

FINAL REGISTRATION REPORT

Part B

Section 6

Mammalian Toxicology

Detailed summary of the risk assessment

Product code: Diflufenikan 500 SC

Product name(s): -

Chemical active substance:

diflufenican, 500 g/L

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

(authorization)

Applicant: Pestila Sp. z o.o. / ProAgri International Sp. z o.o.

Submission date: January 2023; April 2024

MS Finalisation date: May 2023, January 2024, May 2024

Version history

When	What
May 2023	Assessment by expert
January 2024	Updated after comment in Raporting Table
April 2024	OPEX v. 1.0.1 (EFSA Journal 2022;20(1):7032) – applicant's update
May 2024	Assessment by Expert

Table of Contents

6	Mammalian Toxicology (KCP 7)	5
6.1	Summary	5
6.2	Toxicological Information on Active Substance(s)	7
6.3	Toxicological Evaluation of Plant Protection Product.....	8
6.4	Toxicological Evaluation of Groundwater Metabolites.....	9
6.5	Dermal Absorption (KCP 7.3)	9
6.5.1	Justification for proposed values - diflufenican.....	9
6.6	Exposure Assessment of Plant Protection Product (KCP 7.2).....	11
6.6.1	Selection of critical use(s) and justification.....	11
6.6.2	Operator exposure (KCP 7.2.1)	11
6.6.2.1	Estimation of operator exposure	11
6.6.2.2	Measurement of operator exposure.....	12
6.6.3	Worker exposure (KCP 7.2.3)	13
6.6.3.1	Estimation of worker exposure	13
6.6.3.2	Refinement of generic DFR value (KCP 7.2)	16
6.6.3.3	Measurement of worker exposure.....	16
6.6.4	Resident and bystander exposure (KCP 7.2.2)	16
6.6.4.1	Estimation of resident and bystander exposure	16
6.6.4.2	Measurement of resident and/or bystander exposure.....	18
6.6.5	Combined exposure	18
Appendix 1	Lists of data considered in support of the evaluation.....	19
Appendix 2	Detailed evaluation of the studies relied upon.....	21
A 2.1	Statement on bridging possibilities.....	21
A 2.2	Acute oral toxicity (KCP 7.1.1)	21
A 2.3	Acute percutaneous (dermal) toxicity (KCP 7.1.2)	21
A 2.4	Acute inhalation toxicity (KCP 7.1.3)	21
A 2.5	Skin irritation (KCP 7.1.4).....	22
A 2.6	Eye irritation (KCP 7.1.5)	22
A 2.7	Skin sensitisation (KCP 7.1.6)	23
A 2.8	Supplementary studies for combinations of plant protection products (KCP 7.1.7)	23
A 2.9	Data on co-formulants (KCP 7.4)	23
A 2.9.1	Material safety data sheet for each co-formulant.....	23
A 2.9.2	Available toxicological data for each co-formulant.....	23
A 2.10	Studies on dermal absorption (KCP 7.3)	24
A 2.11	Other/Special Studies	24
Appendix 3	Exposure calculations	25
A 3.1	Operator exposure calculations (KCP 7.2.1.1)	25
A 3.1.1	Calculations for diflufenican.....	25

A 3.2	Worker exposure calculations (KCP 7.2.3.1)	32
A 3.2.1	Calculations for diflufenican.....	32
A 3.3	Resident and bystander exposure calculations (KCP 7.2.2.1)	35
A 3.3.1	Calculations for diflufenican.....	35
Appendix 4	Detailed evaluation of exposure and/or DFR studies relied upon (KCP 7.2, KCP 7.2.1.1, KCP 7.2.2.1, KCP 7.2.3.1)	39

6 Mammalian Toxicology (KCP 7)

6.1 Summary

Table 6.1-1: Information on Diflufenikan 500 SC *

Product name and code	Diflufenikan 500 SC
Formulation type	Suspension concentrate [Code: SC]
Active substance (incl. content)	diflufenikan; 500 g/L
Function	herbicide
Product already evaluated as the 'representative formulation' during the approval of the active substance	No
Product previously evaluated in another MS according to Uniform Principles	No

* Information on the detailed composition of Diflufenikan 500 SC can be found in the confidential dRR Part C.

Justified proposals for classification and labelling

According to the criteria given in Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008, the following classification and labelling with regard to toxicological data is proposed for the preparation:

Table 6.1-2: Justified proposals for classification and labelling for Diflufenikan 500 SC according to Regulation (EC) No 1272/2008

Hazard class(es), categories	NR
Hazard pictograms or Code(s) for hazard pictogram(s)	NR
Signal word	NR
Hazard statement(s)	NR
Precautionary statement(s)	P280 - Wear protective gloves, protective clothing. P391 - Collect spillage
Additional labelling phrases	To avoid risks to man and the environment, comply with the instructions for use. [EUH401] Contains 1,2-benzisothiazol-3(2H)-on and 2-metyloizotiazol-3(2H)-on.. May produce an allergic reaction. [EUH208]

Table 6.1-3: Summary of risk assessment for operators, workers, residents and bystanders for Diflufenikan 500 SC

	Result	PPE / Risk mitigation measures
Operators	Acceptable	None. Recommended: workwear (arms, body and legs covered) and gloves during mixing/loading and during application.

Diffufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

	Result	PPE / Risk mitigation measures
Workers	Acceptable	None. Recommended: workwear (arms, body and legs covered) and gloves when inspecting the treated crops.
Residents	Acceptable	None.
Bystanders	Acceptable	None.

No unacceptable risk for operators, workers, residents and bystanders was identified when the product is used as intended. No specific PPE is necessary.

A summary of the critical uses and the overall conclusion regarding exposure for operators, workers and residents/bystanders is presented in the following table.

Table 6.1-4 Critical uses and overall conclusion of exposure assessment

1	2	3	4	5	6	7	8	9	10			
Use-No.*	Crops and situation (e.g. growth stage of crop)	F, Fn, Fpn G, Gn, Gpn or I **	Application		Application rate		PHI (d)	Remarks: (e.g. safener/synergist (L/ha)) critical gap for operator, worker, resident or bystander exposure based on [Exposure model]	Acceptability of exposure assessment			
			Method / Kind (incl. application technique ***	Max. number (min. interval between applications) a) per use b) per crop/season	Max. application rate kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max			Operator	Worker	Residents	Bystander
1	Cereals Winter wheat, Winter barley (BBCH 00-29) Winter triticale Winter rye BBCH 10-29	F	Spraying, LCTM	a) 1 b) 1	a) 0.150 b) 0.150	100-400	NR	Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874 EFSA Journal 2022;20(1):7032				

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1

** F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

*** e.g. LC: low crops, HC: high crop, TM: tractor-mounted, HH: hand-held

Explanation for column 10 "Acceptability of exposure assessment"

A	Exposure acceptable without PPE / risk mitigation measures
R	Further refinement and/or risk mitigation measures required
N	Exposure not acceptable/ Evaluation not possible

Data gaps

N/A

6.2 Toxicological Information on Active Substance(s)

Information regarding classification of the active substances and on EU endpoints and critical areas of concern identified during the EU review are given in Table 6.2-1.

