            | 0.162 µg/kg                            | 0.162 µg/kg            |
| RAC                           | 0.0162                                 | 0.0162                 | 0.0162                                 | 0.0162                 | 0.0162                                 | 0.0162                 |
| FOCUS Step 1                  | 62.260                                 | 62.260                 | 62.260                                 | 62.260                 | 124.520                                | 124.520                |
| FOCUS Step 2                  |                                        |                        |                                        |                        |                                        |                        |
| North Europe                  | 11.922                                 | 11.922                 | 5.556                                 | 5.556                 | 16.895                                 | 16.895                 |
| South Europe                  | 9.753                                  | 9.753                  | 9.893                                 | 9.893                 | 31.355                                 | 31.355                 |

**Notes:**
- PEC values in bold indicate that the PEC\textsubscript{SED} exceeds the RAC, and thus that further consideration is necessary.
- Some uncertainties are linked to the used endpoint of 0.162 µg/kg, since this value was derived from the NOEC for the water phase. The NOEC for the water phase was expressed on the basis of initial measured test concentrations however some considerable degradation/dissipation was observed in the water phase of the test.
- FOCUS Step 3 values for winter cereals are based on BBCH 10+, covering BBCH 31+ (except scenario D2 ditch: PEC\textsubscript{SED} = 0.868 µg a.s./kg, D2 stream: PEC\textsubscript{SED} = 0.769 µg a.s./kg, D3 ditch: PEC\textsubscript{SED} = 0.583 µg a.s./kg, D6 ditch: PEC\textsubscript{SED} = 0.765 µg a.s./kg, R3 stream: PEC\textsubscript{SED} = 0.358 µg a.s./kg and R4 stream: PEC\textsubscript{SED} = 0.744 µg a.s./kg), and covering BBCH 69-77 (except scenario D2 ditch: PEC\textsubscript{SED} = 0.837 µg a.s./kg, D2 stream: PEC\textsubscript{SED} = 0.745 µg a.s./kg, D3 ditch: PEC\textsubscript{SED} = 0.601 µg a.s./kg, R1 stream: PEC\textsubscript{SED} = 1.159 µg a.s./kg and R3 stream: PEC\textsubscript{SED} = 0.364 µg a.s./kg).
- FOCUS Step 3 values for spring cereals are based on BBCH 69-77, covering BBCH 10+ (except D4 pond: PEC\textsubscript{SED} = 0.072 µg a.s./kg, D5 pond: PEC\textsubscript{SED} = 0.074 µg a.s./kg and R4 stream: PEC\textsubscript{SED} = 0.803 µg a.s./kg), and covering BBCH 31+ (except D1 ditch: PEC\textsubscript{SED} = 0.861 µg a.s./kg, D1 stream: PEC\textsubscript{SED} = 0.528 µg a.s./kg, D4 pond: PEC\textsubscript{SED} = 0.068 µg a.s./kg, D5 pond: PEC\textsubscript{SED} = 0.074 µg a.s./kg and R1 steam: PEC\textsubscript{SED} = 0.378 µg a.s./kg and R3 stream: PEC\textsubscript{SED} = 1.152 µg a.s./kg), covering BBCH 31+ (except R3 stream: PEC\textsubscript{SED} = 0.40µg a.s./kg).
Peer review of the pesticide risk assessment of the active substance cypermethrin

D1 (Lanna) ditch - - 0.861 0.861 - -
D1 (Lana) stream - - 0.528 0.528 - -
D2 (Brimstone) ditch 0.772 0.772 - - - -
D2 (Brimstone) stream - - 0.543 - - -
D3 (Vredepeel) ditch 0.554 0.554 0.636 0.636 0.989 0.989
D4 (Skousbo) pond 0.082 0.082 0.068 0.068 0.130 0.130
D4 (Skousbo) stream 0.219 0.219 0.343 0.343 0.121 0.121
D5 (La Jailliere) pond 0.069 0.069 0.073 0.073 - -
D5 (La Jailliere) stream 0.355 0.355 0.169 0.169 - -
D6 (Thiva) ditch 1st crop - - - - 0.803 0.803
D6 (Thiva) ditch 2nd crop - - - - 0.862 0.862
R1 (Weiherbach) pond 0.081 0.081 0.084 0.084 0.190 0.190
R1 (Weiherbach) stream 0.420 0.420 0.535 0.535 4.066 4.066
R2 (Porto) stream - - - - - -
R3 (Bologna) stream 1.150 1.150 - - 2.973 2.973
R4 (Roujan) stream - - - - - -

Notes: PEC values in bold indicate that the $\text{PEC}_{\text{SW,SED}}$ exceeds the RAC, and thus that further consideration is necessary.

Some uncertainties are linked to the used endpoint of 0.162 µg/kg, since this value was derived from the NOEC for the water phase. The NOEC for the water phase was expressed on the basis of initial measured test concentrations however some considerable degradation/dissipation was observed in the water phase of the test.

FOCUS Step 3 values for winter oilseed rape are based on BBCH 50-77, covering BBCH 9+ (except D2 stream: $\text{PEC}_{\text{sed}} = 0.691$ µg a.s./kg, D4 pond: $\text{PEC}_{\text{sed}} = 0.100$ µg a.s./kg, D5 pond: $\text{PEC}_{\text{sed}} = 0.095$ µg a.s./kg, R1 pond: $\text{PEC}_{\text{sed}} = 0.111$ µg a.s./kg, R1 stream: $\text{PEC}_{\text{sed}} = 0.445$ µg a.s./kg) and covering BBCH 31+ (except D4 pond: $\text{PEC}_{\text{sed}} = 0.087$ µg a.s./kg, D5 pond: $\text{PEC}_{\text{sed}} = 0.076$ µg a.s./kg, R1 pond: $\text{PEC}_{\text{sed}} = 0.100$ µg a.s./kg and R1 stream: $\text{PEC}_{\text{sed}} = 0.445$ µg a.s./kg).

FOCUS Step 3 values for spring oilseed rape are based on BBCH 10+ (except D4 pond: $\text{PEC}_{\text{sed}} = 0.068$ µg a.s./kg, D5 pond: $\text{PEC}_{\text{sed}} = 0.74$ µg a.s./kg and R1 pond: $\text{PEC}_{\text{sed}} = 0.077$ µg a.s./kg).

FOCUS Step 3 values for potatoes are based on late application covering early application (except D4 pond: $\text{PEC}_{\text{sed}} = 0.135$ µg a.s./kg, D4 stream: $\text{PEC} = 0.245$ µg a.s./kg and R2 stream: $\text{PEC}_{\text{sed}} = 1.474$ µg a.s./kg).

FOCUS$_{\text{sw}}$ step 1-2 - Comparison of RACs and global maximum $\text{PEC}_{\text{SW}}$ for the metabolite DCVA – winter and spring cereals at 1 x 25 g a.s./ha

| Scenario | Initial $\text{PEC}_{\text{SW}}$ (µg/L) | Fish acute | Aquatic invertebrates | Algae | Initial $\text{PEC}_{\text{SW}}$ (µg/L) | Fish acute | Aquatic invertebrates | Algae |
|----------|--------------------------------------|------------|----------------------|-------|--------------------------------------|------------|----------------------|-------|
| Winter cereals | Oncorhynchus mykiss | Daphnia magna | Pseudokirchneriella subcapitata | | | Oncorhynchus mykiss | Daphnia magna | Pseudokirchneriella subcapitata | |
| Level of assessment | Tier 1 | Tier 1 | Tier 1 | Tier 1 | Tier 1 | Tier 1 | Tier 1 |
| | LC$_{50}$ | EC$_{50}$ | E$_{C_{50}}$ | | LC$_{50}$ | EC$_{50}$ | E$_{C_{50}}$ |
| | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L | | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L |

www.efs.europa.eu/efsajournal
### FOCUS$_{sw}$ step 1-2 - Comparison of RACs and global maximum PEC$_{SW}$ for the metabolite DCVA – winter oilseed rape at 2 x 25 g a.s./ha / spring oilseed rape at 1 x 25 g a.s./ha

| Scenario               | Initial PEC$_{SW}$ (µg/L) | Fish acute | Aquatic invertebrates | Algae                  | Initial PEC$_{SW}$ (µg/L) | Fish acute | Aquatic invertebrates | Algae                  |
|------------------------|---------------------------|------------|-----------------------|------------------------|---------------------------|------------|-----------------------|------------------------|
| Winter oilseed rape    |                           | Oncorhynchus mykiss | Daphnia magna | Pseudokirchneriella subcapitata | Spring oilseed rape | Oncorhynchus mykiss | Daphnia magna | Pseudokirchneriella subcapitata |
| Tier 1                 | Tier 1                    | Tier 1     | Tier 1                | Tier 1                | Tier 1                    | Tier 1     | Tier 1                | Tier 1                |
| LC$_{50}$              | EC$_{50}$                 | E$_{C50}$  | LC$_{50}$            | EC$_{50}$            | E$_{C50}$                 | LC$_{50}$            | EC$_{50}$            | E$_{C50}$                 |
| > 1000 µg/L            | > 1000 µg/L               | > 1000 µg/L | > 1000 µg/L          | > 1000 µg/L          | > 1000 µg/L               | > 1000 µg/L          | > 1000 µg/L          | > 1000 µg/L               |
| Level of assessment    |                           |            |                       |                        |                           |            |                       |                        |
| RAC                    | 10                        | 10         | 100                   | 10                     | 10                        | 10         | 100                   | 10                     |
| FOCUS Step 1           | 4.969                     | 4.969      | 4.969                 | 4.969                  | 4.969                     | 4.969      | 4.969                 | 4.969                  |
| FOCUS Step 2           | 1.976                     | 1.976      | 1.976                 | 0.834                  | 1.595                     | 1.595      | 0.834                 | 0.834                  |

Notes: PEC values in bold indicate that the PEC$_{SW/SED}$ exceeds the RAC, and thus that further consideration is necessary.

---

RAC

| FOCUS Step 1 | 10 | 10 | 100 | 10 | 10 | 100 | 10 | 10 | 100 |
|--------------|----|----|-----|----|----|-----|----|----|-----|

RAC

| FOCUS Step 2 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

FOCUS Step 2

---

www.efsa.europa.eu/efsajournal, 127, EFSA Journal 2018;16(8):5402
| Scenario       | Initial PEC<sub>SW</sub> (µg/L) | Fish acute | Aquatic invertebrates | Algae                   |
|----------------|--------------------------------|------------|-----------------------|-------------------------|
|                | Potatoes                       | Oncorhynchus mykiss | Daphnia magna | Pseudokirchneriella subcapitata |
| Level of assessment | Tier 1 | Tier 1 | Tier 1 |                     |
| RAC            | LC<sub>50</sub> | EC<sub>50</sub> | EC<sub>50</sub> |                     |
|                | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L |                     |
| FOCUS Step 1   | 10 | 10 | 100 |                     |
| Note: PEC values in bold indicate that the PEC<sub>SW</sub>/SED exceeds the RAC, and thus that further consideration is necessary.
FOCUS<sub>sw</sub> step 1-2 - Comparison of RACs and global maximum PEC<sub>SW</sub> for the metabolite PBAcid – winter and spring cereals at 1 x 25 g a.s./ha

| Scenario        | Winter cereals | Fish acute             | Aquatic invertebrates | Algae                | Spring cereals | Fish acute | Aquatic invertebrates | Algae                |
|-----------------|----------------|------------------------|-----------------------|----------------------|----------------|------------|-----------------------|----------------------|
|                 | Initial PEC<sub>SW</sub> (µg/L) | Oncorhynchus mykiss | Daphnia magna | Pseudokirchene-neriella subcapitata | Initial PEC<sub>SW</sub> (µg/L) | Oncorhynchus mykiss | Daphnia magna | Pseudokirchene-neriella subcapitata |
| Level of assessment |                | Tier 1 | Tier 1 | Tier 1 |                | Tier 1 | Tier 1 | Tier 1 |
| RAC             |                | LC<sub>50</sub> | EC<sub>50</sub> | E<sub>R</sub>C<sub>50</sub> |                | LC<sub>50</sub> | EC<sub>50</sub> | E<sub>R</sub>C<sub>50</sub> |
| > 1000 µg/L     | 10             | 10          | 100      | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L |
| FOCUS Step 1    | 2.374          | 2.374       | 2.374    | 2.374     | 2.374          | 2.374       | 2.374     | 2.374     |
| FOCUS Step 2    |                |             |          |           |                |             |           |           |
| North Europe    | 0.748          | 0.748       | 0.748    | 0.748     | 0.313          | 0.313       | 0.313     | 0.313     |
| South Europe    | 0.603          | 0.603       | 0.603    | 0.603     | 0.603          | 0.603       | 0.603     | 0.603     |
### FOCUS\textsubscript{sw} step 1-2 - Comparison of RACs and global maximum PEC\textsubscript{SW} for the metabolite PBAcid – winter oilseed rape at 2 x 25 g a.s./ha / spring oilseed rape at 1 x 25 g a.s./ha

