

REGISTRATION REPORT

Part B

Section 8

Environmental Fate

Detailed summary of the risk assessment

Product code: GLOB1913H

Product name: Roxy XL

Chemical active substance:

Prosulfocarb, 900 g/L

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

Applicant: Globachem NV

Submission date: September 2022

MS Finalisation date: 04/08/2023

After commenting period: 15/11/2023

Version history

When	What
September 2022	Initial submission by the applicant for approval of new product.
August 2023	zRMS assessment
November 2023	After commenting period

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8 Fate and behaviour in the environment (KCP 9)

General comment zRMS

The following data and information were provided by the applicant Globalchem NV and have been submitted as a dRR.

This document provides the results of the assessment of the zRMS. All comments of the zRMS there are in the “greyboxes”.

8.1 Critical GAP and overall conclusions

Table 8.1-1: Critical use pattern of the formulated product

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Use-No. *	Member state(s)	Crop and/or situation (crop destination / purpose of crop)	F, Fn, Fpn G, Gn, Gpn or I **	Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group)	Application				Application rate			PHI (days)	Remarks: e.g. g safener/ synergist per ha	Conclusion
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/season	Min. interval between applications (days)	L product/ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min/max			
Zonal uses (field or outdoor uses, certain types of protected crops)														

1	PL, IE, BE, HU, SK	Winter wheat (TRZAW), Winter barley (HORVW), Winter rye (SECCW), Triticale (TTLWI)	F	Annual broad leaved weeds (BBBAN) & grasses (GGGAN)	Downward spraying	Pre- emergence	a) 1 b) 1	/	a) 4.0 b) 4.0	a)Prosulfocarb: 3.6 b)Prosulfocarb: 3.6	155-300	/	/	A
2	PL, IE, BE, HU, SK	Winter wheat (TRZAW), Winter barley (HORVW), Winter rye (SECCW), Triticale (TTLWI)	F	Annual broad leaved weeds (BBBAN) & grasses (GGGAN)	Downward spraying	Pre- emergence	a) 1 b) 1	/	a) 3.5 b) 3.5	a)Prosulfocarb: 3.15 b)Prosulfocarb: 3.15	155-300	/	/	A
3	PL, IE, BE, HU, SK	Winter wheat (TRZAW), Winter barley (HORVW), Winter rye (SECCW), Triticale (TTLWI)	F	Annual broad leaved weeds (BBBAN) & grasses (GGGAN)	Downward spraying	BBCH10- 29	a) 1 b) 1	/	a) 4.0 b) 4.0	a)Prosulfocarb: 3.6 b)Prosulfocarb: 3.6	155-300	/	/	A
4	PL, IE, BE, HU, SK	Winter wheat (TRZAW), Winter barley (HORVW), Winter rye (SECCW), Triticale (TTLWI)	F	Annual broad leaved weeds (BBBAN) & grasses (GGGAN)	Downward spraying	BBCH10- 29	a) 1 b) 1	/	a) 3.5 b) 3.5	a)Prosulfocarb: 3.15 b)Prosulfocarb: 3.15	155-300	/	/	A
5	PL, IE, BE, HU, SK	Potato (SOL- TU)	F	Annual broad leaved weeds (BBBAN) & grasses (GGGAN)	Downward spraying	Pre- emergence	a) 1 b) 1	/	a) 4.4 b) 4.4	a)Prosulfocarb: 3.96 b)Prosulfocarb: 3.96	155-300	/	/	A
6	PL, IE, BE, HU, SK	Potato (SOL- TU)	F	Annual broad leaved weeds (BBBAN) & grasses (GGGAN)	Downward spraying	Pre- emergence	a) 1 b) 1	/	a) 3.5 b) 3.5	a)Prosulfocarb: 3.15 b)Prosulfocarb: 3.15	155-300	/	/	A
7	PL, IE, BE, HU, SK	Winter durum wheat (TRZDW)	F	Annual broad leaved weeds (BBBAN) & grasses (GGGAN)	Downward spraying	Pre- emergence	a) 1 b) 1	/	a) 2.6 b) 2.6	a) Prosulfocarb: 2.34 b) Prosulfocarb: 2.34	155-300	/	/	A
8	PL, IE, BE, HU,	Winter durum wheat	F	Annual broad leaved weeds (BBBAN) &	Downward spraying	BBCH10- 29	a) 1 b) 1	/	a) 2.6 b) 2.6	a)Prosulfocarb: 2.34 b) Prosulfocarb: 2.34	155-300	/	/	A

	SK	(TRZDW)		grasses (GGGAN)									
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* 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

Explanation for column 15 “Conclusion”

A	Safe use
R	Further refinement and/or risk mitigation measures required
C	To be confirmed by cMS
N	No safe use