Table 6.2-1: Information on active substance(s)

	diiflufenikan
Common Name	diiflufenikan
CAS-No.	83164-33-4
Classification and proposed labelling	
With regard to toxicological endpoints (according to the criteria in Reg. 1272/2008, as amended)	Hazard classes (s), categories: none Code(s) for hazard pictogram(s): none Signal word: none Hazard statement(s): none Precautionary statement(s): none
Additional C&L proposal	NR

	diiflufenikan
Agreed EU endpoints	
AOEL systemic	0.11 mg/kg bw/d (correction for oral absorption: 58 %)
Reference	EFSA Scientific Report (2007) 122, 1-84 RAC opinion proposing harmonised classification and labelling at EU level of diiflufenikan Adopted 13 June 2019
Conditions to take into account/critical areas of concern with regard to toxicology	
EFSA Conclusion for active substance	None

6.3 Toxicological Evaluation of Plant Protection Product

A summary of the toxicological evaluation for Diiflufenikan 500 SC is given in the following tables. Full summaries of studies on the product that have not been previously considered within an EU peer review process are described in detail in Appendix 2.

Table 6.3-1: Summary of evaluation of the studies on acute toxicity including irritancy and skin sensitisation for Diiflufenikan 500 SC

Type of test, species, model system (Guideline)	Result	Acceptability	Classification (acc. to the criteria in Reg. 1272/2008)	Reference
LD ₅₀ oral, rat	Estimation based on composition of the product (additivity formula)	Accepted	None	dRR Part C
LD ₅₀ dermal, rat	Estimation based on composition of the product (additivity formula)	Accepted	None	dRR Part C
LC ₅₀ inhalation, rat	Estimation based on composition of the product (additivity formula)	Accepted	None	dRR Part C
Skin irritation, model system	Estimation based on composition of the product (additivity formula)	Accepted	None	dRR Part C
Eye irritation, model system	Estimation based on composition of the product (additivity formula)	Accepted	None	dRR Part C
Skin sensitisation, guinea pig/mouse	Estimation based on composition of the product (additivity formula)	Accepted	None	dRR Part C
Supplementary studies for combinations of plant protection products	-	-	-	-

Table 6.3-2: Additional toxicological information relevant for classification/labelling of DiFlufenikan 500 SC

	Substance (concentration in product, % w/w)	Classification of the substance (acc. to the criteria in Reg. 1272/2008)	Reference	Classification of product (acc. to the criteria in Reg. 1272/2008)
Toxicological properties of active substance(s) (relevant for classification of product)	NR	None	-	-
Toxicological properties of non- active substance(s) (relevant for classification of product)	NR	None	-	-
Further toxicological information	No data – not required	-	-	-

6.4 Toxicological Evaluation of Groundwater Metabolites

For all scenarios PEC_{gw} values for diflufenican and its metabolites are below the trigger value of 0.1 µg/L (see dRR Part B8 point 8.8). Assessment of the relevance of these metabolites according to the stepwise procedure of the EC guidance document SANCO/221/2000 - rev.10 is therefore not required.

6.5 Dermal Absorption (KCP 7.3)

A summary of the dermal absorption rates for the active substances in DiFlufenikan 500 SC are presented in the following table.

Table 6.5-1: Dermal absorption rates for active substances in DiFlufenikan 500 SC

diflufenican		
	Value	Reference
Concentrate	10 %	EFSA Journal 2017;15(6):4873 Guidance on Dermal Absorption and SANTE/2018/10591 rev.1 of 24 October 2018.
Dilution	50 %	

6.5.1 Justification for proposed values - diflufenican

No data on dermal absorption for diflufenican in DiFlufenikan 500 SC is available. Justifications for default values according to Guidance on Dermal Absorption (EFSA Journal 2017;15(6):4873) and SANTE/2018/10591 rev.1 of 24 October 2018 (a corrigendum (minor modification) on EFSA Journal 2017;15(6):4873) are presented in the following table.

Table 6.5-2: Default dermal absorption rates for diflufenican

	Value	Justification for value	Acceptability of justification
Concentrate	10 %	<p>According to EFSA Journal 2017;15(6):4873 a default dermal absorption value of 10% may be applied for concentrated products that are water-based/dispersed^(c) or solid-formulated^(d).</p> <p>According to SANTE/2018/10591 rev.1 of 24 October 2018 a "concentrate" when the active substance is present in the plant protection product at a concentration higher than 50 g/L (or 50g/Kg or 5%).</p>	Accepted
Dilution	50 %	<p>According to EFSA Journal 2017;15(6):4873 a default dermal absorption value of 50% may be applied for (in use) dilutions water-based/dispersed^(c) or solid-formulated^(d).</p> <p>According to SANTE/2018/10591 rev.1 of 24 October 2018 a "dilution" when the active substance is present in the plant protection product at a concentration lower than or equal to 50 g/L (or 50g/Kg or 5%).</p>	Accepted

(c): Formulation types: soluble concentrate (SL), suspension concentrate (SC), flowable concentrate for seed treatment (FS), flowable (FL) (=SC).

(d): Formulation types: wettable powder (WP), water-dispersible granules (WG/WDG), water-soluble granules (SG), water-soluble powder (SP), powder for dry seed treatment (DS).

6.6 Exposure Assessment of Plant Protection Product (KCP 7.2)

Table 6.6-1: Product information and toxicological reference values used for exposure assessment

Product name and code	DiFlufenikan 500 SC
Formulation type	SC
Category	Herbicide
Container size(s), short description	250mL, 0.5L, 1L, 2L, 5L, 10L, 20L bottles, cannisters HDPE, HDPE/PA (COEX), fHDPE and 220L, 1000L drums and containers HDPE professional user
Active substance (incl. content)	diFlufenikan 500 g/L
AOEL systemic	0.11 mg/kg bw/d (correction for oral absorption: 58 %)
Inhalation absorption	100 %
Oral absorption	58 %
Dermal absorption	Concentrate: 10 % Dilution: 50 % (Default)

6.6.1 Selection of critical use(s) and justification

Not relevant.

6.6.2 Operator exposure (KCP 7.2.1)

6.6.2.1 Estimation of operator exposure

A summary of the exposure models used for estimation of operator exposure to the active substances during application of DiFlufenikan 500 SC according to the critical use is presented in Table 6.6-2. The outcome of the estimation is presented in Table 6.6-3 (longer term exposure). Detailed calculations are in Appendix 3.

Table 6.6-2: Exposure models for intended uses

Critical use	Cereals (max. 0.3 L product/ha)
Model	EFSA model AOEM (Agricultural Operator Exposure Model [Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874; calculator version: 30/03/2015] EFSA model AOEM (Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2022;20(1):7032) OPEX version: 1.0.1

DiFlufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

Table 6.6-3: Estimated operator exposure (longer term exposure)

DiFlufenikan			
Model data	Level of PPE	Total absorbed dose (mg/kg/day)	% of systemic AOEL
Cereals Outdoor Downward spraying Vehicle-mounted			
Application rate		0.150 kg a.s./ha	
Spray application (AOEM; 75 th percentile) Body weight: 60 kg	Potential exposure	0.0781954	71.09
	Work wear (arms, body and legs covered) M/L and A	0.0488838	44.44
	Work wear (arms, body and legs covered) M/L and A + gloves	0.0026995	2.45
Cereals Field crops/Outdoor/Downward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal			
Application rate		1x 0.150 kg a.s./ha	
Spray application (AOEM; 75 th percentile) Body weight: 60 kg	Potential exposure	0.09	83.4
	M/L: Workwear App: Workwear	0.06	54.6

Conclusion

According to the model calculations, it can be concluded that the risk for the operator using DiFlufenikan 500 SC on intended uses presented in GAP table is acceptable even if operator is not equipped with work wear (arms, body and legs covered) and no protective gloves during mixing/loading and during application. However, it is recommended to use workwear (arms, body and legs covered) and protective gloves during mixing/loading and during application.