| Scenario       | Initial PEC\textsubscript{SW} (µg/L) | Fish acute | Aquatic invertebrates | Algae       | Initial PEC\textsubscript{SW} (µg/L) | Fish acute | Aquatic invertebrates | Algae       |
|----------------|-------------------------------------|------------|-----------------------|-------------|-------------------------------------|------------|-----------------------|-------------|
| Winter         |                                    |            |                       |             | Spring                              |            |                       |             |
| oilseed rape   | Winter                              | Oncorhynchus mykiss | Daphnia magna | Pseudokircheriella subcapitata | Spring     | Oncorhynchus mykiss | Daphnia magna | Pseudokircheriella subcapitata |
|                |                                     | LC\textsubscript{50} | EC\textsubscript{50} | E\textsubscript{C,50} | oilseed rape | LC\textsubscript{50} | EC\textsubscript{50} | E\textsubscript{C,50} |
| Level of assessment | Tier 1                              | Tier 1 | Tier 1 | Tier 1 | Tier 1                              | Tier 1 | Tier 1 | Tier 1 |
| RAC            | 10                                  | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L | > 1000 µg/L |
| FOCUS Step 1   | 2.374                               | 2.374 | 2.374 | 2.374 | 2.374                               | 2.374 | 2.374 | 2.374 |
| FOCUS Step 2   |                                     |            |                       |             |                                    |            |                       |             |
| North Europe   | 0.496                               | 0.496 | 0.496 | 0.496 | 0.197                               | 0.197 | 0.197 | 0.197 |
| South Europe   | 0.401                               | 0.401 | 0.401 | 0.401 | 0.371                               | 0.371 | 0.371 | 0.371 |

Notes: PEC values in bold indicate that the PEC\textsubscript{SW/SED} exceeds the RAC, and thus that further consideration is necessary.

FOCUS Step 2 values for winter oilseed rape are based on multiple application, covering single application.

---

### FOCUS\textsubscript{sw} step 1-2 - Comparison of RACs and global maximum PEC\textsubscript{SW} for the metabolite PBAcid – potato at 1 x 50 g a.s./ha
### Scenario

| Scenario | Initial PEC<sub>SW</sub> (µg/L) | Fish acute | Aquatic invertebrates | Algae |
|----------|--------------------------------|------------|-----------------------|-------|
| Potatoes | Oncorhynchus mykiss | Daphnia magna | Pseudokirchneriella subcapitata |

| Level of assessment | Tier 1 | Tier 1 | Tier 1 |
|---------------------|--------|--------|--------|
| LC<sub>50</sub> | EC<sub>50</sub> | EC<sub>50</sub> |
| > 1000 µg/L | > 1000 µg/L | > 1000 µg/L |

| RAC | 10 | 10 |
| FOCUS Step 1 | 4.747 | 4.747 | 4.747 | 4.747 |

| FOCUS Step 2 |
|---------------|
| North Europe | 0.626 | 0.626 | 0.626 | 0.626 |
| South Europe | 1.205 | 1.205 | 1.205 | 1.205 |

*Notes: PEC values in bold indicate that the PEC<sub>SW/SED</sub> exceeds the RAC, and thus that further consideration is necessary.*
### Level of assessment

| Scenario                  | Tier 1 | Tier 1 |
|---------------------------|--------|--------|
| EC₅₀                      | > 22.4 µg/L | > 22.4 µg/L |
| RAC                       | 0.224  | 0.224  |
| FOCUS Step 1              | 0.040  | 0.040  |

Notes: PEC values in bold indicate that the PEC\_SW/SED exceeds the RAC, and thus that further consideration is necessary

### FOCUS\_sw step 1-2 - Comparison of RACs and global maximum PEC\_SW for the metabolite carboxamide – winter oilseed rape at 2 x 25 g a.s./ha / spring oilseed rape at 1 x 25 g a.s./ha / potato at 1 x 50 g a.s./ha / potato at 1 x 50 g a.s./ha

| Scenario                  | Initial PEC\_SW (µg/L) | Aquatic invertebrates | Initial PEC\_SW (µg/L) | Aquatic invertebrates | Initial PEC\_SW (µg/L) | Aquatic invertebrates |
|---------------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|
| Winter oilseed rape       | Daphnia magna          |                       | Spring oilseed rape    | Daphnia magna          | Potatoes               | Daphnia magna          |
| Level of assessment       | Tier 1                 | Tier 1                | Tier 1                 |
| EC₅₀                      | > 22.4 µg/L            | > 22.4 µg/L           | > 22.4 µg/L            |
| RAC                       | 0.224                  | 0.224                 | 0.224                  |
| FOCUS Step 1              | 0.080                  | 0.080                 | 0.040                  | 0.040                 | 0.080                  | 0.080                 |
### FOCUS Step 2

| Region         | FOCUS Step 2 | FOCUS Step 2 | PEC SW/SED | PEC Sed | RAC |
|----------------|--------------|--------------|------------|---------|-----|
| North Europe   | 0.013        | 0.013        | 0.004      | 0.004   | 0.015|
| South Europe   | 0.010        | 0.010        | 0.009      | 0.009   | 0.030|

*Notes: PEC values in bold indicate that the PEC SW/SED exceeds the RAC, and thus that further consideration is necessary. FOCUS Step 2 values for winter oilseed rape are based on multiple application, covering single application.*
### Regulatory acceptable concentrations used in the higher tier risk assessment for fish

| Species group | Endpoint | Assessment factor | RAC       |
|---------------|----------|-------------------|-----------|
| Acute effect assessment | Fish | LC50, geomean = 3.12 µg a.s./L | 100 | 0.0312 µg a.s./L |

**Overall acute RAC**: 0.0312 µg a.s./L

| Chronic assessment | Fish | NOEC = 0.077 µg a.s./L | 10 | 0.0077 µg a.s./L |

**Overall chronic RAC**: 0.0077 µg a.s./L

*Notes: RAC = Regulatory Acceptable Concentration*

### Regulatory acceptable concentrations used in the higher tier risk assessment for aquatic invertebrates

| Species group | Endpoint | Assessment factor | RAC       |
|---------------|----------|-------------------|-----------|
| Effect assessment based on ETO | Aquatic invertebrates | NOEC = 0.005 µg a.s./L | 3 | 0.0017 µg a.s./L |

**ETO-RAC**: 0.0017 µg a.s./L

| Effect assessment based on ERO | Aquatic invertebrates | NOEAEc = 0.015 µg a.s./L | 4 | 0.0038 µg a.s./L |

**ERO-RAC**: 0.0038 µg a.s./L

*Notes: RAC = Regulatory Acceptable Concentration*
**FOCUS\textsubscript{sw} step 1-3 - Comparison of RACs and global maximum PEC\textsubscript{sw} for cypermethrin – winter cereals at 1 x 25 g a.s./ha**

| Scenario          | Initial PEC\textsubscript{sw} (µg/L) | Fish acute | Fish chronic | Mesocosm | Mesocosm |
|-------------------|--------------------------------------|------------|--------------|----------|----------|
|                   |                                      | Oncorhynchus mykiss and Cyprinodon variegatus | Pimephales promelas |
| Level of assessment | Tier 2                               | Tier 1     | Tier 3       | Tier 3   |          |
|                   | Geomean LC\textsubscript{50} (µg/L)  | NOEC (FFLC) | NOEC (ETO)   | NOEAEC (ERO) |          |
|                   | 3.12 µg/L                             | 0.077 µg/L | 0.005 µg/L   | 0.015 µg/L |
| RAC               | 0.0312                                | 0.0077     | 0.0017       | 0.0038   |
| FOCUS Step 1      | 0.262                                 | 0.262      | 0.262        | 0.262    | 0.262    |
| FOCUS Step 2      |                                       |            |              |          |          |
| North Europe      | 0.230                                 | 0.230      | 0.230        | 0.230    |
| South Europe      | 0.230                                 | 0.230      | 0.230        | 0.230    |
| FOCUS Step 3*     |                                       |            |              |          |          |
| D1 (Lanna) ditch  | 0.139                                 | 0.139      | 0.139        | 0.139    |
| D1 (Lana) stream  | 0.122                                 | 0.122      | 0.122        | 0.122    |
| D2 (Brimstone) ditch | 0.139                          | 0.139      | 0.139        | 0.139    |
| D2 (Brimstone) stream | 0.124                         | 0.124      | 0.124        | 0.124    |
| D3 (Vredepeel) ditch | 0.138                        | 0.138      | 0.138        | 0.138    |
| D4 (Skousbo) pond | 0.005                                 | 0.005      | 0.005        | 0.005    |
| D4 (Skousbo) stream | 0.119                         | 0.119      | 0.119        | 0.119    |
| D5 (La Jailliere) pond | 0.005                      | 0.005      | 0.005        | 0.005    |
| D5 (La Jailliere) stream | 0.128                      | 0.128      | 0.128        | 0.128    |
| D6 (Thiva) ditch | 0.139                                 | 0.139      | 0.139        | 0.139    |
| R1 (Weiherbach) pond | 0.005                        | 0.005      | 0.005        | 0.005    |
| R1 (Weiherbach) stream | 0.091                       | 0.091      | 0.091        | 0.091    |
| R3 (Bologna) stream | 0.127                      | 0.127      | 0.127        | 0.127    |
| R4 (Roujjan) stream | 0.091                        | 0.091      | 0.091        | 0.091    |

*Notes: PEC values in bold indicate that the PEC\textsubscript{sw,SED} exceeds the RAC, and thus that further consideration is necessary.
FOCUS Step3 values are based on BBCH 69-77, covering BBCH 10+ and BBCH 31+*

**FOCUS\textsubscript{sw} step 1-3 - Comparison of RACs and global maximum PEC\textsubscript{sw} for cypermethrin – spring cereals at 1 x 25 g a.s./ha**
### Peer review of the pesticide risk assessment of the active substance cypermethrin

**Scenario**

| Initial PEC$_{SW}$ (µg/L) | Fish acute | Fish chronic | Mesocosm Pimephales promelas | Mesocosm Oncorhynchus mykiss and Cyprinodon variegatus |
|---------------------------|------------|--------------|-------------------------------|--------------------------------------------------|
| **Fish acute**            |            |              |                               |                                                  |
| **Fish chronic**          |            |              |                               |                                                  |
| **Mesocosm**              |            |              |                               |                                                  |
| **Mesocosm**              |            |              |                               |                                                  |

### Level of assessment

| Geomean LC$_{50}$ | NOEC (FFLC) | NOEC (ETO) | NOEAEC (ERO) |
|-------------------|-------------|------------|--------------|
| 3.12 µg/L         | 0.077 µg/L | 0.005 µg/L | 0.015 µg/L |

### RAC

| RAC |
|-----|
| 0.0312 |

| FOCUS Step 1 | 0.262 |
|--------------|-------|

### FOCUS Step 2

| FOCUS Step 2 | North Europe | South Europe |
|--------------|--------------|--------------|
| 0.230        | 0.230        | 0.230        |

### FOCUS Step 3

| FOCUS Step 3 | D1 (Lanna) ditch | D1 (Lana) stream | D3 (Vredepeel) ditch | D4 (Skousbo) pond | D4 (Skousbo) stream | D5 (La Jailliere) pond | D5 (La Jailliere) stream | R4 (Roujan) stream |
|--------------|------------------|------------------|----------------------|-------------------|--------------------|------------------------|------------------------|------------------|
|              | 0.139            | 0.122            | 0.138                | 0.005             | 0.119              | 0.005                  | 0.120                  | 0.091            |
|              | 0.139            | 0.122            | 0.138                | 0.005             | 0.119              | 0.005                  | 0.120                  | 0.091            |
|              | 0.139            | 0.122            | 0.138                | 0.005             | 0.119              | 0.005                  | 0.120                  | 0.091            |
|              | 0.139            | 0.122            | 0.138                | 0.005             | 0.119              | 0.005                  | 0.120                  | 0.091            |

**Notes:** PEC values in bold indicate that the PEC$_{SW/SED}$ exceeds the RAC, and thus that further consideration is necessary.