Table 8.1-2: Assessed (critical) uses during approval of prosulfocarb concerning the Section Environmental Fate (EFSA Scientific Report (2007) 111, 1-81)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Use- No.	Member state(s)	Crop and/or situation (crop destina- tion / purpose of crop)	F, Fn, Fpn G, Gn, Gpn or I **	Pests or Group of pests controlled (additionally: devel- opmental stages of the pest or pest group)	Application				Application rate			PHI (days)	Remarks: e.g. g safener/ synergist per ha
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	L product/ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min/max		
1	Northern and Southern Europe	Winter wheat	F	Weeds	Boom sprayer	Pre- emergence up to BBCH 21	a) 1 b) 1	NR	a) 5 b) 5	c) 4.0 d) 4.0	200-400	NA	-
2	Northern and Southern Europe	Potatoes	F	Weeds	Boom sprayer	Pre- emergence up to BBCH 11	c) 1 d) 1	NR	a) 5 b) 5	c) 4.0 d) 4.0	200-400	NA	-

General comment zRMS

Roxy XL (product code: GLOB1913H) is an emulsifiable concentrate (EC) containing 900 g/L prosulfocarb for use as a herbicide in winter cereals and potato.

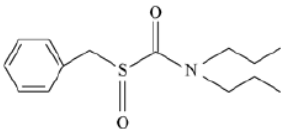
Prosulfocarb (S-benzyl dipropyl(thiocarbamat); CAS No 52888-80-9) is recognised as approved for use in plant protection products under Regulation (EC) No

1107/2009 in Annex of Commission Implementing Regulation (EU) No 540/2011 of 25 May 2011 with the expiration of approval on 31 October 2023 (this approval period was extended by Commission Implementing Regulation (EU) 2022/1480 of 7 September 2022.

For prosulfocarb only uses as herbicide may be authorised.

8.2 Metabolites considered in the assessment

Table 8.2-1: Metabolites of prosulfocarb potentially relevant for exposure assessment

Metabolite	Molar mass	Chemical structure	Maximum observed occurrence in compartments	Exposure assessment required due to
Prosulfocarb sulfoxide	267.4		Soil: 6.8%	PEC _{gw} : leaching potential to groundwater PEC _{soil} : risk to soil organisms PEC _{sw/sed} : risk to aquatic organisms

8.3 Rate of degradation in soil (KCP 9.1.1)

Studies on degradation in soil with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

Evaluation by zRMS	Rate of degradation in soil (KCP 9.1.1)
Comments	No new studies have been submitted regarding degradation in soil for the active substance: prosulfocarb in comparison to the corresponding EU endpoints. DT ₅₀ values of prosulfocarb and its soil relevant metabolite as summarised in this point refer to the results of the EU assessment of this active substance. Information in this point can be extrapolated to formulation. Therefore no studies have been conducted. EU agreed data were correctly reported.
Agreed endpoint:	Prosulfocarb - geomean DT ₅₀ value of 12.1 days for PEC _{gw} and PEC _{sw} , PEC _{sed} modelling Prosulfocarb sulfoxide (metabolite of prosulfocarb) - the worst case DT ₅₀ value of 3.9 days (maximum laboratory study, not normalized) for PEC _{soil} calculations - geomean DT ₅₀ value of 2.5 days for PEC _{gw} and PEC _{sw} , PEC _{sed} modelling

8.3.1 Aerobic degradation in soil (KCP 9.1.1.1)

8.3.1.1 Prosulfocarb and its metabolites

Table 8.3-1: Summary of aerobic degradation rates for prosulfocarb - laboratory studies

Prosulfocarb, Laboratory studies, aerobic conditions										
Soil name	Soil type	pH	t.°C	MWHC %	DT50 (d)	DT90 (d)	DT50 (d) 20°C pF2/10kPa	Chi2 (%)	Kinetic model	Evaluated on EU level y/n/ Reference
Iowa	Silty clay loam	4.8	22	26	38.4 (Q10 = 2.2) 41.6 (Q10 = 2.58)	128	40.3	0.97	SFO	Y, EFSA, 2007
Heavy loamy sand	Loamy sand	5.7	21.5	9.6	11 (Q10 = 2.2) 9.73 (Q10 = 2.58)	35	9.5	0.84	SFO	Y, EFSA, 2007
Medium loamy sand	Loamy sand	5.4	21.5	9.6	22 (Q10 = 2.2) 19.36 (Q10 = 2.58)	74	18.9	0.89	SFO	Y, EFSA, 2007
Gartenacker	Silt loam	7.0	20	49.8	6.3	21	6.3	0.955	SFO	Y, EFSA, 2007
18 Acres	Sandy clay loam	6.5	20	33.3	6.7	22	6.7	0.979	SFO	Y, EFSA, 2007
Marsillargues	Silty clay loam	7.5	20	30.9	9.3	31	9.3	0.937	SFO	Y, EFSA, 2007
Geometric mean (n=6)					12.4 (Q10 = 2.2)		11.9			