According to the model calculations performed by OPEX version: 1.0.1, it can be concluded that the risk for the operator using DiFlufenikan 500 SC on intended uses presented in GAP table is acceptable even if operator is not equipped with work wear (arms, body and legs covered) and protective gloves during mixing/loading and during application. However, it is recommended to use workwear (arms, body and legs covered) and protective gloves during mixing/loading and during application.

ACCEPTED

6.6.2.2 Measurement of operator exposure

Since the operator exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) will not be exceeded under conditions of intended uses and consideration of the above mentioned personal protective equipment (PPE), a study to provide measurements of operator exposure was not necessary and was therefore not performed.

6.6.3 Worker exposure (KCP 7.2.3)

6.6.3.1 Estimation of worker exposure

Table 6.6-4 shows the exposure models used for estimation of worker exposure after entry into a previously treated area or handling a crop treated with Diflufenikan 500 SC according to the critical use. Outcome of the estimation is presented in Table 6.6-5 (longer term exposure). Detailed calculations are in Appendix 3.

Table 6.6-4: Exposure models for intended uses

Critical use	Cereals (max. 0.3 L product/ha)
Models	<p>EFSA model AOEM (Agricultural Operator Exposure Model [Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874; calculator version: 30/03/2015])</p> <p>EUROPOEM II re-entry model [Hemmen et al (2002) Post-application exposure of workers to pesticides in agriculture. Report of the re-entry working group. EUROPOEM II project. FAIR3 CT96-1406]</p> <p>EFSA model AOEM (Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2022;20(1):7032) OPEX version: 1.0.1</p>

Table 6.6-5: Estimated worker exposure (long term exposure)

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

Diflufenikan			
Model data	Level of PPE	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals Outdoor Downward spraying Vehicle-mounted Inspection, irrigation Work rate: 2 hours/day DT ₅₀ : 30 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: NA			
EFSA model AOEM			
Number of applications and application rate		1 x 0.150 kg a.s./ha	
Body weight: 60 kg	Potential TC: 12500 cm ² /person/h	0.0937500	85.23
	Work wear (arms, body and legs covered) TC: 1400 cm ² /person/h	0.0105000	9.55
	Work wear (arms, body and legs covered) and gloves TC: not available	-	-
EUROPOEM II re-entry model			
Model data	Level of PPE	Total absorbed dose (mg a.s./day)	% of systemic AOEL
Body weight: 60 kg TC: 0.15 m ² /h	Without PPE	0.630	10.0
	With PPE (gloves)	0.126	2.0
Cereals (<i>Field crops</i>) Inspection, irrigation / Outdoor Work rate: 2 hours/day Interval: NA Body weight: 60 kg TC (potential): 12500 cm ² /h TC (workwear (arms, body and legs covered)): 1400 cm ² /h TC (workwear (arms, body and legs covered) and gloves): 1250 cm ² /h TC (gloves): NA cm ² /h			
Application rate		1x 0.150 kg a.s./ha	
Body weight: 60 kg <i>OPEX version: 1.0.1</i>	Potential	0.09	85.2
	Workwear	0.01	9.5
	Workwear and gloves	0.009	8.5

Conclusion

The results of the exposure estimations show that the use of Diflufenikan 500 SC according to the list of intended uses presented in GAP Table, causes no health risk for the worker even if the workwear (arms, body and legs covered) and gloves are not used. The calculated exposure level to diflufenikan is lower than the value of AOEL for this active substance.

Taking into account hygienic rules, it is recommended that a worker inspecting treated area was dressed properly (long trousers, long-sleeve shirt) and equipped with protective gloves. As a standard rule, it should be mentioned on the label that treated crops should not be re-entered before spray deposits on leaf surfaces have completely dried.

The results of the exposure estimations performed by OPEX version: 1.0.1 show that the use of Di flufenikan 500 SC according to the list of intended uses presented in GAP Table, causes no health risk for the worker even if the workwear (arms, body and legs covered) and gloves are not used. The calculated exposure level to di flufenikan is lower than the value of AOEL for this active substance.

Taking into account hygienic rules, it is recommended that a worker inspecting treated area was dressed properly (long trousers, long-sleeve shirt) and equipped with protective gloves. As a standard rule, it should be mentioned on the label that treated crops should not be re-entered before spray deposits on leaf surfaces have completely dried

ACCEPTED

6.6.3.2 Refinement of generic DFR value (KCP 7.2)

Not required.

6.6.3.3 Measurement of worker exposure

Since the worker exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) will not be exceeded under conditions of intended uses and considering above mention PPE, a study to provide measurements of worker exposure was not necessary and was therefore not performed.

6.6.4 Resident and bystander exposure (KCP 7.2.2)

6.6.4.1 Estimation of resident and bystander exposure

No bystander risk assessment is required for PPPs that do not have significant acute toxicity or the potential to exert toxic effects after a single exposure. Exposure in this case will be determined by average exposure over a longer duration, and higher exposures on one day will tend to be offset by lower exposures on other days. Therefore, exposure assessment for residents also covers bystander exposure.

Table 6.6-6 shows the exposure model used for estimation of resident and bystander exposure to diflufenican. The outcome of the estimation is presented in **Błąd! Nie można odnaleźć źródła odwołania.** 7 (longer term resident exposure). Detailed calculations are in Appendix 3.

Table 6.6-6: Exposure models for intended uses

Critical use	Cereals (max. 0.3 L product/ha)
Model	<p>EFSA model AOEM (Agricultural Operator Exposure Model [Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874; calculator version: 30/03/2015])</p> <p>EFSA model AOEM (Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2022;20(1):7032) OPEX version: 1.0.1</p>

Table 6.6-7: Estimated resident exposure (longer term exposure)

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

Diflufenican			
Model data		Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals Outdoor Downward spraying Vehicle-mounted Buffer zone: 2-3 (m) Drift reduction technology: no DT ₅₀ : 30 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: NA			
Number of applications and application rate		1 x 0.150 kg a.s./ha	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.0201435	18.31
	Vapour (75 th perc.)	0.0010700	0.97
	Deposits (75 th perc.)	0.0011626	1.06
	Re-entry (75 th perc.)	0.0126563	11.51
	Sum (mean)	0.0231080	21.01
Resident adult Body weight: 60 kg	Drift (75 th perc.)	0.0048200	4.38
	Vapour (75 th perc.)	0.0002300	0.21
	Deposits (75 th perc.)	0.0005110	0.46
	Re-entry (75 th perc.)	0.0070313	6.39
	Sum (mean)	0.0085002	7.73
Cereals Outdoor Season: Not relevant Buffer zone: 2-3 m Drift reduction technology: 0 % Interval between treatments: NA Minimum volume of water: 100 L Number of applications and application rate: 1 x 0.15 kg a.s./ha Dermal absorption: 50 % DFR: 3 µg/cm ² foliage per kg a.s./ha DT ₅₀ : 30 days			
Number of applications and application rate		1 x 0.150 kg a.s./ha	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.02	18.5
	Vapour (75 th perc.)	0.0008	0.7
	Deposits (75 th perc.)	0.001	1.1
	Re-entry (75 th perc.)	0.01	11.5
	Sum (mean)	0.02	20.8
Resident adult Body weight: 60 kg	Drift (75 th perc.)	0.005	4.4
	Vapour (75 th perc.)	0.0003	0.2
	Deposits (75 th perc.)	0.0005	0.5

DiFlufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

	Re-entry (75 th perc.)	0.007	6.4
	Sum (mean)	0.009	7.7

Conclusion

The reference value acutely toxic active substance (RVAAS) for diflufenican is not allocated. Consequently, it is assumed that the estimation of bystander exposure is covered by the calculation of resident exposure towards this active substance.