FOCUS Step 3 values are based on BBCH 69-77, covering BBCH 10+ and BBCH 31+

FOCUS$_{sw}$ step 1-3 - Comparison of RACs and global maximum PEC$_{SW}$ for cypermethrin – winter oilseed rape at 1 x 25 g a.s./ha

| Initial PEC$_{SW}$ (µg/L) | Fish acute | Fish chronic | Mesocosm Pimephales promelas | Mesocosm Oncorhynchus mykiss and Cyprinodon variegatus |
|---------------------------|------------|--------------|-------------------------------|--------------------------------------------------|

**Scenario**

| Initial PEC$_{SW}$ (µg/L) | Fish acute | Fish chronic | Mesocosm Pimephales promelas | Mesocosm Oncorhynchus mykiss and Cyprinodon variegatus |
|---------------------------|------------|--------------|-------------------------------|--------------------------------------------------|

**Notes:** PEC values in bold indicate that the PEC$_{SW/SED}$ exceeds the RAC, and thus that further consideration is necessary.

FOCUS Step 3 values are based on BBCH 69-77, covering BBCH 10+ and BBCH 31+
variegatus

| Level of assessment | Tier 2 | Tier 1 | Tier 3 | Tier 3 |
|---------------------|-------|-------|-------|-------|
| Geomean LC\(_{50}\) | NOEC (FFLC) | NOEC (ETO) | NOEAE (ERO) |
| RAC | 0.0312 | 0.0077 | 0.0017 | 0.0038 |
| FOCUS Step 1 | 0.262 | 0.262 | 0.262 | 0.262 |

FOCUS Step 2

| Region | Tier 1 | Tier 1 | Tier 3 | Tier 3 | Tier 3 |
|--------|-------|-------|-------|-------|-------|
| North Europe | 0.230 | 0.230 | 0.230 | 0.230 | 0.230 |
| South Europe | 0.230 | 0.230 | 0.230 | 0.230 | 0.230 |

FOCUS Step 3

| Scenario | Tier 1 | Tier 1 | Tier 3 | Tier 3 | Tier 3 |
|----------|-------|-------|-------|-------|-------|
| D2 (Brimstone) ditch | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 |
| D2 (Brimstone) stream | 0.124 | 0.124 | 0.124 | 0.124 | 0.124 |
| D3 (Vredepeel) ditch | 0.138 | 0.138 | 0.138 | 0.138 | 0.138 |
| D4 (Skousbo) pond | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| D4 (Skousbo) stream | 0.116 | 0.116 | 0.116 | 0.116 | 0.116 |
| D5 (La Jailliere) pond | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| D5 (La Jailliere) stream | 0.117 | 0.117 | 0.117 | 0.117 | 0.117 |
| R1 (Weiherbach) pond | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| R1 (Weiherbach) stream | 0.090 | 0.090 | 0.090 | 0.090 | 0.090 |
| R3 (Bologna) stream | 0.127 | 0.127 | 0.127 | 0.127 | 0.127 |

Notes: PEC values in bold indicate that the PEC\(_{SW}^{SED}\) exceeds the RAC, and thus that further consideration is necessary.

FOCUS Step3 values are based on BBCH 50-77, covering BBCH 9+ (except scenario D5 stream: PEC\(_{sw} = 0.128 \) µg a.s./L) and BBCH 31+

FOCUS\(_{sw}^{step 1-3}\) - Comparison of RACs and global maximum PEC\(_{sw}\) for cypermethrin – winter oilseed rape at 2 x 25 g a.s./ha

| Scenario | Initial PEC\(_{sw}\) (µg/L) | Fish acute | Fish chronic | Mesocosm | Mesocosm |
|----------|-----------------------------|------------|-------------|----------|----------|
| Oncorhynchus mykiss and Cyprinodon variegatus | | | | | |
| Pimephales promelas | | | | | |

| Level of assessment | Tier 2 | Tier 1 | Tier 3 | Tier 3 |
|---------------------|-------|-------|-------|-------|
| Tier 2 | Tier 1 | Tier 3 | Tier 3 |
### Peer review of the pesticide risk assessment of the active substance cypermethrin

| Geomean LC$_{50}$ | NOEC (FFLC) | NOEC (ETO) | NOEAEC (ERO) |
|-------------------|-------------|------------|--------------|
| 3.12 µg/L         | 0.077 µg/L  | 0.005 µg/L | 0.015 µg/L   |

| RAC            | 0.0312 | 0.0077 | 0.0017 | 0.0038 |
|----------------|--------|--------|--------|--------|

| FOCUS Step 1  | 0.262  | 0.262  | 0.262  | 0.262  |
|----------------|--------|--------|--------|--------|

| FOCUS Step 2  | 0.230  | 0.230  | 0.230  | 0.230  | 0.230  |
|----------------|--------|--------|--------|--------|--------|

| FOCUS Step 3  | 0.230  | 0.230  | 0.230  | 0.230  |
|----------------|--------|--------|--------|--------|

| Scenario                  | Initial PEC$_{SW}$ (µg/L) | Fish acute | Fish chronic | Mesocosm | Mesocosm |
|---------------------------|---------------------------|------------|--------------|----------|----------|
| **Oncorhynchus mykiss**   |                           |            |              |          |          |
| **Cyprinodon variegatus** |                           |            |              |          |          |
| **Pimephales promelas**   |                           |            |              |          |          |

**Notes:** PEC values in bold indicate that the PEC$_{SW/SED}$ exceeds the RAC, and thus that further consideration is necessary. FOCUS Step3 values are based on BBCH 50-77, covering BBCH 9+ (except scenario D2 stream: PEC$_{SW}$ = 0.107 µg a.s./L) and BBCH 31+

### FOCUS$_{sw}$ step 1-3 - Comparison of RACs and global maximum PEC$_{SW}$ for cypermethrin – spring oilseed rape at 1 x 25 g a.s./ha

| Scenario | Initial PEC$_{SW}$ (µg/L) | Fish acute | Fish chronic | Mesocosm | Mesocosm |
|----------|---------------------------|------------|--------------|----------|----------|
| **Oncorhynchus mykiss and Cyprinodon variegatus** |                           |            |              |          |          |
| **Pimephales promelas** |                           |            |              |          |          |

**Level of assessment**

| Level of assessment | Tier 2 | Tier 1 | Tier 3 | Tier 3 |
|---------------------|--------|--------|--------|--------|
| **Geomean LC$_{50}$** | NOEC (FFLC) | NOEC (ETO) | NOEAEC (ERO) |
### FOCUS sw step 1-3 - Comparison of RACs and global maximum PEC<sub>SW</sub> for cypermethrin – potato at 1 x 50 g a.s./ha

| Scenario | Initial PEC<sub>SW</sub> (µg/L) | Fish acute | Fish chronic | Mesocosm | Mesocosm |
|----------|--------------------------------|------------|--------------|----------|----------|
| Oncorhynchus mykiss and Cyprinodon variegatus | | | | | |
| Pimephales promelas | | | | | |
| Level of assessment | Tier 2 | Tier 1 | Tier 3 | Tier 3 |
| Geomean LC<sub>50</sub> | NOEC (FFLC) | NOEC (ETO) | NOEAE| (ERO) |
| 3.12 µg/L | 0.077 µg/L | 0.005 µg/L | 0.015 µg/L |
| RAC | 0.0312 | 0.0077 | 0.0017 | 0.0038 |
| FOCUS Step 1 | 0.524 | 0.524 | 0.524 | 0.524 |
### FOCUS Step 2

| Region          | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| North Europe    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    |
| South Europe    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    | 0.460    |

### FOCUS Step 3

| Site/Stream          | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop | 1st crop | 2nd crop |
|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| D3 (Vredepeel) ditch | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    | 0.228    |
| D4 (Skousbo) pond    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    |
| D4 (Skousbo) stream  | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    | 0.171    |
| D6 (Thiva) ditch     | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    | 0.226    |
| R1 (Weiherbach) pond | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    | 0.009    |
| R1 (Weiherbach) stream | 0.158   | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    | 0.158    |
| R2 (Porto) stream    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    | 0.212    |
| R3 (Bologna) stream  | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    | 0.222    |

Notes: PEC values in bold indicate that the PEC\(_{SW,SED}\) exceeds the RAC, and thus that further consideration is necessary.

### FOCUS\(_{sw}\) Step 4 - Comparison of RACs and global maximum PEC\(_{SW}\) for cypermethrin – winter cereals at 1 x 25 g a.s./ha – Fish

#### Scenario

| Fish Species | Level of assessment | Mitigation options |
|--------------|---------------------|--------------------|
| Oncorhynchus mykiss | Tier 2 | 20 m |
| Cyprinodon variegatus | Tier 1 | 20 m |
| Pimephales promelas | Tier 1 | 20 m |

| Level of assessment | Oncorhynchus mykiss | Cyprinodon variegatus | Pimephales promelas |
|---------------------|---------------------|-----------------------|--------------------|
| RAC                 | 0.0312              | 0.0077                |

| Site/Stream          | Fish acute | Fish chronic |
|----------------------|------------|--------------|
| D1 (Lanna) ditch     | 0.0104     | 0.0104       |
| D1 (Lana) stream     | 0.0122     | 0.0122       |
| D2 (Brimstone) ditch | 0.0104     | 0.0104       |
| D2 (Brimstone) stream| 0.0124     | 0.0124       |
| D3 (Vredepeel) ditch | 0.0103     | 0.0103       |
| D4 (Skousbo) pond    | 0.0020     | 0.0020       |
| D4 (Skousbo) stream  | 0.0119     | 0.0119       |
| D5 (La Jailliere) pond| 0.0020| 0.0020 |
| D5 (La Jailliere) stream| 0.0129| 0.0129 |
| D6 (Thiva) ditch     | 0.0104     | 0.0104       |
Peer review of the pesticide risk assessment of the active substance cypermethrin

| Scenario          | Mesocosm Natural populations in ponds | Mesocosm Natural populations in ponds |
|-------------------|--------------------------------------|--------------------------------------|
| Level of assessment | Tier 3 NOEC (ETO)                     | Tier 3 NOEAE (ERO)                   |
|                   | 0.005 µg a.s./L                       | 0.015 µg a.s./L                      |
| RAC               | 0.0017                                | 0.0038                                |
| Mitigation options| 20 m                                  | 20 m                                  |