Prosulfocarb, Laboratory studies, aerobic conditions										
Soil name	Soil type	pH	t.°C	MWHC %	DT50 (d)	DT90 (d)	DT50 (d) 20°C pF2/10kPa	Chi2 (%)	Kinetic model	Evaluated on EU level y/n/ Reference
					12.1 (Q10 = 2.58)					
pH-dependency: y/n							no			

Table 8.3-2: Summary of aerobic degradation rates for prosulfocarb sulfoxide - laboratory studies

Prosulfocarb sulfoxide, Laboratory studies, aerobic conditions										
Soil name	Soil type	pH	t.°C	MWHC %	DT50 (d)	DT90 (d)	DT50 (d) 20°C pF2/10kPa	Chi2 (%)	Kinetic model	Evaluated on EU level y/n/ Reference
18 Acres	Sandy clay loam	4.8	20	32.2	2.7	8.8	2.7	0.99	SFO	Y, EFSA, 2007
Gartenacker	Loam	7.0	20	44.0	1.5	5.2	1.6	0.99	SFO	Y, EFSA, 2007
Marsillargues	Silty clay loam	7.7	20	27.6	3.9	13.0	3.9	0.99	SFO	Y, EFSA, 2007
Geometric mean (n=3)							2.5			
pH-dependency: y/n							no			

8.3.2 Anaerobic degradation in soil (KCP 9.1.1.1)

8.3.2.1 Prosulfocarb and its metabolites

Table 8.3-3: Summary of anaerobic degradation rates for prosulfocarb - laboratory studies

Prosulfocarb, Laboratory studies, anaerobic conditions									
Soil name	Soil type	pH	t.°C	DT50 (d)	DT90 (d)		Chi2 (%)	Kinetic model	Evaluated on EU level y/n/ Reference
-	Silty clay loam	4.8	Not reported	96	221	Indicative values based on only 4 data points	0.95	SFO	Y, EFSA, 2007

8.4 Field studies (KCP 9.1.1.2)

Evaluation by zRMS	Field studies (KCP 9.1.1.2)
Comments	No new data. Information in Section 8.4 is available in dossier of active substance prosulfocarb and can be extrapolated to formulation. Therefore no studies have been conducted. EU agreed data were correctly reported.
Agreed endpoints:	Prosulfocarb - the worst case DT _{50max} value of 13 days (maximum field study, not normalized) for PECsoil calculations

8.4.1 Soil dissipation testing on a range of representative soils (KCP 9.1.1.2.1)

8.4.1.1 Prosulfocarb and its metabolites

A summary of the results of the field soil dissipation studies available in the EU review of prosulfocarb (EFSA, 2007) is given in the table below. However, based on the rapid degradation of prosulfocarb and the metabolite prosulfocarb sulfoxide in the laboratory studies (DegDT₅₀ < 60 d and DegDT₉₀ < 200 d), no field soil dissipation studies are required.

Table 8.4-1: Summary of aerobic degradation rates for prosulfocarb - field studies

Prosulfocarb, Field studies – Triggering endpoints								
Soil type	Location	pH	Depth (cm)	DissT50 (d) actual	DT90 (d) actual	St. (x ²)	Method of calculation	Evaluated on EU level y/n/ Reference
Sand (bare soil)	Speyer, Germany	6.4	25	6.5	22	0.83	SFO	Y, EFSA, 2007
Loam/sandy loam (bare soil)	Varendorf, Germany	6.7	10	9.9	33	0.99	SFO	Y, EFSA, 2007
Loam/sandy loam (bare soil)	Varendorf, Germany	6.7	10	10	33	0.98	SFO	Y, EFSA, 2007
Clay loam (bare soil)	Hernigersdorf, Germany	6.8	30	11	35	0.98	SFO	Y, EFSA, 2007
Silt clay loam (bare soil)	Romerberg, Germany	7.4	10	13	48	0.94	SFO	Y, EFSA, 2007
Geometric mean (n=5)				9.8	33			
Maximum (n=5)				13	48			

8.4.2 Soil accumulation testing (KCP 9.1.1.2.2)

8.4.2.1 Prosulfocarb

No data or assessment is provided. The kinetic evaluation of the aerobic laboratory degradation data, for prosulfocarb and prosulfocarb sulfoxide indicate that both substances degrade rapidly, in all soils, at 20°C and pF2. In all soils tested, the DegT_{50,lab} for parent and metabolites was determined to be less than 60 days and the corresponding DegT_{90,lab} were less than 200 days. Therefore soil accumulation studies are not required.

8.5 Mobility in soil (KCP 9.1.2)

Studies on mobility in soil with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

Evaluation by zRMS	Mobility in soil (KCP 9.1.2)
Comments	No new data. Information in Section 8.5 is available in dossier of active substance prosulfocarb and can be extrapolated to formulation. Therefore no studies have been conducted. EU agreed data were correctly reported.
Agreed endpoints:	Prosulfocarb - geomean Koc value of 1799 mL/g for PECgw, PECsw and PECsed modelling together with arithmetic mean 1/n value of 0.93. Prosulfocarb sulfoxide (metabolite of prosulfocarb) - geomean Koc value of 56.1 mL/g for PECgw, PECsw and PECsed modelling together with arithmetic mean 1/n value of 0.91.