All estimated values are below the systemic AOEL for diflufenican. It can be concluded that the exposure of bystander and resident (children and adult) to diflufenican contained in the formulation Diflufenikan 500 SC causes no risk to human health if the product is used in accordance with the intended uses listed in the GAP Table. Buffer zone 2-3m

All values estimated by OPEX version: 1.0.1 are below the systemic AOEL for diflufenican. It can be concluded that the exposure of bystander and resident (children and adult) to diflufenican contained in the formulation Diflufenikan 500 SC causes no risk to human health if the product is used in accordance with the intended uses listed in the GAP Table. Buffer zone 2-3m.

ACCEPTED

6.6.4.2 Measurement of resident and/or bystander exposure

Since the resident and/or bystander exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) for diflufenican will not be exceeded under conditions of intended uses and considering above mentioned risk mitigation measures, a study to provide measurements of resident/bystander exposure was not necessary and was therefore not performed.

6.6.5 Combined exposure

Not relevant. The product contains only one active substance.

Appendix 1 Lists of data considered in support of the evaluation

Tables considered not relevant can be deleted as appropriate.

MS to blacken authors of vertebrate studies in the version made available to third parties/public.

List of data submitted by the applicant and relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
-	-	-	-	-	-

List of data submitted or referred to by the applicant and relied on, but already evaluated at EU peer review

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
-	-	-	-	-	-

Diflufenikan 500 SC
 Part B – Section 6 - Core Assessment
 Applicant version

The following tables are to be completed by MS

List of data submitted by the applicant and not relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
-	-	-	-	-	-

List of data relied on not submitted by the applicant but necessary for evaluation

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
-	-	-	-	-	-

Appendix 2 Detailed evaluation of the studies relied upon

A 2.1 Statement on bridging possibilities

Not relevant.

A 2.2 Acute oral toxicity (KCP 7.1.1)

Comments of zRMS:	ATE mix = 3 834 for acute oral toxicity, which is above 2 000, therefore product Diiflufenikan 500 SC should not be classify in this category
-------------------	--

No studies submitted with this application. Classification based on composition of the product. According to 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* classification of Diiflufenikan 500 SC for toxicological part was based on ingredients of the mixture (Additivity formula) and concentration limits. The CLP calculation method is an alternative method based on the concentration addition of all adverse substances in a mixture. The additivity approach is often accepted as a worst-case estimation of chemical interaction.

For more details, please refer to Part C.

A 2.3 Acute percutaneous (dermal) toxicity (KCP 7.1.2)

Comments of zRMS:	ATE mix = 12 004 801 for acute dermal toxicity, which is above 2 000, therefore product Diiflufenikan 500 SC should not be classify in this category.
-------------------	--

No studies submitted with this application. Classification based on composition of the product. According to 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* classification of Diiflufenikan 500 SC for toxicological part was based on ingredients of the mixture (Additivity formula) and concentration limits. The CLP calculation method is an alternative method based on the concentration addition of all adverse substances in a mixture. The additivity approach is often accepted as a worst-case estimation of chemical interaction.

For more details, please refer to Part C.

A 2.4 Acute inhalation toxicity (KCP 7.1.3)

Comments of zRMS:	ATE mix = 1 968 for acute inhalation toxicity, which is above 5.0, therefore product Diiflufenikan 500 SC should not be classify in this category
-------------------	--

No studies submitted with this application. Classification based on composition of the product.

According to 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* classification of Diflufenikan 500 SC for toxicological part was based on ingredients of the mixture (Additivity formula) and concentration limits. The CLP calculation method is an alternative method based on the concentration addition of all adverse substances in a mixture. The additivity approach is often accepted as a worst-case estimation of chemical interaction.

For more details, please refer to Part C.

A 2.5 Skin irritation (KCP 7.1.4)

Comments of zRMS:	$\Sigma\%$ Skin corrosion Sub-Category 1A, 1B, 1C or Category 1: $0.0025\% + 0.005\% + 0.00004\% = 0.00754\%$, which is below 1%, therefore product Diflufenikan 500 SC should not be classified in this category. $\Sigma\% 10 \times$ (Skin corrosion Sub-Category 1A, 1B, 1C or Category 1) + Skin irritation (Category 2): $10 \times 0.00754\% + 0.0025\% = 0.0779\%$, which is below 10%, therefore product Diflufenikan 500 SC should not be classified in this category
-------------------	--

No studies submitted with this application. Classification based on composition of the product. According to 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* classification of Diflufenikan 500 SC for toxicological part was based on ingredients of the mixture (Additivity formula) and concentration limits. The CLP calculation method is an alternative method based on the concentration addition of all adverse substances in a mixture. The additivity approach is often accepted as a worst-case estimation of chemical interaction.

For more details, please refer to Part C.

A 2.6 Eye irritation (KCP 7.1.5)

Comments of zRMS:	$\Sigma\%$ Skin corrosion Sub-Category 1A, 1B, 1C or Category 1 + Serious eye damage (Category 1): $0.0025\% + 0.0025\% + 0.005\% + 0.00004\% = 0.01004\%$, which is below 1%, therefore product Diflufenikan 500 SC should not be classified in this category. $\Sigma\% 10 \times$ (Skin corrosion Sub-Category 1A, 1B, 1C or Skin corrosion Category 1 + Serious eye damage (Category 1)) + Eye irritation (Category 2): $10 \times 0.00754\% + 0.0025\% + 1.7\% + 1.3\% = 3.0779\%$, which is below 10%, therefore product Diflufenikan 500 SC should not be classified in this category
-------------------	---

No studies submitted with this application. Classification based on composition of the product. According to 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* classification of

Diflufenikan 500 SC for toxicological part was based on ingredients of the mixture (Additivity formula) and concentration limits. The CLP calculation method is an alternative method based on the concentration addition of all adverse substances in a mixture. The additivity approach is often accepted as a worst-case estimation of chemical interaction.

For more details, please refer to Part C.

A 2.7 Skin sensitisation (KCP 7.1.6)

Comments of zRMS:	<p>Category 1, Respiratory sensitiser is 0.0001%, which is below 0.1%, therefore product Diflufenikan 500 SC should not be classified in this category.</p> <p>Sub-category 1A, Skin Sensitization is below 0.01 % for each of the co-formulants, therefore product Diflufenikan 500 SC should not be classified in this category.</p>
-------------------	--

No studies submitted with this application. Classification based on composition of the product. According to 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* classification of Diflufenikan 500 SC for toxicological part was based on ingredients of the mixture (Additivity formula) and concentration limits. The CLP calculation method is an alternative method based on the concentration addition of all adverse substances in a mixture. The additivity approach is often accepted as a worst-case estimation of chemical interaction.