**FOCUS** step 4 - Comparison of RACs and global maximum PEC\(_{SW}\) for cypermethrin – winter cereals at 1 x 25 g a.s./ha – Aquatic invertebrates

| Scenario          | Mesocosm Natural populations in ponds | Mesocosm Natural populations in ponds |
|-------------------|--------------------------------------|--------------------------------------|
| Level of assessment | Tier 3 NOEC (ETO)                     | Tier 3 NOEAE (ERO)                   |
|                   | 0.005 µg a.s./L                       | 0.015 µg a.s./L                      |
| RAC               | 0.0017                                | 0.0038                                |
| Mitigation options| 20 m                                  | 20 m                                  |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
FOCUS<sub>sw</sub> step 4 - Comparison of RACs and global maximum PEC<sub>sw</sub> for cypermethrin – spring cereals at 1 x 25 g a.s./ha – Fish

| Scenario                      | Fish acute | Fish chronic |
|-------------------------------|------------|-------------|
|                               | Oncorhynchus mykiss | Pimephales promelas |
|                               | Cyprinodon variegatus |             |
| Level of assessment           | Tier 2     | Tier 1      |
| geomean LC<sub>50</sub>       | 3.12 µg a.s./L | 0.077 µg a.s./L |
| RAC                           | 0.0312     | 0.0077      |
| Mitigation options            | 20 m       | 20 m        |
| FOCUS Step 4<sup>+</sup>       |            |             |
| D1 (Lanna) ditch              | 0.0104     | 0.0104      |
| D1 (Lana) stream              | 0.0122     | 0.0122      |
| D3 (Vredepeel) ditch          | 0.0103     | 0.0103      |
| D4 (Skousbo) pond             | 0.0020     | 0.0020      |
| D4 (Skousbo) stream           | 0.0119     | 0.0119      |
| D5 (La Jailliere) pond        | 0.0020     | 0.0020      |
| D5 (La Jailliere) stream      | 0.0120     | 0.0120      |
| R4 (Roujan) stream            | 0.0091     | 0.0091      |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
FOCUS\textsubscript{sw} step 4 - Comparison of RACs and global maximum PEC\textsubscript{sw} for cypermethrin – spring cereals at 1 x 25 g a.s./ha – Aquatic invertebrates

| Scenario                  | Mesocosm Natural populations in ponds | Mesocosm Natural populations in ponds |
|---------------------------|---------------------------------------|---------------------------------------|
| **Level of assessment**   | Tier 3                                | Tier 3                                |
| NOEC (ETO)                | 0.005 µg a.s./L                        | 0.015 µg a.s./L                       |
| **RAC**                   | 0.0017                                | 0.0038                                |
| **Mitigation options**    | 20 m                                  | 20 m                                  |
| **FOCUS Step 4**          |                                       |                                       |
| D1 (Lanna) ditch          | 0.0104                                | 0.0104                                |
| D1 (Lana) stream          | 0.0122                                | 0.0122                                |
| D3 (Vredepeel) ditch      | 0.0103                                | 0.0103                                |
| D4 (Skousbo) pond         | 0.0020                                | 0.0020                                |
| D4 (Skousbo) stream       | 0.0119                                | 0.0119                                |
| D5 (La Jailliere) pond    | 0.0020                                | 0.0020                                |
| D5 (La Jailliere) stream  | 0.0120                                | 0.0120                                |
| R4 (Roujan) stream        | 0.0091                                | 0.0091                                |

Notes: figures with 'm' in the 'Mitigation options' row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
### FOCUSsw step 4 - Comparison of RACs and global maximum PEC_{SW} for cypermethrin – winter oilseed rape at 1 x 25 g a.s./ha – Fish

| Scenario                        | Fish acute                                      | Fish chronic                                    |
|---------------------------------|-------------------------------------------------|-------------------------------------------------|
|                                 | Oncorhynchus mykiss Cyprinodon variegatus       | Pimephales promelas                             |
| Level of assessment             | Tier 2                                          | Tier 1                                          |
| geomean LC_{50}                 | 3.12 µg a.s./L                                  | 0.077 µg a.s./L                                 |
| RAC                             | 0.0312                                          | 0.0077                                          |
| Mitigation options              | 20 m                                            | 20 m                                            |
| FOCUS Step 4                    |                                                 |                                                 |
| D2 (Brimstone) ditch            | 0.0104                                          | 0.0104                                          |
| D2 (Brimstone) stream           | 0.0124                                          | 0.0124                                          |
| D3 (Vredepeel) ditch            | 0.0103                                          | 0.0103                                          |
| D4 (Skousbo) pond               | 0.0020                                          | 0.0020                                          |
| D4 (Skousbo) stream             | 0.0116                                          | 0.0116                                          |
| D5 (La Jailliere) pond          | 0.0020                                          | 0.0020                                          |
| D5 (La Jailliere) stream        | 0.0118                                          | 0.0118                                          |
| R1 (Weiherbach) pond            | 0.0020                                          | 0.0020                                          |
| R1 (Weiherbach) stream          | 0.0091                                          | 0.0091                                          |
| R3 (Bologna) stream             | 0.0127                                          | 0.0127                                          |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk

---

### FOCUSsw step 4 - Comparison of RACs and global maximum PEC_{SW} for cypermethrin – winter oilseed rape at 1 x 25 g a.s./ha – Aquatic invertebrates

| Scenario                        | Mesocosm                                      | Mesocosm                                      |
|---------------------------------|-----------------------------------------------|-----------------------------------------------|
|                                 | Natural populations in ponds                  | Natural populations in ponds                  |
| Level of assessment             | Tier 3                                        | Tier 3                                        |
|                      | NOEC (ETO)       | NOEAEC (ER0)      |
|----------------------|------------------|-------------------|
|                      | 0.005 µg a.s./L  | 0.015 µg a.s./L   |
| RAC                  | 0.0017           | 0.0038            |
| Mitigation options   | 20 m             | 20 m              |
| FOCUS Step 4         |                  |                   |
| D2 (Brimstone) ditch | 0.0104           | 0.0104            |
| D2 (Brimstone) stream| 0.0124           | 0.0124            |
| D3 (Vredepeel) ditch | 0.0103           | 0.0103            |
| D4 (Skousbo) pond    | 0.0020           | 0.0020            |
| D4 (Skousbo) stream  | 0.0116           | 0.0116            |
| D5 (La Jailliere) pond| 0.0020          | 0.0020            |
| D5 (La Jailliere) stream| 0.0118        | 0.0118            |
| R1 (Weiherbach) pond | 0.0020           | 0.0020            |
| R1 (Weiherbach) stream| 0.0091          | 0.0091            |
| R3 (Bologna) stream  | 0.0127           | 0.0127            |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk

**FOCUS sw step 4 - Comparison of RACs and global maximum PEC<sub>SW</sub> for cypermethrin – winter oilseed rape at 2 x 25 g a.s./ha – Fish**

| Scenario                  | Fish acute | Fish chronic |
|---------------------------|------------|--------------|
|                           | *Oncorhynchus mykiss* | *Pimephales promelas* |
|                           | *Cyprinodon variegatus* |                      |
| Level of assessment       | Tier 2     | Tier 1       |
|                           | geomean LC<sub>50</sub> | NOEC          |
|                           | 3.12 µg a.s./L     | 0.077 µg a.s./L |
| RAC                       | 0.0312       | 0.0077       |
| Mitigation options        | 20 m        | 20 m         |
| FOCUS Step 4*             |             |              |
| Scenario                  | Mitigation options | NOEC (ETO) | NOEAECD (ERO) |
|---------------------------|--------------------|------------|---------------|
| D2 (Brimstone) ditch      | 20 m               | 0.0084     | 0.0084        |
| D2 (Brimstone) stream     | 20 m               | 0.0098     | 0.0098        |
| D3 (Vredepeel) ditch      | 20 m               | 0.0083     | 0.0083        |
| D4 (Skousbo) pond         | 20 m               | 0.0016     | 0.0016        |
| D4 (Skousbo) stream       | 20 m               | 0.0095     | 0.0095        |
| D5 (La Jailliere) pond    | 20 m               | 0.0016     | 0.0016        |
| D5 (La Jailliere) stream  | 20 m               | 0.0105     | 0.0105        |
| R1 (Weiherbach) pond      | 20 m               | 0.0016     | 0.0016        |
| R1 (Weiherbach) stream    | 20 m               | 0.0074     | 0.0074        |
| R3 (Bologna) stream       | 20 m               | 0.0105     | 0.0105        |

Notes: figures with 'm' in the 'Mitigation options' row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
FOCUS$_{sw}$ step 4 - Comparison of RACs and global maximum PEC$_{sw}$ for cypermethrin – spring oilseed rape at 1 x 25 g a.s./ha – Fish

| Scenario          | Fish acute | Fish chronic |
|-------------------|------------|--------------|
|                   | *Oncorhynchus mykiss* | Cyprinodon variegatus | *Pimephales promelas* |
| Level of assessment | Tier 2 | NOEC | NOEC |
| geomean LC$_{50}$  | 3.12 µg a.s./L | 0.077 µg a.s./L | |
| RAC                | 0.0312 | 0.0077 |
| Mitigation options | 20 m | 20 m |
| FOCUS Step 4       |          |          |
| D1 (Lanna) ditch   | 0.0104 | 0.0104 |
| D1 (Lana) stream   | 0.0122 | 0.0122 |
| D3 (Vredepeel) ditch | 0.0103 | 0.0103 |
| D4 (Skousbo) pond  | 0.0020 | 0.0020 |
| D4 (Skousbo) stream | 0.0119 | 0.0119 |
| D5 (La Jailliere) pond | 0.0020 | 0.0020 |
| D5 (La Jailliere) stream | 0.0121 | 0.0121 |
| R1 (Weiherbach) pond | 0.0020 | 0.0020 |
| R1 (Weiherbach) stream | 0.0091 | 0.0091 |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
FOCUS$_{sw}$ step 4 - Comparison of RACs and global maximum PEC$_{sw}$ for cypermethrin – spring oilseed rape at 1 x 25 g a.s./ha – Aquatic invertebrates

| Scenario | Mesocosm | Mesocosm |
|----------|----------|----------|
|          | Natural populations in ponds | Natural populations in ponds |
| Level of assessment | Tier 3 | Tier 3 |
|          | NOEC (ETO) | NOEAE (ERO) |
|          | 0.005 µg a.s./L | 0.015 µg a.s./L |
| RAC | 0.0017 | 0.0038 |
| Mitigation options | 20 m | 20 m |

**FOCUS Step 4**

| Scenario | FOCUS Step 4 |
|----------|--------------|
| D1 (Lanna) ditch | 0.0104 |
| D1 (Lanna) stream | 0.0122 |
| D3 (Vredepeel) ditch | 0.0103 |
| D4 (Skousbo) pond | 0.0020 |
| D4 (Skousbo) stream | 0.0119 |
| D5 (La Jailliere) pond | 0.0020 |
| D5 (La Jailliere) stream | 0.0121 |
| R1 (Weiherbach) pond | 0.0020 |
| R1 (Weiherbach) stream | 0.0091 |

*Notes: figures with 'm' in the 'Mitigation options' row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk*
### FOCUS\textsubscript{sw} step 4 - Comparison of RACs and global maximum PEC\textsubscript{sw} for cypermethrin – potato at 1 x 50 g a.s./ha (early) – Fish

| Scenario | Fish acute | Fish chronic |
|----------|------------|--------------|
|          | Oncorhynchus mykiss | Cyprinodon variegatus | Pimephales promelas |
| Level of assessment | Tier 2 | Tier 1 |
| geomean LC\textsubscript{50} | 3.12 µg a.s./L | 0.077 µg a.s./L |
| RAC | 0.0312 | 0.0077 |
| Mitigation options | 20 m | 20 m |
| FOCUS Step 4 | | |

| D3 (Vredepeel) ditch | 0.0206 | 0.0206 |
| D4 (Skousbo) pond | 0.0039 | 0.0039 |
| D4 (Skousbo) stream | 0.0221 | 0.0221 |
| D6 (Thiva), 1st crop ditch | 0.0203 | 0.0203 |
| D6 (Thiva), 2nd crop ditch | 0.0202 | 0.0202 |
| R1 (Weiherbach) pond | 0.0039 | 0.0039 |
| R1 (Weiherbach) stream | 0.0179 | 0.0179 |
| R2 (Porto) stream | 0.0241 | 0.0241 |
| R3 (Bologna) stream | 0.0257 | 0.0257 |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
### FOCUS<sub>sw</sub> step 4 - Comparison of RACs and global maximum PEC<sub>sw</sub> for cypermethrin – potato at 1 x 50 g a.s./ha (early) – Aquatic invertebrates

| Scenario                                      | Mesocosm | Mesocosm |
|----------------------------------------------|----------|----------|
|                                               | Natural populations in ponds | Natural populations in ponds |
| Level of assessment                           | Tier 3  | Tier 3  |
|                                               | NOEC (ETO) | NOEAEAC (ERO) |
|                                               | 0.005 µg a.s./L | 0.015 µg a.s./L |
| RAC                                           | 0.0017 | 0.0038 |
| Mitigation options                           | 20 m    | 20 m    |
| FOCUS Step 4                                  |         |         |
| D3 (Vredepeel) ditch                          | 0.0206  | 0.0206  |
| D4 (Skousbo) pond                             | 0.0039  | 0.0039  |
| D4 (Skousbo) stream                           | 0.0221  | 0.0221  |
| D6 (Thiva), 1st crop ditch                    | 0.0203  | 0.0203  |
| D6 (Thiva), 2nd crop ditch                    | 0.0202  | 0.0202  |
| R1 (Weiherbach) pond                          | 0.0039  | 0.0039  |
| R1 (Weiherbach) stream                        | 0.0179  | 0.0179  |
| R2 (Porto) stream                             | 0.0241  | 0.0241  |
| R3 (Bologna) stream                           | 0.0257  | 0.0257  |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.