8.5.1 Prosulfocarb and its metabolites

Table 8.5-1: Summary of soil adsorption/desorption for prosulfocarb

Prosulfocarb							
Soil name	Soil type	OC (%)	pH (-)	Kf (mL/g)	Kfoc (mL/g)	1/n (-)	Evaluated on EU level y/n/ Reference
LUFA	Sand	0.5	6.0	32.8	1367	1.0	Y, EFSA, 2007 + Addendum to DAR
Itingen	Clay loam	2.4	7.3	11.7	2339	0.90	Y, EFSA, 2007 + Addendum to DAR
Borstel	Loamy sand	1.00	5.14	27.6	2760	0.92	Y, EFSA, 2007 + Addendum to DAR

Prosulfocarb									
Soil name	Soil type	OC (%)	pH (-)	Kf (mL/g)	Kfoc (mL/g)		1/n (-)		Evaluated on EU level y/n/ Reference
18 Acres	Sandy clay loam	3.25	5.6	56.7	1743		0.92		Y, EFSA, 2007 + Addendum to DAR
Vetroz	Loam	3.49	7.3	54.1	1551		0.89		Y, EFSA, 2007 + Addendum to DAR
Les Evouettes	Silt loam	1.8	5.6	24.7	1372	1420 (geomean)	0.97	0.93 (geomean)	Y, EFSA, 2007 + Addendum to DAR
Les Evouettes	Silt loam	2.55	7.2	37.5	1469		0.89		Y, EFSA, 2007 + Addendum to DAR
Geometric mean (n=6)					1799		-		
Arithmetic mean (n=6)					-		0.93		
pH-dependency y/n					no				

Table 8.5-2: Summary of soil adsorption/desorption for prosulfocarb sulfoxide

Prosulfocarb sulfoxide							
Soil Name	Soil Type	OC (%)	pH (-)	Kf (mL/g)	Kfoc (mL/g)	1/n (-)	Evaluated on EU level y/n/ Reference
18 Acres	Sandy clay loam	2.9	5.9	1.98	68	0.90	Y, EFSA, 2007
Gartenacker	Loam	2.0	7.1	1.02	50	0.91	Y, EFSA, 2007
Wisborough Green	Silty clay loam	2.9	4.8	1.50	52	0.91	Y, EFSA, 2007
Geometric mean (n=3)					56.1	-	
Arithmetic mean (n=3)					-	0.91	
pH-dependency y/n					no		

8.5.2 Column leaching (KCP 9.1.2.1)

8.5.2.1 Prosulfocarb

No reliable study, as the LOQ in the available study for the leachate was high at 5 µg/L, however there is no data gap as results from adequate soil batch adsorption studies are available. Leachate: < 5 µg/L (<

0.64% of applied). The result is only considered as supportive information. (EFSA, 2007)

8.5.3 Lysimeter studies (KCP 9.1.2.2)

8.5.3.1 Prosulfocarb

No studies available, not required.

8.5.4 Field leaching studies (KCP 9.1.2.3)

8.5.4.1 Prosulfocarb

No studies available, not required.

8.6 Degradation in the water/sediment systems (KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3)

Studies on degradation in water/sediment systems with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

Evaluation by zRMS	Degradation in the water/sediment systems (KCP 9.2)
Comments	No new data. Information in Section 8.6 is available in dossier of active substance prosulfocarb and can be extrapolated to the formulation. Therefore no studies have been conducted.
Agreed endpoints:	Prosulfocarb <ul style="list-style-type: none"> - Geomean DegT₅₀ value of = 214 days for whole system - Geomean DissT₅₀ value of 0.95 days for water phase Prosulfocarb sulfoxide <ul style="list-style-type: none"> - Geomean DegT₅₀ value of = 3.5 days for whole system - Geomean DissT₅₀ value of 2.92 days for water phase

8.6.1 Prosulfocarb and its metabolites

Table 8.6-1: Summary of degradation in water/sediment of prosulfocarb

Prosulfocarb Distribution (max. water/sediment 84.1/80.4% after 0/14 days)										
Water/sediment system	pH water/sed.	DegT50 whole syst. (d)	DegT90 whole syst. (d)	Kinetic, Fit	DissT50 water (d)	DissT90 water (d)	Kinetic, Fit	DissT50 sed. (d)	Kinetic, Fit	Evaluated on EU level y/n/Reference
Old Basin	7.9/7.5	381/331	Too long to	DFOP SFO	0.6	13.9	DFOP SFO	Not determine	-	Y, EFSA, 2007