For more details, please refer to Part C.

A 2.8 Supplementary studies for combinations of plant protection products (KCP 7.1.7)

Not relevant. No new/additional supplementary studies were submitted.

A 2.9 Data on co-formulants (KCP 7.4)

A 2.9.1 Material safety data sheet for each co-formulant

Information regarding material safety data sheets of the co-formulants can be found in the confidential dossier of this submission (Registration Report - Part C).

A 2.9.2 Available toxicological data for each co-formulant

Available toxicological data for each co-formulant can be found in the confidential dossier of this submission (Registration Report - Part C).

A 2.10 Studies on dermal absorption (KCP 7.3)

No studies submitted with this application.

A 2.11 Other/Special Studies

No studies submitted with this application

Appendix 3 Exposure calculations

A 3.1 Operator exposure calculations (KCP 7.2.1.1)

A 3.1.1 Calculations for diflufenican

Table A 1: Input parameters considered for the estimation of operator exposure

Formulation type	SC		Crop type	Cereals
Application rate (AR)	0.150	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	50	ha	Application equipment	Vehicle-mounted
Dermal absorption (DA)	10	% (concentr.)	Indoor/outdoor	Outdoor
	50	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.11	mg/kg bw/d	Water soluble bag	No
AAOEL	-	mg/kg bw/d	-	-

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

Table A 2: Estimation of longer term operator exposure towards diflufenikan according to EFSA guidance (AOEM EFSA model)

Without gloves

Operator exposure for Diflufenikan 500 SC outdoor spray applications

Operator exposure for: Emulsiormix 500 SC outdoor spray applications					
Application rate of active substance		0,15 kg a.s./ha		i_AppRate	
Assumed area treated		50 ha/day		d_AreaTreated	
Amount of active substance applied		7,5 kg a.s./day		i_AmountAS	
Dermal absorption of the product		10,00%		i_AbsorpProduct	
Dermal absorption of in-use dilution		50,00%		i_AbsorInuse	
Formulation type		Soluble concentrates, emulsifiable concentrate, etc.			
Indoor or Outdoor application		Outdoor			
Application method		Downward spraying			
Application equipment		Vehicle-mounted			
Season		not relevant			
OutdoorSoluble concentrates, emulsifiable concentrate, etc. Downward sprayingVehicle-mounted					
Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	22909	85448	AOEM	
	Body	14704	129332	AOEM	
	Head	389	2134	AOEM	
	Protected hands (gloves)	128	1486	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	142	1097	AOEM	
	Protected head (hood and face shield)	6	121	AOEM	
	Inhalation	7	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
Application					
	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	1112	10024	AOEM	
	Body	622	3206	AOEM	
	Head	29	89	AOEM	
	Protected hands (gloves)	127	4216	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	17	42	AOEM	
	Inhalation	3	9	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

Diflufenikan 500 SC
 Part B – Section 6 - Core Assessment
 Applicant version

1. Total

	Without RPE/PPE	With RPE/PPE	
Longer term			
Total systemic exposure from mixing, loading and application (mg a.s./day)	4,6917225	2,9330298	
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,0781954	0,0488838	
% of RVNAS	71,09%	44,44%	

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

2. Longer term exposure

2.1 Mixing and loading

	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	2290,9120279	38,1818671	$D15^*i_AbsorpProduct$
Body	1470,4044686	24,5067411	$D16^*i_AbsorpProduct$
Head	38,9126908	0,6485448	$D17^*i_AbsorpProduct$
Inhalation	6,7424577	0,1123743	$D21^*i_AbsorpInhalation$
Sum	3806,9716450	63,4495274	
With RPE/PPE (as selected above)			
Hands	2290,9120279	38,1818671	$D18^*i_AbsorpProduct$
Body	14,1781006	0,2363017	$D19^*i_AbsorpProduct$ or $D15^*i_AbsorpProduct*F24$
Head	38,9126908	0,6485448	$D20^*i_AbsorpProduct$ or $D17^*i_AbsorpProduct*F25$
Inhalation	6,7424577	0,1123743	$D21^*i_AbsorpInhalation*G25$
Sum	2350,7452770	39,1790879	
Water soluble	2350,7452770	39,1790879	$C70*F26$

2.2 Application

	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	556,2126746	9,2702112	$D30^*i_AbsorpInuse$
Body	310,9975177	5,1832920	$D31^*i_AbsorpInuse$
Head	14,6988082	0,2449801	$D32^*i_AbsorpInuse$
Inhalation	2,8418233	0,0473637	$D35^*i_AbsorpInhalation$
Sum	884,7508238	14,7458471	
With RPE/PPE (as selected above)			
Hands	556,2126746	9,2702112	$D33^*i_AbsorpInuse$
Body	8,5311867	0,1421864	$D34^*i_AbsorpInuse$ or $D31^*i_AbsorpInuse*F38$
Head	14,6988082	0,2449801	$D32^*i_AbsorpInuse*F39$
Inhalation	2,8418233	0,0473637	$D35^*i_AbsorpInuse*G39$
Sum	582,2844928	9,7047415	

3. Acute exposure

3.1 Mixing and loading

	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	8544,7845175	142,4130753	$E15^*i_AbsorpProduct$
Body	12933,1809133	215,5530152	$E16^*i_AbsorpProduct$
Head	213,4181070	3,5569684	$E17^*i_AbsorpProduct$
Inhalation	30,1266340	0,5021106	$E21^*i_AbsorpInhalation$
Sum	21721,5101718	362,0251695	
With RPE/PPE (as selected above)			
Hands	8544,7845175	142,4130753	$E18^*i_AbsorpProduct$
Body	109,6885419	1,8281424	$E19^*i_AbsorpProduct$ or $E16^*i_AbsorpProduct*F24$
Head	213,4181070	3,5569684	$E20^*i_AbsorpProduct$ or $E17^*i_AbsorpProduct*F25$
Inhalation	30,1266340	0,5021106	$E21^*i_AbsorpInhalation*G25$
Sum	8898,0178004	148,3002967	
Water soluble	8898,0178004	148,3002967	$C104*F26$

2.2 Application

	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	5012,2163385	83,5369390	$E30^*i_AbsorpInuse$
Body	1603,1819874	26,7196998	$E31^*i_AbsorpInuse$
Head	44,3259964	0,7387666	$E32^*i_AbsorpInuse$
Inhalation	9,2714166	0,1545236	$E35^*i_AbsorpInhalation$
Sum	6668,9957389	111,1499290	
With RPE/PPE (as selected above)			
Hands	5012,2163385	83,5369390	$E33^*i_AbsorpInuse$
Body	20,9236730	0,3487279	$E34^*i_AbsorpInuse$ or $E31^*i_AbsorpInuse*F38$
Head	44,3259964	0,7387666	$E32^*i_AbsorpInuse*F39$
Inhalation	9,2714166	0,1545236	$E35^*i_AbsorpInhalation*G39$
Sum	5086,7374244	84,7789571	

Diiflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

With gloves

Operator exposure for Diiflufenikan 500 SC outdoor spray applications

Operator: <i>Emulsiormix 500 50 Outdoor spray applications</i>					
Application rate of active substance		0,15 kg a.s./ha		<i>i_AppRate</i>	
Assumed area treated		50 ha/day		<i>d_AreaTreated</i>	
Amount of active substance applied		7,5 kg a.s./day		<i>i_AmountAS</i>	
Dermal absorption of the product		10,00%		<i>i_AbsorpProduct</i>	
Dermal absorption of in-use dilution		50,00%		<i>i_AbsorInuse</i>	
Formulation type		Soluble concentrates, emulsifiable concentrate, etc.			
Indoor or Outdoor application		Outdoor			
Application method		Downward spraying			
Application equipment		Vehicle-mounted			
Season		not relevant			
OutdoorSoluble concentrates, emulsifiable concentrate, etc. Downward sprayingVehicle-mounted					
Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	22909	85448	AOEM	
	Body	14704	129332	AOEM	
	Head	389	2134	AOEM	
	Protected hands (gloves)	128	1486	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	142	1097	AOEM	
	Protected head (hood and face shield)	6	121	AOEM	
	Inhalation	7	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	1112	10024	AOEM	
	Body	622	3206	AOEM	
	Head	29	89	AOEM	
	Protected hands (gloves)	127	4216	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	17	42	AOEM	
	Inhalation	3	9	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE	
Longer term			
Total systemic exposure from mixing, loading and application (mg a.s./day)	4,6917225	0,1619678	
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,0781954	0,0026995	
% of RVNAS	71,09%	2,45%	

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

2. Longer term exposure

2.1 Mixing and loading

	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	2290,9120279	38,1818671	$D15*i_AbsorpProduct$
Body	1470,4044686	24,5067411	$D16*i_AbsorpProduct$
Head	38,9126908	0,6485448	$D17*i_AbsorpProduct$
Inhalation	6,7424577	0,1123743	$D21*i_AbsorpInhalation$
Sum	3806,9716450	63,4495274	
With RPE/PPE (as selected above)			
Hands	12,7790884	0,2129848	$D18*i_AbsorpProduct$
Body	14,1781006	0,2363017	$D19*i_AbsorpProduct$ or $D15*i_AbsorpProduct*F24$
Head	38,9126908	0,6485448	$D20*i_AbsorpProduct$ or $D17*i_AbsorpProduct*F25$
Inhalation	6,7424577	0,1123743	$D21*i_AbsorpInhalation*G25$
Sum	72,6123375	1,2102056	
Water soluble	72,6123375	1,2102056	$C70*F26$

2.2 Application

	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	556,2126746	9,2702112	$D30*i_AbsorpInuse$
Body	310,9975177	5,1832920	$D31*i_AbsorpInuse$
Head	14,6988082	0,2449801	$D32*i_AbsorpInuse$
Inhalation	2,8418233	0,0473637	$D35*i_AbsorpInhalation$
Sum	884,7508238	14,7458471	
With RPE/PPE (as selected above)			
Hands	63,2836407	1,0547273	$D33*i_AbsorpInuse$
Body	8,5311867	0,1421864	$D34*i_AbsorpInuse$ or $D31*i_AbsorpInuse*F38$
Head	14,6988082	0,2449801	$D32*i_AbsorpInuse*F39$
Inhalation	2,8418233	0,0473637	$D35*i_AbsorpInuse*G39$
Sum	89,3554589	1,4892576	

3. Acute exposure

3.1 Mixing and loading

	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	8544,7845175	142,4130753	$E15*i_AbsorpProduct$
Body	12933,1809133	215,5530152	$E16*i_AbsorpProduct$
Head	213,4181070	3,5569684	$E17*i_AbsorpProduct$
Inhalation	30,1266340	0,5021106	$E21*i_AbsorpInhalation$
Sum	21721,5101718	362,0251695	
With RPE/PPE (as selected above)			
Hands	148,5507246	2,4758454	$E18*i_AbsorpProduct$
Body	109,6885419	1,8281424	$E19*i_AbsorpProduct$ or $E16*i_AbsorpProduct*F24$
Head	213,4181070	3,5569684	$E20*i_AbsorpProduct$ or $E17*i_AbsorpProduct*F25$
Inhalation	30,1266340	0,5021106	$E21*i_AbsorpInhalation*G25$
Sum	501,7840075	8,3630668	
Water soluble	501,7840075	8,3630668	$C104*F26$

2.2 Application





	Systemic exposure [$\mu\text{g a.s. /day}$]	Systemic exposure [$\mu\text{g a.s./kg bw/day}$]	Formula
Without RPE/PPE			
Hands	5012,2163385	83,5369390	$E30*i_AbsorpInuse$
Body	1603,1819874	26,7196998	$E31*i_AbsorpInuse$
Head	44,3259964	0,7387666	$E32*i_AbsorpInuse$
Inhalation	9,2714166	0,1545236	$E35*i_AbsorpInhalation$
Sum	6668,9957389	111,1499290	
With RPE/PPE (as selected above)			
Hands	2107,8818124	35,1313635	$E33*i_AbsorpInuse$
Body	20,9236730	0,3487279	$E34*i_AbsorpInuse$ or $E31*i_AbsorpInuse*F38$
Head	44,3259964	0,7387666	$E32*i_AbsorpInuse*F39$
Inhalation	9,2714166	0,1545236	$E35*i_AbsorpInhalation*G39$
Sum	2182,4028984	36,3733816	

OPEX v. 1.0.1 (EFSA Journal 2022;20(1):7032)

3. Operator

3.1. Use 1 : Field crops

Short term exposure

Mixing/loading	Application	Di flufenikan (% AOEL) Normal & vehicle-mounted
		83.4
		54.6

3.1.1. Scenario 1 : Outdoor, normal, downward spraying, vehicle-mounted

3.1.1.1. Summary data - Short term exposure

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Field crops/Outdoor/Downward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal			
Number of applications and application rate: 1 x 0.15 kg a.s./ha Dermal absorption (concentrate): 10 % Dermal absorption (in-use dilution): 50 %			
Di flufenikan	M/L: Workwear App: Workwear	0.06	54.6

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

A 3.2 Worker exposure calculations (KCP 7.2.3.1)

A 3.2.1 Calculations for diflufenican

Table A 3: Input parameters considered for the estimation of worker exposure

Intended use	cereals, inspection/irrigation, outdoor	Dislodgeable foliar residue (DFR)	3	µg/cm ² /kg a.s./ha
Application rate (AR)	0.150 kg a.s./ha	Dermal absorption (DA)	50	% (worst case)
Number of applications (NA)	1	Inhalation absorption (IA)	100	%
Interval between applications	NR days	Work rate per day (WR)	2	h/d
Half-life of active substance	30 days	TC dermal (potential)	12500	cm ² /h
Multiple application factor (MAF)	NR	TC dermal (work wear)	1400	cm ² /h
Body weight (BW)	60 kg/person	TC dermal (work wear, gloves)	NR	cm ² /h
AOEL	0.11 mg/kg bw/d	Task specific factor inhalation	NR	ha/h x 10 ⁻³
AAOEL	- mg/kg bw/d	-	-	-

Table A 4: Estimation of acute worker exposure towards active substance according to EFSA guidance (AOEL EFSA model)