---

### FOCUS<sub>sw</sub> step 4 - Comparison of RACs and global maximum PEC<sub>sw</sub> for cypermethrin – potato at 1 x 50 g a.s./ha (late) – Fish

| Scenario                                      | Fish acute | Fish chronic |
|----------------------------------------------|------------|--------------|
|                                              | Oncorhynchus mykiss | Pimephales promelas |
|                                              | Cyprinodon variegatus |              |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
### Level of assessment

|                  | Tier 2 | Tier 1 |
|------------------|--------|--------|
| geomean LC₅₀     |        |        |
|                  | 3.12 µg a.s./L | 0.077 µg a.s./L |
| RAC              | 0.0312 | 0.0077 |

### Mitigation options

|                  | 20 m   | 20 m   |
|------------------|--------|--------|

### FOCUS Step 4

| Location          | Mitigation options |
|-------------------|--------------------|
| D3 (Vredepeel) ditch | 0.0206 m          |
| D4 (Skousbo) pond  | 0.0039 m          |
| D4 (Skousbo) stream | 0.0198 m        |
| D6 (Thiva), 1st crop ditch | 0.0204 m |
| D6 (Thiva), 2nd crop ditch | 0.0205 m |
| R1 (Weiherbach) pond | 0.0039 m        |
| R1 (Weiherbach) stream | 0.0182 m  |
| R2 (Porto) stream  | 0.0245 m          |
| R3 (Bologna) stream | 0.0256 m         |

Notes: Figures with 'm' in the 'Mitigation options' row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.

---

### FOCUSₚₜ step 4 - Comparison of RACs and global maximum PECₚₜ for cypermethrin – potato at 1 x 50 g a.s./ha (late) – Aquatic invertebrates

| Scenario        | Mesocosm | Mesocosm |
|-----------------|----------|----------|
|                  | Natural populations in ponds | Natural populations in ponds |
| **Level of assessment** | Tier 3 | Tier 3 |
|                  | NOEC (ETO) | NOEAEIC (ERO) |
|                  | 0.005 µg a.s./L | 0.015 µg a.s./L |
| **RAC**          | 0.0017 | 0.0038 |
| **Mitigation options** | 20 m   | 20 m   |
| FOCUS Step 4 | Mitigation Options | RAC Mitigation Options |
|--------------|--------------------|------------------------|
| D3 (Vredepeel) ditch | 0.0206 | 0.0206 |
| D4 (Skousbo) pond | 0.0039 | 0.0039 |
| D4 (Skousbo) stream | 0.0198 | 0.0198 |
| D6 (Thiva), 1st crop ditch | 0.0204 | 0.0204 |
| D6 (Thiva), 2nd crop ditch | 0.0205 | 0.0205 |
| R1 (Weiherbach) pond | 0.0039 | 0.0039 |
| R1 (Weiherbach) stream | 0.0182 | 0.0182 |
| R2 (Porto) stream | 0.0245 | 0.0245 |
| R3 (Bologna) stream | 0.0256 | 0.0256 |

Notes: figures with ‘m’ in the ‘Mitigation options’ row indicate the necessary widths of no-spray buffer zones (in metres); DRN = Drift mitigation by drift reducing nozzles; vfs: vegetated filter strip; values in bold exceed the relevant RAC, indicating an unacceptable risk.
Effects on bees (Regulation (EU) N° 283/2013, Annex Part A, point 8.3.1 and Regulation (EU) N° 284/2013 Annex Part A, point 10.3.1)*

* This section does reflect the new EFSA Guidance Document on bees which has not yet been noted by the Standing Committee on Plants, Animals, Food and Feed.

| Species            | Test substance | Time scale/type of endpoint | End point | toxicity                          |
|--------------------|----------------|-----------------------------|-----------|-----------------------------------|
| Honeybee (Apis mellifera) | Cypermethrin   | Acute, adult toxicity       | Oral toxicity (LD<sub>50</sub>) | 0.4592 µg a.s./bee               |
| Honeybee (Apis mellifera) | Cypermethrin   | Acute, adult toxicity       | Contact toxicity (LD<sub>50</sub>) | 0.0206 µg a.s./bee               |
| Honeybee (Apis mellifera) | Cypermethrin 500 EC | Acute, adult toxicity | Oral toxicity (LD<sub>50</sub>) | 0.1994 µg a.s./bee               |
| Honeybee (Apis mellifera) | Cypermethrin 500 EC | Acute, adult toxicity | Contact toxicity (LD<sub>50</sub>) | 0.0189 µg a.s./bee               |
| Honeybee (Apis mellifera) | Cypermethrin 500 EC | Chronic (10d), adult toxicity | LDD<sub>50</sub> | > 0.0149 µg a.s./bee/day         |
| Honeybee (Apis mellifera) | Cypermethrin   | Chronic (7d), larval toxicity | NOED | 0.060 µg a.s./larva               |
| Bumblebee (Bombus terrestris) | Cypermethrin 500 EC | Acute, adult toxicity | Oral toxicity (LD<sub>50</sub>) | 0.263 µg a.s./beee              |
| Bumblebee (Bombus terrestris) | Cypermethrin 500 EC | Acute, adult toxicity | Contact toxicity (LD<sub>50</sub>) | 0.119 µg a.s./bee               |

Potential for accumulative toxicity: not assessed

Semi-field test (Cage and tunnel test)

In total, six reliable semi-field tests (tunnel tests) are available, in which the representative formulation Cypermethrin 500 EC or the formulations Cypermethrin 50 EC, Cypermethrin 100 EC, Cypermethrin 100 EWor Cypermethrin PPBO 100/300 were applied at a rate of 25 or 50 g a.s./ha, either during or after bee flight. All available studies show consistent results, which are summarized below.

| Species            | Test substance | Type of test | Results                                                                 |
|--------------------|----------------|--------------|-------------------------------------------------------------------------|
| Honeybee (Apis mellifera) | Cypermethrin 50 EC | Semi-field test (tunnel test) in winter wheat/Northern France | 25 and 50 g a.s./ha after bee flight: short-term effect on mortality of 3 days; short-term effect on foraging activity of 2-3 days, no unacceptable effects on brood and colony; 25 g a.s./ha during bee flight: short-term effect on mortality of 3 days, short-term effect on foraging activity of 2-3 days, no unacceptable effects on brood and colony. |
| Honeybee (Apis mellifera) | Cypermethrin 100 EC | Semi-field test (tunnel test) in *Phacelia* tanacetifolia/Northern France | 25 and 50 g a.s./ha after bee flight: short-term effect on mortality of 1 day, short-term effect on foraging activity of 1-2 days (25 g a.s./ha) and of 2 days (50 g a.s./ha), no unacceptable effects on brood and colony; 25 g a.s./ha during bee flight: short-term effect on mortality of 2 days, short-term effect on foraging activity of 2-3 days, no unacceptable effects on brood and colony. |
Field tests
In total, three field effect studies are available, in which the representative formulation Cypermethrin 500 EC was applied at a rate of 25 g a.s./ha, either during or after bee flight. All available studies showed consistent results, which are summarized below.

| Species                      | Test substance | Type of test                     | Results                                                                 |
|------------------------------|----------------|----------------------------------|-------------------------------------------------------------------------|
| Honeybee (Apis mellifera)    | Cypermethrin   | Field test in *Phacelia* tanacetifolia / Southern Germany | 25 g a.s./ha after bee flight: 1st trial: no effect on mortality, short-term effect on foraging activity of 1 day, no unacceptable effects on brood and colony 2nd trial: short-term effect on mortality of 1 day, no effect on foraging activity, no unacceptable effects on brood and colony 25 g a.s./ha during bee flight: 1st trial: short-term effect on mortality of 2 days, short-term effect on foraging activity of 2 days, no unacceptable effects on brood and colony |
Peer review of the pesticide risk assessment of the active substance cypermethrin

2 days, no unacceptable effects on brood and colony

→ 2nd trial: short-term effect on mortality of 3 days, short-term effect on foraging activity of 2 days, no unacceptable effects on brood and colony

25 g a.s./ha after bee flight:
→ short-term effect on mortality of 1 day, no effect on foraging activity, no unacceptable effects on brood and colony

25 g a.s./ha during bee flight:
→ no effect on mortality, no effect on foraging activity, no unacceptable effects on brood and colony

Honeybee (Apis mellifera) | Cypermethrin 500 EC | Field test in winter oilseed rape/Northern France | 25 g a.s./ha after bee flight:
→ short-term effect on mortality of 1 day, no effect on foraging activity of 1 day, no unacceptable effects on brood and colony

25 g a.s./ha during bee flight:
→ short-term effect on mortality of 2 days, short-term effect on foraging activity of 1 day, no unacceptable effects on brood and colony

Honeybee (Apis mellifera) | Cypermethrin 500 EC | Field test in Phacelia tanacetifolia/Northern France | 25 g a.s./ha after bee flight:
→ short-term effect on mortality of 1 day, short-term effect on foraging activity of 1 day, no unacceptable effects on brood and colony

25 g a.s./ha during bee flight:
→ short-term effect on mortality of 2 days, short-term effect on foraging activity of 1 day, no unacceptable effects on brood and colony

Tier 1 Risk assessment according to SANCO/10329/2002 and EPPO (2010)

Risk assessment for Cereals (winter and spring) at 1 x 25 g a.s./ha, winter oilseed rape at 2 x 25 g a.s./ha (interval 90 days), and spring oilseed rape at 1 x 25 g a.s./ha

| Species | Test substance | Risk quotient | HQ | Trigger |
|---------|----------------|---------------|-----|---------|
| Honeybee (Apis mellifera) | Cypermethrin | HQ<sub>oral</sub> | 54 | 50 |
| Honeybee (Apis mellifera) | Cypermethrin | HQ<sub>contact</sub> | 1214 | 50 |
| Honeybee (Apis mellifera) | Cypermethrin | TER<sub>CH,adult</sub>* | 0.181 | 1* |
| Honeybee (Apis mellifera) | Cypermethrin | TER<sub>CH,larvae</sub>* | 2.06 | 1* |

Note: HQ and TER values in bold exceed, respectively are below, the trigger, indicating that further consideration is required.

Risk assessment for Potato at 1 x 50 g a.s./ha

| Species | Test substance | Risk quotient | HQ | Trigger |
|---------|----------------|---------------|-----|---------|
| Honeybee (Apis mellifera) | Cypermethrin | HQ<sub>oral</sub> | 109 | 50 |
| Honeybee (Apis mellifera) | Cypermethrin | HQ<sub>contact</sub> | 2427 | 50 |
| Honeybee (Apis mellifera) | Cypermethrin | TER<sub>CH,adult</sub>* | 0.181 | 1* |
| Honeybee (Apis mellifera) | Cypermethrin | TER<sub>CH,larvae</sub>* | 2.06 | 1* |

Note: HQ and TER values in bold exceed, respectively are below, the trigger, indicating that further consideration is required.

* this trigger value is quoted in EPPO, 2010; the risk assessment used only for indicative purposes
Tier 1 Risk assessment according to EFSA (2013)
Risk assessment for Cereals (winter and spring) at 1 x 25 g a.s./ha, winter oilseed rape at 2 x 25 g a.s./ha (interval 90 days), spring oilseed rape at 1 x 25 g a.s./ha, and Potato at 1 x 50 g a.s./ha

Acute contact exposure of adult honeybees – screening step

| Test substance | Crop                      | Application rate (g a.s./ha) | LD₅₀ (µg/bee) | HQ   | Trigger value |
|----------------|---------------------------|-----------------------------|---------------|------|---------------|
| Cypermethrin   | Cereals (winter and spring)| 25                          | 0.0206         | 1214 | 42            |
|                | Oilseed rape (winter and spring) | 25                          | 0.0206         | 1214 | 42            |
|                | Potato                     | 50                          | 0.0206         | 2427 | 42            |

HQ values in bold exceed the trigger, indicating a potential risk.