Prosulfocarb Distribution (max. water/sediment 84.1/80.4% after 0/14 days)										
Water/sediment system	pH water/sed.	DegT50 whole syst. (d)	DegT90 whole syst. (d)	Kinetic, Fit	DissT50 water (d)	DissT90 water (d)	Kinetic, Fit	DissT50 sed. (d)	Kinetic, Fit	Evaluated on EU level y/n/Reference
			predict					d		
Virginia Water	7.9/7.2	147 139	Too long to predict	DFOP SFO	1.5	51.1	DFOP SFO	Not determined	-	Y, EFSA, 2007
Geometric mean (n=2)		214	-		0.95	26.6		-		

Table 8.6-2: Summary of degradation in water/sediment of prosulfocarb sulfoxide

Prosulfocarb sulfoxide Distribution								
Water/sediment system	pH water/sed.	DegT50 whole syst. (d)	DegT90 whole syst. (d)	Kinetic, Fit	DissT50 water (d)	DissT90 water (d)	Kinetic, Fit	Evaluated on EU level y/n/Reference
Pond	8.3/7.2	3.69	12.27	SFO	3.02	10.0	SFO	Y, EFSA, 2007 Addendum, April 2013
River	8.3/7.3	3.32	11.02	SFO	2.82	9.38	SFO	Y, EFSA, 2007 Addendum, April 2013
Geometric mean (n=2)		3.50	11.6		2.92	9.69		

Table 8.6-3: Summary of observed metabolites

Prosulfocarb sulfoxide Water/sediment system	Max. in water/sediment 1% after 107 d	Y, EFSA, 2007
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8.7 Predicted Environmental Concentrations in soil (PEC_{soil}) (KCP 9.1.3)

8.7.1 Justification for new endpoints

-

8.7.2 Active substance(s) and relevant metabolite(s)

Table 8.7-1: Input parameters related to application for PEC_{soil} calculations

Use No.	1+3	2+4+6 (covering also 7+8)	5
Crop	Winter cereals	Winter cereals/Potato	Potato

Table 8.7-2: Input parameter for active substance(s) and relevant metabolite(s) for PEC_{soil} calculation

8.7.2.1 Prosulfocarb and its metabolites

PEC _{soil} (mg/kg)		Use 1+3		Use 2+4+6		Use 5	
		Single application		Single application		Single application	
		Actual	TWA	Actual	TWA	Actual	TWA
Initial		4.8000	-	4.200	-	5.2800	-
Short term	24h	4.5508	4.6743	3.9819	4.0900	5.0058	5.1417
	2d	4.3145	4.5529	3.7752	3.9838	4.7459	5.0082
	4d	3.8781	4.3227	3.3933	3.7823	4.2659	4.7549
Long term	7d	3.3048	4.0060	2.8917	3.5053	3.6353	4.4066
	14d	2.2754	3.3821	1.9910	2.9593	2.5029	3.7203
	21d	1.5666	2.8877	1.3708	2.5268	1.7233	3.1765
	28d	1.0786	2.4927	0.9438	2.1811	1.1865	2.7419
	50d	0.3338	1.6753	0.2920	1.4659	0.3671	1.8428
	100d	0.0232	0.8959	0.0203	0.7839	0.0255	0.9855
Plateau concentration (20 cm)		Not calculated; DT ₉₀ < 365 d		Not calculated; DT ₉₀ < 365 d		Not calculated; DT ₉₀ < 365 d	
PEC _{accumulation} (PEC _{act} + PEC _{soil plateau})							

PEC_{soil} of metabolites

Table 8.7-4: PEC_{soil} for prosulfocarb sulfoxide on winter cereals and potato

PEC _{soil} (mg/kg)		Use 1+3		Use 2+4+6		Use 5	
		Single application		Single application		Single application	
		Actual	TWA	Actual	TWA	Actual	TWA
Initial		0.3469	-	0.3035	-	0.3816	-
Short term	24h	0.2904	0.3178	0.2541	0.2781	0.3195	0.3496
	2d	0.2431	0.2919	0.2127	0.2554	0.2674	0.3211
	4d	0.1704	0.2483	0.1491	0.2172	0.1874	0.2731
Long term	7d	0.1000	0.1985	0.0875	0.1737	0.1100	0.2183
	14d	0.0288	0.1278	0.0252	0.1119	0.0317	0.1406
	21d	0.0083	0.0907	0.0073	0.0794	0.0091	0.0998
	28d	0.0024	0.0692	0.0021	0.0606	0.0026	0.0761
	50d	0.0000	0.0390	0.0000	0.0342	0.0001	0.0429
	100d	0.0000	0.0195	0.0000	0.0171	0.0000	0.0215
Plateau concentration (20 cm)		Not calculated; DT ₉₀ < 365 d		Not calculated; DT ₉₀ < 365 d		Not calculated; DT ₉₀ < 365 d	
PEC _{accumulation} (PEC _{act} +PEC _{soil plateau})							