Worker exposure from residues on foliage for Diflufenikan 500 SC				
Crop type	Cereals			
Indoor or outdoor	Outdoor			
Application method	Downward spraying			
Application equipment	Vehicle-mounted			
Worker's task	Inspection, irrigation			
Main body parts in contact with foliage	Hand and body			
Application rate of active substance	0,15 kg a.s./ha			<i>i_AppRate</i>
Number of applications	1			<i>i_AppNo</i>
Interval between multiple applications	365 days			<i>i_AppInt</i>
Half-life of active substance	30 days			<i>d_HalfLifeAS</i>
Multiple application factor	1,0			<i>d_MAF</i>
Dermal absorption of the product	10,00%			<i>i_AbsorpProduct</i>
Dermal absorption of the in-use dilution	50,00%			<i>i_Absorplnuse</i>
Dislodgeable foliar residue (<i>i_AppRate</i> * <i>i_DFR</i>)	0,45 µg a.s./cm ²			<i>d_DFR</i>
Working hours	2 hr			<i>d_WorkHr</i>
Dermal transfer coefficient - Total potential exposure	12500 cm ² /hr			<i>d_DermTcUCV</i>
Dermal transfer coefficient - arms, body and legs covered	1400 cm ² /hr			<i>d_DermTcCV1</i>
Dermal transfer coefficient - hands, arms, body and legs covered	no TC available for this assessment			<i>d_DermTcCV2</i>
Inhalation transfer coefficient for automated applications	NA ha/hr*10 ^{^(-3)}			<i>d_InhalTcAut</i>
Inhalation transfer coefficient for cutting ornamentals	NA ha/hr*10 ^{^(-3)}			<i>d_InhalTcCut</i>
Inhalation transfer coefficient for sorting / bundling ornamentals	NA ha/hr*10 ^{^(-3)}			<i>d_InhalTcSort</i>
1. Total				
	Potential exposure	Work wear - arms, body and legs covered	Working wear and gloves	Comments
Total systemic exposure (mg a.s./day)	5,6250000	0,6300000	no TC available for this assessment	
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0937500	0,0105000		
% of RVNAS	85,23%	9,55%		
2. Details				
	Systemic exposure		Formula	Comments
	[mg a.s. /day]	[mg a.s./kg bw/day]		
Dermal - Potential	5,6250000	0,0937500	$d_DermTcUCV * d_WorkHr * i_DFR * i_MAF / 1000 * i_Absorplnuse$	
Dermal - Work wear - arms, body and legs covered	0,6300000	0,0105000	$d_DermTcCV1 * d_WorkHr * d_DFR * d_MAF / 1000 * i_Absorplnuse$	
Dermal - Working wear and gloves	no TC available for this assessment		$d_DermTcCV2 * d_WorkHr * d_DFR * d_MAF / 1000 * i_Absorplnuse$	
Inhalation				Na for outdoor activities

Table A 5: Estimation of acute worker exposure towards active substance according to EFSA guidance (EUROPOEM II re-entry model)

WORKER EXPOSURE			EUROPOEM II MODEL	
form	Diflufenikan 500 SC		Re-entry in the field	
a.s.	diflufenican			
Parameter		Value	Unit	References, comments
Re-entry activities in the field				
AR	Application rate	0,15	kg a.s./ha	summary of intended uses
Worker				
Duration				
T		2	hours / day	default: 6 h (Europoem II)
Inhalation Exposure				
	no model available	-		w ithout PPE
Dermal Exposure				
DFR	Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europoem II)
TC	Transfer coefficient	0,14	m2/ hour	vegetable (field): 0.25; ornamentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)
Dermal Exposure		1,26	mg a.s./ day	DE = DFR x AR x TC x T
Internal exposure				
DA	Dermal Absorption	50	%	
	PPE-factor dermal	5		gloves*
	AOEL	6,6	mg a.s./ day	based on 60 kg bw
		Without PPE	With PPE	
Internal exposure		[mg a.s./ day]	[mg a.s./ day]	
	Inhalation	-	-	no model available
	Dermal	0,630	0,126	DE(int) = DE x (DA/100)
	Total	0,630	0,126	sum
	% AOEL			
	Inhalation	-	-	no model available
	Dermal	10	2	%AOEL = 100 x DE(int) / AOEL
	Total	10	2	sum

* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.

OPEX v. 1.0.1 (EFSA Journal 2022;20(1):7032)

4. Worker

4.1. Use 1 : Field crops

4.1.1. Scenario 1 : Outdoor, normal

Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL	Re-entry restriction [days]
Inspection, irrigation / Outdoor Work rate: 2 hours/day Interval: NA Body weight: 60 kg TC (potential): 12500 cm ² /h TC (workwear (arms, body and legs covered)): 1400 cm ² /h TC (workwear (arms, body and legs covered) and gloves): 1250 cm ² /h TC (gloves): NA cm ² /h			
Number of applications & application rate: 1 x 0.15 kg a.s./ha Dermal absorption: 50 % DFR: 3 µg/cm ² foliage per kg a.s./ha DT50: 30 days			
Diflufenican			
Potential	0.09	85.2	0
Workwear	0.01	9.5	0
Workwear and gloves	0.009	8.5	0

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

A 3.3 Resident and bystander exposure calculations (KCP 7.2.2.1)

A 3.3.1 Calculations for diflufenican

Table A 6: Input parameters considered for the estimation of longer term resident exposure

Resident exposure for Diflufenikan 500 SC			
Croptype	Cereals		
Application method	Downward spraying		
Application equipment	Vehicle-mounted		<i>i_AppEquip</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.		<i>i_FormVal</i>
Buffer strip	2-3 m		<i>i_Buffer</i>
Application rate of the product	0,15 kg a.s./ha		<i>i_AppRate</i>
Concentration of active substance (in-use dilution for liquid applications)	1,5 g a.s./l		<i>d_ConcAS</i>
Dermal absorption of product	10,00%		<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	50,00%		<i>i_Absorpinuse</i>
Oral absorption	58,00%		<i>i_AbsorpOrallinuse</i>
Dislodgeable foliar residue (<i>i_AppRate</i> * <i>i_DFR</i>)	0,45 µg a.s./cm ²		<i>d_DFR</i>
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa	Pa	<i>i_Volat</i>
Concentration in air	0,001 mg/m ³		<i>d_AirCon</i>
Resident dermal spray drift exposure 75th percentile - adult	0,47 ml spray dilution/person		
Resident dermal spray drift exposure 75th percentile - child	0,327 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - adult	0,00010 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - child	0,00022 ml spray dilution/person		
Resident dermal spray drift exposure mean - adult	0,22318 ml spray dilution/person		
Resident dermal spray drift exposure mean - child	0,18 ml spray dilution/person		
Resident inhal. spray drift exposure mean - adult	0,00009 ml spray dilution/person		
Resident inhal. spray drift exposure mean - child	0,00017 ml spray dilution/person		
Exposure duration dermal	2 hours		<i>d_ReExpDur</i>
Exposure duration inhalation	24 hours		<i>d_ReExpDurInhal</i>
Exposure duration entry into treated crops	0,25 hours		<i>d_ExpDurTreatCrop</i>
Light clothing adjustment factor	18,0%		<i>d_ClothAF</i>
Breathing rate adult	0,23 m ³ /day/kg		<i>d_BreathRAAd</i>
Breathing rate child (1-3 year old)	1,07 m ³ /day/kg		<i>d_BreathRCh</i>
Drift percentage on surface (75th percentile)	5,60%		
Drift percentage on surface (mean)	4,10%		
Turf transferable residues percentage	5,00%		<i>d_Turf</i>
Transfer coeff. of surface deposits-adult	7300 cm ² /hour		<i>d_ReTCAd</i>
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour		<i>d_ReTCCh</i>
Saliva extraction percentage	50,00%		<i>d_SalExt</i>
Surface area of hands mouthed	20 cm ²		<i>d_AreaHM</i>
Frequency of hand to mouth activity	9,5 events/hour		<i>d_ReFreqHM</i>
Ingestion rate for mouthing of grass per day	25 cm ²		<i>d_MouthGrass</i>
Dislodgeable residues percentage transferability for object to mouth	20,00%		<i>d_DRP</i>
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 cm ² /h		<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm ² /h		<i>d_TcEntryCh</i>
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h		<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h		<i>d_TcEntryCh</i>