Acute contact exposure of adult honeybees – Tier 1

| Crop                      | Scenario          | BBCH | Appl. Rate (g a.s./ha) | Eₚp | LD₅₀ (µg/bee) | HQ   | Trigger value |
|---------------------------|-------------------|------|------------------------|-----|---------------|------|---------------|
| Cereals (winter and spring)| treated crop      | all  | 25                     | 1   |               | 1214 |               |
|                           | <30               | 25   | 1                      |     |               | 1214 |               |
|                           | 30-39             | 25   | 0.5                    |     |               | 607  |               |
|                           | ≥ 40              | 25   | 0.3                    |     |               | 364  |               |
|                           | field margin      | all  | 25                     | 0.028 |             | 34   |               |
| Oilseed rape (winter and spring) | treated crop      | all  | 25                     | 1   |               | 1214 |               |
|                           | <30               | 25   | 1                      |     |               | 1214 |               |
|                           | 30-39             | 25   | 0.3                    |     |               | 364  |               |
|                           | ≥ 40              | 25   | 0.25                   |     |               | 303  |               |
|                           | field margin      | all  | 25                     | 0.028 |             | 34   |               |
| Potato                    | treated crop      | all  | 50                     | 1   |               | 2427 |               |
|                           | < 40              | 50   | 1                      |     |               | 2427 |               |
|                           | ≥ 40              | 50   | 0.3                    |     |               | 728  |               |
|                           | field margin      | all  | 50                     | 0.028 |             | 68   |               |

HQ values in bold exceed the trigger, indicating a potential risk.

Acute and chronic oral exposure of adult honeybees and honeybee larvae – screening step

| Type of assessment | Test substance       | Crop                      | Application rate (kg a.s./ha) | SV | Endpoint          | ETR | Trigger value |
|--------------------|----------------------|---------------------------|-------------------------------|----|------------------|-----|---------------|
| Acute oral exposure adult bees | Cypermethrin | Cereals ¹⁾ | 0.025 | 7.6 | 0.4592 µg a.s./bee | 0.41 | 0.2 |
|                      |                     | Oilseed rape ¹⁾ | 0.025 | 7.6 | 0.41 | 0.2 |
|                      |                     | Potato                  | 0.050 | 7.6 | 0.83 | 0.2 |
| Chronic oral exposure adult bees | Cypermethrin 500 EC | Cereals ¹⁾ | 0.025 | 7.6 | 0.0149 µg a.s./bee/day | < 12.75 | 0.03 |
|                      |                     | Oilseed rape ¹⁾ | 0.025 | 7.6 | 0.0149 | < 12.75 | 0.03 |
|                      |                     | Potato                  | 0.050 | 7.6 | 25.50 | < 25.50 | 0.03 |
| Chronic oral exposure larvae | Cypermethrin | Cereals ¹⁾ | 0.025 | 4.4 | 0.041 µg a.s./larva per developmental period | 2.68 | 0.2 |
|                      |                     | Oilseed rape ¹⁾ | 0.025 | 4.4 | 2.68 | 0.2 |
|                      |                     | Potato                  | 0.050 | 4.4 | 5.37 | 0.2 |

¹⁾ ETR values representative for both the use in winter and spring cereals/oilseed rape; SV: Shortcut value; bold values exceed the trigger, indicating a potential risk.

Acute oral exposure of adult honeybees – Tier 1

| Crop                      | Scenario          | BBCH | Appl. rate (kg a.s./ha) | Eₚp | SV  | Endpoint (µg a.s./bee) | ETR | Trigger value |
|---------------------------|-------------------|------|------------------------|-----|-----|-----------------------|-----|---------------|
| Cereals (winter and spring)| Treated crop      | 10-69| 0.025                  | 1   | 0.92| 0.4592                | 0.05| 0.2           |
|                           | ≥ 70              |      | 1                      | 0   |     |                       | 0   |               |
| Weeds                     |                   | 10-29| 0.025                  | 1   | 3.7 |                       | 0.2 |               |

EFSA Journal 2018;16(8):5402
### Chronic oral exposure of adult honeybees – Tier 1.

| Crop                  | Scenario     | BBCH      | Appl. rate (kg a.s./ha) | EF | SV     | Endpoint (µg a.s./bee/day) | ETR | Trigger value |
|-----------------------|--------------|-----------|-------------------------|----|--------|---------------------------|-----|---------------|
| **Cereals (winter and spring)** | Treated crop | 10-69     | 1                       | 0.92 | 0.72   | > 0.0149                  |     | < 1.11        |
|                       |              | ≥ 70      | 1                       | 0    | 0.72   | > 0.0149                  |     | < 1.11        |
|                       | Weeds        | 10-29     | 1                       | 2.9  | 0.72   | > 0.0149                  |     | < 1.11        |
|                       |              | 30-39     | 0.5                     | 2.9  | 0.72   | > 0.0149                  |     | < 1.11        |
|                       |              | 40-69     | 0.3                     | 2.9  | 0.72   | > 0.0149                  |     | < 1.11        |
|                       |              | ≥ 70      | 0.3                     | 2.9  | 0.72   | > 0.0149                  |     | < 1.11        |
|                       | Field margin | all       | 0.0092                  | 2.9  | 0.72   | > 0.0149                  |     | < 0.032       |
|                       | Adjacent crop | all       | 0.0033                  | 5.8  | 0.72   | > 0.0149                  |     | < 0.023       |
|                       | Succeeding crop | all       | 1                       | 0.54 | 0.72   | > 0.0149                  |     | < 0.65        |
| **Oilseed rape (winter and spring)** | Treated crop | 10-69     | 1                       | 5.8  | 0.72   | > 0.0149                  |     | < 7.01        |
|                       |              | ≥ 70      | 1                       | 0    | 0.72   | > 0.0149                  |     | < 7.01        |
|                       | Weeds        | 10-29     | 1                       | 2.9  | 0.72   | > 0.0149                  |     | < 7.01        |
|                       |              | 30-39     | 0.3                     | 2.9  | 0.72   | > 0.0149                  |     | < 7.01        |
|                       |              | 40-69     | 0.25                    | 2.9  | 0.72   | > 0.0149                  |     | < 7.01        |
|                       |              | ≥ 70      | 0.25                    | 2.9  | 0.72   | > 0.0149                  |     | < 7.01        |
|                       | Field margin | all       | 0.0092                  | 2.9  | 0.72   | > 0.0149                  |     | < 0.032       |
|                       | Adjacent crop | all       | 0.0033                  | 5.8  | 0.72   | > 0.0149                  |     | < 0.23        |
|                       | Succeeding crop | all       | 1                       | 0.54 | 0.72   | > 0.0149                  |     | < 0.65        |
### Chronic oral exposure of honeybee larvae – Tier 1.

| Crop                     | Scenario       | BBCH | Appl. rate (kg a.s./ha) | $E_f$ | SV | Endpoint (µg a.s./larva) | ETR | Trigger value |
|--------------------------|----------------|------|-------------------------|--------|----|-------------------------|-----|--------------|
| Cereals (winter and spring) | Treated crop   | 10-69 | 1                         | 0.15  | 0.85 | 0.041                  | 0.08|              |
|                          |                | ≥ 70  | 1                         | 0     |     |                         | 0   | 1.14         |
|                          |                | 10-29 | 1                         | 2.2   |     |                         | 0.57|              |
|                          |                | 30-39 | 0.5                       | 2.2   |     |                         | 0.34|              |
|                          |                | 40-69 | 0.3                       | 2.2   |     |                         | 0.34|              |
|                          |                | ≥ 70  | 0.3                       | 2.2   |     |                         | 0.01|              |
|                          | Field margin   | all   | 0.0092                   | 2.2   |     |                         | 0.008|             |
|                          | Adjacent crop  | all   | 0.0033                   | 4.4   |     |                         | 0.008|             |
|                          | Succeeding crop| all   | 1                        | 0.4   |     |                         | 0.21|             |
| Oilseed rape (winter and spring) | Treated crop   | 10-69 | 1                         | 4.4   | 0.85 | 0.041                  | 2.28|              |
|                          |                | ≥ 70  | 1                         | 4.4   |     |                         | 0   |              |
|                          |                | 10-29 | 1                         | 2.2   |     |                         | 1.14|              |
|                          |                | 30-39 | 0.3                       | 2.2   |     |                         | 0.34|              |
|                          |                | 40-69 | 0.25                      | 2.2   |     |                         | 0.29|              |
|                          |                | ≥ 70  | 0.25                      | 2.2   |     |                         | 0.29|              |
|                          | Field margin   | all   | 0.0092                   | 2.2   |     |                         | 0.01|              |
|                          | Adjacent crop  | all   | 0.0033                   | 4.4   |     |                         | 0.008|             |
|                          | Succeeding crop| all   | 1                        | 0.4   |     |                         | 0.21|              |
| Potato                   | Treated crop   | <10   | 1                         | 0.002 | 0.85 | 0.041                  | 0.002|              |
|                          |                | 10-69 | 1                         | 0.15  |     |                         | 0.16|              |
|                          |                | ≥ 70  | 1                         | 0     |     |                         | 0   |              |
|                          | Weeds          | <10   | 1                         | 2.2   | 0.85 | 0.041                  | 2.28|              |
|                          |                | 10-39 | 1                         | 2.2   |     |                         | 2.28|              |
|                          |                | 40-69 | 0.3                       | 2.2   |     |                         | 0.68|              |
|                          |                | ≥ 70  | 0.3                       | 2.2   |     |                         | 0.68|              |
|                          | Field margin   | all   | 0.0092                   | 2.2   |     |                         | 0.021|             |
|                          | Adjacent crop  | all   | 0.0033                   | 4.4   |     |                         | 0.015|             |
|                          | Succeeding crop| all   | 1                        | 0.4   |     |                         | 0.42|              |

**SV**: Shortcut value; $E_f$: exposure factor; bold values exceed the trigger, indicating a potential risk.
### Exposure to guttation water contaminated with cypermethrin – Tier 1

| Type of assessment | Water consumption (µL) | PEC (µg/µL) | Endpoint | ETR   | Trigger |
|-------------------|-----------------------|-------------|----------|-------|---------|
| Acute oral exposure adult bees | 11.4 | 0.000009 | 0.172 µg a.s./bee | 0.000597 | 0.2 |
| Chronic oral exposure adult bees | 11.4 | 0.00000486 | > 0.0149 µg a.s./bee/day | < 0.00372 | 0.03 |
| Chronic oral exposure larvae | 111 | 0.00000648 | 0.041 µg a.s./larvae per developmental period | 0.01754 | 0.2 |

1Based on a maximum water solubility of < 9 µg/L for cypermethrin; **bold** values exceed the trigger, indicating a potential risk.