8.7.2.2 PEC_{soil} of GLOB1913H

Table 8.7-5: PEC_{soil} for GLOB1913H on winter cereals and potato

Active substance/ reparation	Application rate (g/ha)	PEC _{act} (mg/kg)	PEC _{twa} 21 d (mg/kg)	Tillage depth (cm)	PEC _{soil,plateau} (mg/kg)	PEC _{accu} = PEC _{act} + PEC _{soil,plateau} (mg/kg)
GLOB1913H	3631	4.8413	2.9126	5	-	-
	4150	5.5333	3.3289	5	-	-
	4565	6.0867	3.6618	5	-	-

Evaluation by zRMS	PEC _{soil} (KCP 9.1.3)
Modelling	<p>The assumptions and results of calculations are acceptable. The predicted environmental concentrations in soil (PEC_{soil}) of prosulfocarb and its metabolite prosulfocarb sulfoxide were calculated according to recommendations of the FOCUS workgroup on degradation kinetics using:</p> <ul style="list-style-type: none"> single application for three application rates: <ul style="list-style-type: none"> 4.0l product Roxy XL (GLOB1913H)/ha (3600 g/ha prosulfocarb) on winter cereals; 3.5 l product Roxy XL (GLOB1913H)/ha (3150 g/ha prosulfocarb) on winter cereals and potato; 4.4l product Roxy XL (GLOB1913H)/ha (3960 g/ha prosulfocarb) on

	<p>potato.</p> <p>No interception was considered. It was assumed that the active substance was distributed in the top 5 cm soil layer with a soil bulk density of 1.5 g/mL. The calculated PECs values are presented in Tables from 8.7-3 to 8.7-4. The applicant also correctly calculated the PEC_{soil} for the formulation Roxy XL (GLOB1913H). The results are shown in the Table 8.7-5. The calculated PEC_{soil} values for Roxy XL (GLOB1913H), prosulfocarb and its metabolite prosulfocarb sulfoxide are appropriate to be used for the subsequent risk assessment for soil organisms.</p>
Agreed Endpoints	<p>Prosulfocarb:</p> <p><u>Application rate: 4l Roxy XL (GLOB1913H)/ha</u> Initial PEC_{soil}: 4.8 mg/kg</p> <p><u>Application rate: 3.5l Roxy XL (GLOB1913H)/ha</u> Initial PEC_{soil}: 4.2 mg/kg</p> <p><u>Application rate: 4.4l Roxy XL (GLOB1913H)/ha</u> Initial PEC_{soil}: 5.28 mg/kg</p> <p>Metabolites of prosulfocarb:</p> <p>Prosulfocarb sulfoxide</p> <p><u>Application rate: 4l Roxy XL (GLOB1913H)/ha</u> Initial PEC_{soil}: 0.3469 mg/kg</p> <p><u>Application rate: 3.5l Roxy XL (GLOB1913H)/ha</u> Initial PEC_{soil}: 0.3035 mg/kg</p> <p><u>Application rate: 4.4l Roxy XL (GLOB1913H)/ha</u> Initial PEC_{soil}: 0.3816 mg/kg</p> <p>Formulation: Roxy XL (GLOB1913H)/ha</p> <p><u>Application rate: 4l Roxy XL (GLOB1913H)/ha</u> PEC_{act} = 4.8413 mg/kg</p> <p><u>Application rate: 3.5l Roxy XL (GLOB1913H)/ha</u> PEC_{act} = 5.5333 mg/kg</p> <p><u>Application rate: 4.4l Roxy XL (GLOB1913H)/ha</u> PEC_{act} = 6.0867 mg/kg</p>

9.2.4)

8.8.1 Justification for new endpoints

For the Koc and DT50 in soil, the geometric mean was used in accordance with EFSA Journal 2014;12(5):3662.

The values for calculating the DT₅₀ of prosulfocarb in soil were renormalised using a Q₁₀ of 2.58.

8.8.2 Active substance(s) and relevant metabolite(s) (KCP 9.2.4.1)

Table 8.8-1: Input parameters related to application for PEC_{gw} calculations

Use No.	1+2 (and covering 7)	3+4 (and covering 8)	5 (and covering 6)
Crop	Winter cereals	Winter cereals	Potato
Application rate (g as/ha)	Prosulfocarb: 3960*	Prosulfocarb: 3960*	Prosulfocarb: 3960
Number of applications/interval (d)	1/-	1/-	1/-
Relative application date (PEARL & PELMO)	7 days before emergence	7 days after emergence	7 days before emergence
Absolute application date (MACRO)	13 Oct (286)**	27 Oct (300)**	8 Apr (98)**
Crop interception (%)	0	0	0
Frequency of application	annual	annual	annual
Models used for calculation	FOCUS PEARL v5.5.5, FOCUS PELMO v6.6.4, FOCUS MACRO v5.5.4		

* PEC_{gw} modelling in winter cereals was performed at a higher dose rate covering the requested dose rates in winter cereals

** proposed in AppDate version 3.06

8.8.2.1 Prosulfocarb and its metabolites

Table 8.8-2: Input parameters related to active substance prosulfocarb and metabolite prosulfocarb sulfoxide for PEC_{gw} calculations