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

Table A 7: Estimation of longer term resident exposure towards diflufenican according to EFSA guidance (AOEM EFSA model)

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0,2014350	0,0107000	0,0116264	0,1265625	0,2310797
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0201435	0,0010700	0,0011626	0,0126563	0,0231080
% of RVNAS	18,31%	0,97%	1,06%	11,51%	21,01%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0,2892000	0,0138000	0,0306600	0,4218750	0,5100132
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0048200	0,0002300	0,0005110	0,0070313	0,0085002
% of RVNAS	4,38%	0,21%	0,46%	6,39%	7,73%

Diflufenikan 500 SC
Part B – Section 6 - Core Assessment
Applicant version

2. Resident exposure 75th Percentile				
	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula	Comments
1-3 year old child				
Spray drift	0,2014350	0,0201435	$((C16 * i_Absorplnuse * (1 - d_ClothAF)) + C18) * d_ConcAS$	
Vapour	0,0107000	0,0010700	$d_AirCon * d_BreathRCh * d_BwChild$	
Surface deposits				
Dermal	0,0109200	0,0010920	$(i_AppRate/100) * C29 * d_Turf * d_ReTCCh * d_ReExpDur * MAX(i_AbsorpProduct_i_Absorplnuse) * d_MAF * IF(i_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$	
Hand to mouth	0,0004628	0,0000463	$(i_AppRate/100) * C29 * d_Turf * d_SalExt * d_AreaHM * d_ReFreqHM * d_ReExpDur * i_AbsorpOrallnuse * d_MAF$	
Object to mouth	0,0002436	0,0000244	$(i_AppRate/100) * C29 * d_DRP * d_MouthGrass * i_AbsorpOrallnuse * d_MAF$	
Entry into treated crops				
Dermal	0,1265625	0,0126563	$(d_TcEntryCh * 0.25 * d_DFR * d_MAF) / 1000 * MAX(i_AbsorpProduct_i_Absorplnuse)$	
Hand to mouth			$(i_AppRate/100) * d_Turf * d_MAF * d_SalExt * d_AreaHM * d_ReFreqHM * d_ReExpDur * i_AbsorpOrallnuse$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
Object to mouth			$(i_AppRate/100) * d_DRP * d_MouthGrass * i_AbsorpOrallnuse * d_MAF$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
Adult				
Spray drift	0,2892000	0,0048200	$(C15 * i_Absorplnuse * (1 - d_ClothAF)) + C17) * d_ConcAS$	
Vapour	0,0138000	0,0002300	$d_AirCon * d_BreathRAD * d_BwAdult$	
Surface deposits (dermal)	0,0306600	0,0005110	$(i_AppRate/100) * C30 * d_Turf * d_ReTCAd * d_ReExpDur * i_Absorplnuse$	
Entry into treated crops (dermal)	0,4218750	0,0070313	$(d_TcEntryAd * 0.25 * d_DFR * d_MAF) / 1000 * MAX(i_AbsorpProduct_i_Absorplnuse)$	
3. Summing of exposure pathways mean				
	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula	Comments
1-3 year old child				
Spray drift	0,1109550	0,0110955	$((C20 * i_Absorplnuse * (1 - d_ClothAF)) + C22) * d_ConcAS$	
Vapour	0,0107000	0,0010700	$d_AirCon * d_BreathRCh * d_BwChild$	
Surface deposits				
Dermal	0,0079950	0,0007995	$(i_AppRate/100) * C30 * d_Turf * d_ReTCCh * d_ReExpDur * MAX(i_AbsorpProduct_i_Absorplnuse) * d_MAF * IF(i_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$	
Hand to mouth	0,0003389	0,0000339	$(i_AppRate/100) * C30 * d_Turf * d_SalExt * d_AreaHM * d_ReFreqHM * d_ReExpDur * i_AbsorpOrallnuse * d_MAF$	
Object to mouth	0,0001784	0,0000178	$(i_AppRate/100) * C30 * d_DRP * d_MouthGrass * i_AbsorpOrallnuse * d_MAF$	
Entry into treated crops				
Dermal	0,1009125	0,0100913	$(d_TcEntryMeanCh * 0.25 * d_DFR * d_MAF) / 1000 * MAX(i_AbsorpProduct_i_Absorplnuse)$	
Hand to mouth			$(i_AppRate/100) * 1 * d_Turf * d_MAF * d_SalExt * d_AreaHM * d_ReFreqHM * d_ReExpDur * i_AbsorpOrallnuse$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
Object to mouth			$(i_AppRate/100) * 1 * d_DRP * d_MouthGrass * i_AbsorpOrallnuse * d_MAF$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
Adult				
Spray drift	0,1373907	0,0022898	$((C19 * i_Absorplnuse * (1 - d_ClothAF)) + C21) * d_ConcAS$	
Vapour	0,0138000	0,0002300	$d_AirCon * d_BreathRAD * d_BwAdult$	
Surface deposits (dermal)	0,0224475	0,0003741	$(i_AppRate/100) * C30 * d_Turf * d_ReTCAd * d_ReExpDur * MAX(i_AbsorpProduct_i_Absorplnuse) * d_MAF * IF(i_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$	
Entry into treated crops (dermal)	0,3363750	0,0056063	$(d_TcEntryMeanAd * 0.25 * d_DFR * d_MAF) / 1000 * MAX(i_AbsorpProduct_i_Absorplnuse)$	

OPEX v. 1.0.1 (EFSA Journal 2022;20(1):7032)

5. Resident

5.1. Use 1 : Field crops

5.1.1. Scenario 1 : Outdoor, season not relevant

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Season: Not relevant Buffer zone: 2-3 m Drift reduction technology: 0 % Interval between treatments: NA Minimum volume of water: 100 l			
Number of applications and application rate: 1 x 0.15 kg a.s./ha Dermal absorption: 50 % DFR: 3 µg/cm ² foliage per kg a.s./ha DT50: 30 days			
Diflufenican			
Resident child Body weight: 10 kg	Drift (75th perc.)	0.02	18.5
	Vapour (75th perc.)	0.0008	0.7
	Deposits (75th perc.)	0.001	1.1
	Re-entry (75th perc.)	0.01	11.5
	Sum (mean)	0.02	20.8
Resident adult Body weight: 60 kg	Drift (75th perc.)	0.005	4.4
	Vapour (75th perc.)	0.0003	0.2
	Deposits (75th perc.)	0.0005	0.5
	Re-entry (75th perc.)	0.007	6.4
	Sum (mean)	0.009	7.7

**Appendix 4 Detailed evaluation of exposure and/or DFR studies relied upon
(KCP 7.2, KCP 7.2.1.1, KCP 7.2.2.1, KCP 7.2.3.1)**

Not relevant.