### Exposure to surface water contaminated with cypermethrin – Tier 1

| Type of assessment | Crop | Water consumption (µL) | PEC (µg/µL) | Endpoint | ETR   | Trigger |
|-------------------|------|-----------------------|-------------|----------|-------|---------|
| Acute oral exposure adult bees | All proposed uses | 11.4 | 0.524 x 10^{-6} | 0.172 µg a.s./bee | 3.473 x 10^{-5} | 0.2 |
| Chronic oral exposure adult bees | All proposed uses | 11.4 | 0.524 x 10^{-6} | > 0.0149 µg a.s./bee/day | < 0.00004 | 0.03 |
| Chronic oral exposure larvae | All proposed uses | 111 | 0.524 x 10^{-6} | 0.041 µg a.s./larvae per developmental period | 0.00142 | 0.2 |

**bold** values exceed the trigger, indicating a potential risk.

### Acute contact exposure of adult bumble bees – Tier 1

| Crop | Scenario | BBCH | Appl. Rate (g a.s./ha) | Ef | SV | LDso (µg/bee) | HQ | Trigger |
|------|----------|------|------------------------|----|----|----------------|----|---------|
| Cereals (winter and spring) | treated crop | all | 25 | 1 | 0.219 | 210 |
| | weeds | <30 | 25 | 1 | 210 |
| | | 30-39 | 25 | 0.5 | 105 |
| | | ≥ 40 | 25 | 0.3 | 63 |
| | field margin | all | 25 | 0.028 | 5.88 |
| | | <30 | 25 | 1 | 210 |
| | | 30-39 | 25 | 0.3 | 63 |
| | | ≥ 40 | 25 | 0.25 | 53 |
| | field margin | all | 25 | 0.028 | 5.88 |
| | | <40 | 50 | 1 | 420 |
| | | ≥ 40 | 50 | 0.3 | 126 |
| Potatoes | treated crop | all | 50 | 1 | 420 |
| | weeds | ≥ 40 | 50 | 0.3 | 126 |

*HQ values in **bold** exceed the trigger, indicating a potential risk.*

### Acute oral exposure of adult bumble bees – Tier 1

| Crop | Scenario | BBCH | Appl. rate (kg a.s./ha) | Ef | SV | Endpoint (µg a.s./bee) | ETR | Trigger value |
|------|----------|------|------------------------|----|----|------------------------|-----|----------------|
| Cereals (winter and spring) | Treated crop | 10-69 | 0.025 | 1 | 2.3 | 0.219 | 0.036 |
| | | ≥ 70 | 1 | 0 | 0.618 |
| | Weeds | 10-29 | 0.025 | 1 | 6.5 | 0.309 |
| | | 30-39 | 0.5 | 6.5 | 0.309 |
| | | 40-69 | 0.3 | 6.5 | 0.185 |
Higher Tier Risk assessment
During the Pesticides Peer Review Meeting 177 the higher tier studies on honeybees and the risk assessment for bees were discussed. In conclusion, high acute risk of cypermethrin on bees was identified and mitigation measures would be needed. However, restriction to application after bee flight is not sufficient as mitigation. Some experts proposed to use risk mitigation measures such as SPE8 (Do not apply when flowering weeds are present). Nevertheless, it was not demonstrated that this mitigation would be protective to bees.

Effects on other arthropod species (Regulation (EU) N° 283/2013, Annex Part A, point 8.3.2 and Regulation (EU) N° 284/2013 Annex Part A, point 10.3.2)

Laboratory tests with standard sensitive species

| Species             | Test Substance | End point        | Toxicity       |
|---------------------|----------------|------------------|----------------|
| Typhlodromus pyri  | Sherpa 100 EC ¹ | Mortality, LR₅₀  | 0.0029 g a.s./ha |
|                     |                | Reproduction, NOER | 0.0016 g a.s./ha |
Species | Test Substance | End point | Toxicity
---|---|---|---
*Aphidius rhopalosiphi* | Sherpa 100 EC | Mortality, LR<sub>50</sub> | 0.822 g a.s./ha
| | | Reproduction, NOER | 0.568 g a.s./ha

<sup>1</sup>EC formulation containing 100 g a.s./L cypermethrin. Based on their respective composition, it is considered that endpoints for Sherpa 100 EC are representative for Cypermethrin 500 EC.

**First tier risk assessment** for – Cereals (winter and spring) at 1 x 25 g a.s./ha, winter oilseed rape at 2 x 25 g a.s./ha (interval 90 days), spring oilseed rape at 1 x 25 g a.s./ha, and Potato at 1 x 50 g a.s./ha

| Test substance | Species | Effect (LR<sub>50</sub> g/ha) | HQ in-field | HQ off-field<sup>1</sup> | Trigger |
|---|---|---|---|---|---|
| Cypermethrin | *Typhlodromus pyri* | 0.0029 | 17241 | 478 | 2 |
| Cypermethrin | *Aphidius rhopalosiphi* | 0.822 | 60.8 | 1.68 | 2 |

<sup>1</sup>HQ value calculated for the use in potato, for which a distance of 1 m was assumed to calculate the drift rate. The off-field exposure for this use covers the off-field exposure for the proposed uses in cereals and oilseed rape.

Semi-field tests

No additional semi-field tests have been submitted

Field studies

Three new field studies with the representative formulation Cypermethrin 500 EC I have been submitted, of which one assessed the effects on natural arthropod communities in-field, and two investigated the effects in off-crop areas. In addition, two studies with the formulation Cyperkill 10 EC and two studies with the formulation Sherpa 100 EC have been submitted. For each of these formulations, one study investigated the effects of cypermethrin on *Aphidius rhopalosiphi* mummies, and the second study assessed the effects on natural arthropod communities in-field. Although performed with another formulation, these four in-crop field studies are considered to be representative for the risk assessment for Cypermethrin 500 EC.

| Species | Test substance | Crop | Application rates/ effects |
|---|---|---|---|
| *Aphidius rhopalosiphi* (mummies) | Cyperkill 10 EC (100 g a.s./L) | Winter wheat (United Kingdom) | 1 x 0.25 L product/ha (= 1 x 25 g a.s./ha) and 1 x 0.00595 L product/ha (= 1 x 0.595 g a.s./ha) | The emergence success / mortality of adult wasps from mummies treated with Cyperkill 10 EC was comparable to the control for both treatment rates. |
| Natural arthropod populations | Cyperkill 10 EC (100 g a.s./L) | Winter wheat (United Kingdom) | 2 x 0.25 L product/ha (= 2 x 25 g a.s./ha) and 2 x 0.00595 L product/ha (= 2 x 0.595 g a.s./ha) | short-term effects on a range of non-target arthropods following application at both treatment rates. All affected species groups, including the lyniphiid spiders (which were the most sensitive), recovered 52-64 days after the first application. |
| Natural arthropod populations | Sherpa 100 EC (100 g a.s./L) | Winter triticale (United Kingdom) |
|--------------------------------|-----------------------------|---------------------------------|
|                                | 2 × 0.30 L product/ha (= 2 × 30 g a.s./ha) and 2 × 0.00714 L product/ha (= 2 × 0.714 g a.s./ha) | For the highest treatment rate (2 × 30 g a.s./ha), there were no marked effects on ground-active beetles (e.g. Carabidae and Staphylinidae) and only short-term effects on aerial fauna such as parasitic wasps and predatory flies (recovery 21-23 days after the first application). For certain species of lynx spiders, significant effects of treatment were found up to 49-51 days after the first application. Full population recovery could not be demonstrated prior to harvest (final sampling occasion 69-71 days after the first application) due to a natural decline in population levels in all treatments and the control. For the lower treatment rate (2 × 0.714 g a.s./ha), only short-term effects on populations of lynx spiders (with recovery 21-23 days after the first application) and no effects on any other group of non-target arthropods were found. |

**Aphidius rhopalosiphi** (mummies) | Sherpa 100 EC (100 g a.s./L) | Winter triticale (United Kingdom) |
|--------------------------------|-----------------------------|---------------------------------|
|                                | 1 × 0.30 L product/ha (= 1 × 30 g a.s./ha) and 1 × 0.00714 L product/ha (= 1 × 0.714 g a.s./ha) | The emergence success / mortality of adult wasps from mummies treated with Sherpa 100 EC was comparable to the control for both treatment rates. |

| Natural arthropod populations | Cypermethrin 500 EC (500 g a.s./L) | Alfalfa (Italy) |
|--------------------------------|-----------------------------------|-----------------|
|                                | 2 × 0.10 L product/ha (= 2 × 50 g a.s./ha) | At the population level, pronounced short-term effects on a wide range of non-target arthropods were found, with a recovery within two months after the first application. At the community level, an impact was observed during the first season of 2013. No full recovery was found at the last two samplings of 2013, however, no differences in the community composition were found in 2014. |

**Off-crop field studies**

| Natural arthropod populations | Cypermethrin 500 EC (500 g a.s./L) | Grassland (United Kingdom) |
|--------------------------------|-----------------------------------|-----------------|
|                                | 0.4, 0.8, 1.6, 3.2 and 6.4 mL product/ha (equivalent to 0.2, 0.4, 0.8, 1.6 and 3.2 g a.s./ha) | slight effects on a number of taxa at 0.4, 0.8 and 1.6 mL product/ha. Short-term effects on 1 taxon at 3.2 mL product/ha and on 3 taxa at 6.4 mL product/ha. Recovery occurred within three weeks after application |

| Natural arthropod populations | Cypermethrin 500 EC (500 g a.s./L) | Grassland (South-West France) |
|--------------------------------|-----------------------------------|-----------------|
|                                | 0.40, 1.56, 2.40, 7.60 and 16.60 mL product/ha (equivalent to 0.2, 0.78, 1.2, 3.8 and 8.3 g a.s./ha) | slight effects on a number of taxa at 0.4 and 1.56 mL product/ha. Pronounced effects with no recovery in the study period for 1 taxon at 2.40 mL product/ha. Short-term effects on 3 taxa and pronounced effects with no recovery in the study period for 1 taxon at 7.60 mL product/ha. Short-term effects with recovery by the end of the study period for all taxa affected at 16.60 mL product/ha. |

**Additional specific test**

No additional specific tests have been submitted

**Risk assessment based on field studies** for – Cereals (winter and spring) at 1 x 25 g a.s./ha, winter oilseed rape at 2 x 25 g a.s./ha (interval 90 days), spring oilseed rape at 1 x 25 g a.s./ha, and Potato at 1 x 50 g a.s./ha
In-field risk assessment:

In the study performed with Sherpa 100 EC, full population recovery could not be demonstrated prior to harvest (final sampling occasion 69-71 days after the first application) for the treatment with 2 x 30 g a.s./ha. This was due to a natural decline in population levels in all treatments and the control, because of which a statistical comparison of the populations levels could not be performed at the final sampling period. Because of this, no conclusion could be drawn from this study in the higher tier assessment.

However, based on the results from the study performed with Cyperkill 10 EC, it can be concluded that an application of up to 2 x 30 g a.s./ha caused no unacceptable effects on the population development of ground and foliar dwelling arthropods under field conditions in winter wheat. This application rate covers the intended application rate of the proposed uses for Northern and Central Europe. Based on the results from the study performed with Cypermethrin 500 EC, no unacceptable effects on arthropod populations were found for an application of up to 2 x 50 g a.s./ha in alfalfa. This application rate covers the intended rate of the proposed uses for Southern Europe. Therefore, the in-field risk to non-target terrestrial arthropods can be considered acceptable for the proposed uses of Cypermethrin 500 EC. However, since the recovery could be impaired when application takes place in autumn (i.e. potentially slower recovery), these studies can only be used in the risk assessment to demonstrate an acceptable risk for applications made in spring/summer.

Off-field risk assessment:

During the Pesticides Peer Review Meeting 177 the off-field risk assessment was discussed. In the available studies (CP 10.3.2.4/09 and CP 10.3.2.4/10), “slight” and transient effects were observed on one occasion (class2) on some taxa in the lowest tested concentration (0.4 mL product/ha). Therefore, a NOER could not be derived from these studies. There was no agreement among experts if class 2 effects could be accepted for the off-field risk assessment. It was mentioned that there is no clear guidance on how to interpret observed effects in the off-field. Risk mitigation measures might be needed for the off-field, but it is not possible to calculate the risk mitigation based on the available data.