Compound	Prosulfocarb	Prosulfocarb sulfoxide	Value in accordance with EU endpoint y/n/ Reference*
Molecular weight (g/mol)	251.4	267.4	Y, EFSA, 2007
Water solubility (mg/L):	13.2 (at 20°C) 26.4 (at 30°C)	2332	Y, EFSA, 2007
Saturated vapour pressure (Pa):	7.9 x 10 ⁻⁴ (at 20°C) 3.16 x 10 ⁻³ (at 30°C)	0	Y, EFSA, 2007
DT ₅₀ in soil (d)	12.1 (geomean, normalisation to pF2, 20°C with Q ₁₀ of 2.58, n = 6)	2.5 (geomean, normalisation to pF2, 20°C with Q ₁₀ of 2.58, n = 3)	Y, EFSA, 2007 Geometric mean used in accordance with EFSA Journal 2014;12(5):3662. Values for prosulfocarb renormalised using Q ₁₀ of 2.58.

Compound	Prosulfocarb	Prosulfocarb sulfoxide	Value in accordance with EU endpoint y/n/ Reference*
Transformation rate	-	0.0573 (prosulfocarb → prosulfocarb sulfoxide) 0.2773 (prosulfocarb sulfoxide → sink)	Calculated ($\ln 2 / DT_{50} * f.f.$)
$K_{foc} (mL/g) / K_{fom}$	1799/1043 (geomean, n = 6)	56.1/32.5 (geomean, n = 3)	Y, EFSA, 2007 Addendum, March 2011 Geometric mean used in accordance with EFSA Journal 2014;12(5):3662.
1/n	0.93 (arithmetic mean, n = 6)	0.91 (arithmetic mean, n = 3)	Y, EFSA, 2007 Addendum, March 2011
Plant uptake factor	0	0	Worst case
Formation fraction	-	1.0 from parent	Y, EFSA, 2007

Table 8.8-3: PEC_{gw} for prosulfocarb and metabolite on winter cereals and potato (with FOCUS PEARL 5.5.5)

Crop	Scenario	80 th Percentile PEC _{gw} at 1 m Soil Depth (µg/L)	
		Prosulfocarb	Prosulfocarb sulfoxide
Winter cereals (pre-emergence)	Châteaudun	< 0.000001	< 0.000001
	Hamburg	< 0.000001	0.000007
	Jokioinen	< 0.000001	< 0.000001
	Kremsmünster	< 0.000001	< 0.000001
	Okehampton	< 0.000001	0.000017
	Piacenza	< 0.000001	0.000004
	Porto	< 0.000001	0.000052
	Sevilla	< 0.000001	< 0.000001
	Thiva	< 0.000001	< 0.000001
Winter cereals (post-emergence)	Châteaudun	< 0.000001	< 0.000001
	Hamburg	< 0.000001	0.000005
	Jokioinen	< 0.000001	< 0.000001
	Kremsmünster	< 0.000001	< 0.000001
	Okehampton	< 0.000001	0.000018
	Piacenza	< 0.000001	0.000001
	Porto	< 0.000001	0.000023
	Sevilla	< 0.000001	< 0.000001
	Thiva	< 0.000001	< 0.000001
Potato	Châteaudun	< 0.000001	< 0.000001
	Hamburg	< 0.000001	< 0.000001

	Jokioinen	< 0.000001	< 0.000001
	Kremsmünster	< 0.000001	< 0.000001
	Okehampton	< 0.000001	< 0.000001
	Piacenza	< 0.000001	< 0.000001
	Porto	< 0.000001	< 0.000001
	Sevilla	< 0.000001	< 0.000001
	Thiva	< 0.000001	< 0.000001

Table 8.8-4: PEC_{gw} for prosulfocarb and metabolite on winter cereals and potato (with FOCUS PELMO 6.6.4)

Crop	Scenario	80 th Percentile PEC _{gw} at 1 m Soil Depth (µg/L)	
		Prosulfocarb	Prosulfocarb sulfoxide
Winter cereals (pre-emergence)	Châteaudun	< 0.001	< 0.001
	Hamburg	< 0.001	< 0.001
	Jokioinen	< 0.001	< 0.001
	Kremsmünster	< 0.001	< 0.001
	Okehampton	< 0.001	0.001
	Piacenza	< 0.001	0.001
	Porto	< 0.001	0.004
	Sevilla	< 0.001	< 0.001
	Thiva	< 0.001	< 0.001
Winter cereals (post-emergence)	Châteaudun	< 0.001	< 0.001
	Hamburg	< 0.001	< 0.001
	Jokioinen	< 0.001	< 0.001
	Kremsmünster	< 0.001	< 0.001
	Okehampton	< 0.001	0.001
	Piacenza	< 0.001	< 0.001
	Porto	< 0.001	0.002
	Sevilla	< 0.001	< 0.001
	Thiva	< 0.001	< 0.001
Potato	Châteaudun	< 0.001	< 0.001
	Hamburg	< 0.001	< 0.001
	Jokioinen	< 0.001	< 0.001
	Kremsmünster	< 0.001	< 0.001
	Okehampton	< 0.001	< 0.001
	Piacenza	< 0.001	< 0.001
	Porto	< 0.001	< 0.001
	Sevilla	< 0.001	< 0.001
	Thiva	< 0.001	< 0.001