Effects on non-target soil meso- and macro fauna; effects on soil nitrogen transformation (Regulation (EU) N° 283/2013, Annex Part A, points 8.4, 8.5, and Regulation (EU) N° 284/2013 Annex Part A, points 10.4, 10.5)

| Test organism | Test substance | Application method of test a.s./OM | Time scale | End point | Toxicity |
|---------------|----------------|----------------------------------|------------|-----------|----------|
| Earthworms (Eisenia fetida) | cypermethrin | Mixed with soil after application to quartz sand / 10% | Chronic | reproduction | EC<sub>20</sub> = 10.6 mg a.s./kg d.w. soil  
EC<sub>20, CORR</sub> = 5.3 mg a.s./kg d.w. soil  
EC<sub>10</sub> = 7.9 mg a.s./kg d.w. soil  
EC<sub>10, CORR</sub> = 3.95 mg a.s./kg d.w. soil  
NOEC = 5.2 mg a.s./kg d.w. soil  
NOEC<sub>CORR</sub> = 2.6 mg a.s./kg d.w. soil |
| Earthworm (Eisenia fetida) | Cypermethrin 500 EC | Mixed with soil as a solution / 10% | Chronic | reproduction | No reliable endpoint could be derived |
| Test organism | Test substance | Application method of test a.s./OM | Time scale | End point | Toxicity |
|---------------|----------------|---------------------------------|------------|-----------|----------|
| Earthworm \((Eisenia andrei)\) | Cypermethrin-carboxamide | Mixed with soil after application to quartz sand / 10% | Chronic | reproduction | EC\(_{20}\) > 281 mg a.s./kg d.w. soil  
EC\(_{20,\text{CORR}}\) > 140.5 mg a.s./kg d.w. soil  
EC\(_{10}\) = 116 mg a.s./kg d.w. soil  
EC\(_{10,\text{CORR}}\) = 58 mg a.s./kg d.w. soil  
NOEC = 400 mg a.s./kg d.w. soil  
NOEC\(_{\text{CORR}}\) = 200 mg a.s./kg d.w.soil |

| Other soil macroorganisms | | | | | |
| Folsomia candida | Cypermethrin 500 EC | Mixed with soil as a solution / 5% | Chronic | Mortality, reproduction | EC\(_{50}\) > 10.4 mg a.s./kg d.w. soil  
EC\(_{50,\text{CORR}}\) > 5.2 mg a.s./kg d.w. soil  
NOEC = 10.4 mg a.s./kg d.w. soil  
NOEC\(_{\text{CORR}}\) = 5.2 mg a.s./kg d.w. soil |

| Species | Test substance (conc. of active substance) | Crop | Application rates / Effects |
|---------|-------------------------------------------|------|---------------------------|
| Earthworms and soil invertebrate populations | WL43467 (cypermethrin) | Spring wheat (United Kingdom) | 1 × 100 g a.s./ha  
→ No significant differences were found between treatments for either mean numbers or mean live wet weights of earthworms.  
A reduction in numbers of total invertebrates to about 40 to 60% of the control was observed during the first few weeks after application. A return to control levels occurred at 5 weeks post-treatment. |
| Invertebrate soil meso-and macrofauna | Cyperkill 10 EC (100 g a.s./L) | Fallow agricultural land | 2 × 0.25 L product/ha (= 2 × 25 g a.s./ha)  
→ no adverse effects of the treatment on the populations of invertebrate fauna (including Collembola, soil mites, Diptera larvae and earthworms) were found |
| Organic matter decomposition | Cyperkill 10 EC (100 g a.s./L) | Fallow agricultural land | 2 × 0.25 L product/ha (= 2 × 25 g a.s./ha)  
→ the rate of straw decomposition in the Cyperkill 10 EC treatment did not differ significantly to the control treatment |
In invertebrate soil mesofauna, Sherpa 100 EC (100 g a.s./L) was applied at a rate of 2 × 0.30 L product/ha (= 2 × 30 g a.s./ha) and 2 × 0.00714 L product/ha (= 2 × 0.714 g a.s./ha) in winter triticale (United Kingdom). No significant reductions in the numbers of invertebrates present in the soil surface layer below the crop (Collembola and soil mites) were recorded for any of the treatment rates.

| Nitrogen transformation | Cypermethrin | Maximum tested rate of 93.6 mg a.s./kg d.w. soil | < 25% effect at day 28 at 93.6 mg a.s./kg d.w. soil |
|-------------------------|--------------|-----------------------------------------------|--------------------------------------------------|
| Cypermethrin 500 EC     | Maximum tested rate of 1.0 mg a.s./kg d.w. soil | < 25% effect at day 56 at 1.0 mg a.s./kg d.w. soil |
| 3-PBA²                  | Maximum tested rate of 9.36 mg a.s./kg d.w. soil | < 25% effect at day 28 at 9.36 mg a.s./kg d.w. soil |
| DCVA                    | Maximum tested rate of 9.36 mg a.s./kg d.w. soil | < 25% effect at day 28 at 9.36 mg a.s./kg d.w. soil |
| Carboxamide             | Maximum tested rate of 9.36 mg a.s./kg d.w. soil | < 25% effect at day 28 at 9.36 mg a.s./kg d.w. soil |

¹ No toxicity data is available for this metabolite. Therefore a 10x higher toxicity compared to the parent cypermethrin is assumed. Due to the dose setting in the study with Cypermethrin 500 EC, where only 0.1 and 1.0 mg a.s./kg soil d.w. were tested, the endpoint for the formulation was lower compared to the active substance. As acceptable effects were found for the active substance up to a dose of 93.6 mg a.s./kg, this higher endpoint was used to derive a surrogate endpoint for the metabolites.

² From the dossier of beta-cypermethrin, the effects of the metabolite PBA towards soil micro-organisms were < 25 % effect at 0.12 mg/kg soil

### Toxicity/exposure ratios for soil organisms

Cereals (winter and spring) at BBCH 10-77, 1 x 25 g a.s./ha

| Test organism          | Test substance | Time scale | Soil PEC ¹ | TER  | Trigger |
|------------------------|----------------|------------|------------|------|---------|
| Earthworms             |                |            |            |      |         |
| Earthworm (Eisenia fetida) | Cypermethrin | Chronic    | 0.0346     | 75   | 5       |
|                        | PBAcid         | Chronic    | 0.0017     | 153² | 5       |
|                        | DCVA           | Chronic    | 0.0111     | 23²  | 5       |
|                        | Carboxamide    | Chronic    | 0.0068     | 8529 | 5       |
| Other soil macroorganisms |             |            |            |      |         |
| Folsomia candida       | Cypermethrin 500 EC | Chronic | 0.0346     | 150  | 5       |
|                        | PBAcid         | Chronic    | 0.0017     | 306² | 5       |
|                        | DCVA           | Chronic    | 0.0111     | 47²  | 5       |
|                        | Carboxamide    | Chronic    | 0.0068     | 76²  | 5       |

¹ worst-case PEC\text{SOIL} under consideration of accumulation; ² as no metabolite specific endpoint is available, it was assumed that the metabolite was 10 x more toxic compared to the active substance to calculate the TER
Winter oilseed rape at BBCH 9-77, 2 x 25 g a.s./ha (interval 90 days) / Spring oilseed rape at BBCH 9-77, 1 x 25 g a.s./ha

| Test organism | Test substance | Time scale | Soil PEC<sup>1</sup> | TER | Trigger |
|---------------|---------------|------------|----------------------|-----|---------|
| Earthworms    |               |            |                      |     |         |
| Earthworm (*Eisenia fetida*) | Cypermethrin | Chronic | 0.0358 | 73 | 5 |
|                | PBAcid        | Chronic | 0.0017 | 153<sup>2</sup> | 5 |
|                | DCVA          | Chronic | 0.0111 | 23<sup>2</sup> | 5 |
|                | Carboxamide   | Chronic | 0.0069 | 8405 | 5 |
| Other soil macroorganisms |               |            |                      |     |         |
| *Folsomia candida* | Cypermethrin 500 EC | Chronic | 0.0358 | 145 | 5 |
|                | PBAcid        | Chronic | 0.0017 | 306<sup>2</sup> | 5 |
|                | DCVA          | Chronic | 0.0111 | 47<sup>2</sup> | 5 |
|                | Carboxamide   | Chronic | 0.0069 | 77<sup>2</sup> | 5 |

<sup>1</sup> worst-case PEC<sub>SOIL</sub> under consideration of accumulation; <sup>2</sup> as no metabolite specific endpoint is available, it was assumed that the metabolite was 10 x more toxic compared to the active substance to calculate the TER

Potato (whole season), 1 x 50 g a.s./ha

| Test organism | Test substance | Time scale | Soil PEC<sup>1</sup> | TER | Trigger |
|---------------|---------------|------------|----------------------|-----|---------|
| Earthworms    |               |            |                      |     |         |
| Earthworm (*Eisenia fetida*) | Cypermethrin | Chronic | 0.0693 | 38 | 5 |
|                | PBAcid        | Chronic | 0.0035 | 74<sup>2</sup> | 5 |
|                | DCVA          | Chronic | 0.0221 | 12<sup>2</sup> | 5 |
|                | Carboxamide   | Chronic | 0.0137 | 4234 | 5 |
| Other soil macroorganisms |               |            |                      |     |         |
| *Folsomia candida* | Cypermethrin 500 EC | Chronic | 0.0693 | 75 | 5 |
|                | PBAcid        | Chronic | 0.0035 | 149<sup>2</sup> | 5 |
|                | DCVA          | Chronic | 0.0221 | 24<sup>2</sup> | 5 |
|                | Carboxamide   | Chronic | 0.0137 | 38<sup>2</sup> | 5 |

<sup>1</sup> worst-case PEC<sub>SOIL</sub> under consideration of accumulation; <sup>2</sup> as no metabolite specific endpoint is available, it was assumed that the metabolite was 10 x more toxic compared to the active substance to calculate the TER

Effects on terrestrial non target higher plants (Regulation (EU) N° 283/2013, Annex Part A, point 8.6 and Regulation (EU) N° 284/2013 Annex Part A, point 10.6)

Screening data

Not submitted

Laboratory dose response tests
| Species                      | Test substance          | ER<sub>50</sub> (g/ha) vegetative vigour | ER<sub>50</sub> (g/ha) emergence | Exposure<sup>1</sup> (g/ha) | TER | Trigger |
|-----------------------------|-------------------------|------------------------------------------|--------------------------------|------------------------------|-----|---------|
| onion (Allium cepa L.), oats (Avena sativa L.), beet (Beta vulgaris L.), cucumber (Cucumis sativus L.), Soybean (Glycine max Merr.), sunflower (Helianthus annuus L.) | Cypermethrin 500 EC | > 0.3 L product/ha (> 150 g a.s./ha) | - | 1) 0.6925 g a.s./ha 2) 1.385 g a.s./ha | 1) > 217 2) > 108 | 5 |

Extended laboratory studies: None
Semi-field and field test: None

Note: 1) for the use in cereals and oilseed rape; 2) for the use in potato

Exposure has been estimated based on Ganzelmeier drift data with a standard drift distance of 1 m for the use in cereals, oilseed rape and potato

Effects on biological methods for sewage treatment (Regulation (EU) N° 283/2013, Annex Part A, point 8.8)

| Test type/organism | end point | | |
|-------------------|-----------|--------------|--------|
| Activated sludge  | ≥ 100 mg a.s./L | | |
| Pseudomonas sp    | No data available | | |

Monitoring data (Regulation (EU) N° 283/2013, Annex Part A, point 8.9 and Regulation (EU) N° 284/2013, Annex Part A, point 10.8)

No data available

Definition of the residue for monitoring (Regulation (EU) N° 283/2013, Annex Part A, point 7.4.2) Ecotoxicologically relevant compounds<sup>1</sup>

| Compartment | |
|-------------|-----------------------------|
| soil        | Parent (cypermethrin)       |
| water       | Parent (cypermethrin)       |
| sediment    | Parent (cypermethrin)       |
| groundwater | Parent (cypermethrin)       |

<sup>1</sup> metabolites are considered relevant when, based on the risk assessment, they pose a risk comparable or higher than the parent
Classification and labelling with regard to ecotoxicological data (Regulation (EU) No 283/2013, Annex Part A, Section 10)

| Substance |   |
|-----------|---|
| **Cypermethrin** |   |
| **Harmonised classification according to Regulation (EC) No 1272/2008 and its Adaptations to Technical Process [Table 3.1 of Annex VI of Regulation (EC) No 1272/2008 as amended]** |   |
| H400 | Category Acute 1 | Endpoint: 0.0053 µg a.s./L [48h EC50 *Hyalella azteca*] |
| H410 | Category Chronic 1 | Endpoint: 0.03 µg a.s./L [Chronic NOEC *Pimephales promelas*] |

Peer review proposal for harmonised classification according to Regulation (EC) No 1272/2008:

11 Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. OJ L 353, 31.12.2008, 1-1355.

12 It should be noted that harmonised classification and labelling is formally proposed and decided in accordance with Regulation (EC) No 1272/2008.