Table 8.8-5: PEC_{gw} for prosulfocarb on winter cereals and potato (with FOCUS MACRO 5.5.4)

Crop	Scenario	80 th Percentile PEC _{gw} at 1 m Soil Depth (µg/L)
		Prosulfocarb
Winter cereals pre-emergence	Châteaudun	0
Winter cereals post-emergence	Châteaudun	0
Potato	Châteaudun	0

Evaluation by zRMS	PEC _{gw} (KCP 9.2.4)
Modelling	<p>For the active substance prosulfocarb and its metabolite prosulfocarb sulfoxide the calculations presented here are accepted.</p> <p>The applicant has used appropriate models for ground water FOCUS-PEARL 5.5.5, FOCUS-PELMO 6.6.4 and FOCUS MACRO 5.5.4. PEC_{GW} values were calculated for single application using the highest application rate 4.4 l formulation/ha pre-emergence and for the growth stage: BBCH 10-29 on winter cereals and pre-emergence on potato.</p> <p>Input parameters used in FOCUS ground water modelling for active substance and its metabolite are correct.</p>
PEC _{gw}	<p>Results of modelling with FOCUS PELMO 6.6.4 and PEARL 5.5.5 show that the active substance prosulfocarb and its metabolite prosulfocarb sulfoxide are not expected to penetrate into groundwater at concentrations of $\geq 0.1 \mu\text{g/L}$ in any of the intended uses for all scenarios.</p> <p>Results of modelling with FOCUS MACRO 5.5.4 show that the active substance prosulfocarb are not expected to penetrate into groundwater at concentrations of $\geq 0.1 \mu\text{g/L}$ in any of the intended uses for Châteaudun scenario.</p>

8.9 Predicted Environmental Concentrations in surface water (PEC_{sw}) (KCP 9.2.5)

8.9.1 Justification for new endpoints

For the Koc and DT₅₀ in soil, the geometric mean was used in accordance with EFSA Journal 2014;12(5):3662.

The values for calculating the DT₅₀ of prosulfocarb in soil were renormalised using a Q₁₀ of 2.58.

8.9.2 Active substance(s), relevant metabolite(s) and the formulation (KCP 9.2.5)

Table 8.9-1: Input parameters related to application for PEC_{SW/SED} calculations

Plant protection product	GLOB1913H
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Use No.	1	2 (and covering 7)	3	4 (and covering 8)	5 (and covering 6)
Crop	Winter cereals	Winter cereals	Winter cereals	Winter cereals	Potato
Application rate (g as/ha)	Prosulfocarb: 3600	Prosulfocarb: 3150	Prosulfocarb: 3600	Prosulfocarb: 3150	Prosulfocarb: 3960
Number of applications/interval (d)	1/-	1/-	1/-	1/-	1/-
Application window	October – February (relevant for STEP 1 and 2 only)	October – February (relevant for STEP 1 and 2 only)	October – February (relevant for STEP 1 and 2 only)	October – February (relevant for STEP 1 and 2 only)	March-May June-September (relevant for STEP 1 and 2 only)
Application method	Ground spray	Ground spray	Ground spray	Ground spray	Ground spray
CAM (Chemical application method)	CAM 1 – soil linear	CAM 1 – soil linear	CAM 2 – foliar linear	CAM 2 – foliar linear	CAM 1 – soil linear
Soil depth (cm)	4	4	4	4	4
Models used for calculation	STEPS 1-2 v 3.2, FOCUS SWASH v5.3, FOCUS PRZM v4.3.1, FOCUS MACRO v5.5.4, FOCUS TOXWA v5.5.3, SWAN v5.0.0				

Table 8.9-2: FOCUS Step 3 Scenario related input parameters for PEC_{sw/sed} calculations for the application of GLOB1913H

Crop	Scenario	Application window used in modelling*
Winter cereals, pre-emergence	D1	15/09 – 25/10 (258 - 288)
	D2	15/10 – 14/11 (288 – 318)
	D3	11/11 – 11/12 (315 – 345)
	D4	12/09 – 12/10 (255 – 285)
	D5	31/10 – 30/11 (304 – 334)
	D6	20/11 – 20/12 (324 – 354)
	R1	02/11 – 02/12 (306 – 336)
	R3	21/11 – 21/12 (325 – 355)
	R4	31/10 – 30/11 (304 - 334)
Winter cereals, post-emergence	D1	26/09 – 26/10 (269 - 299)
	D2	26/10 – 25/11 (299 – 329)
	D3	22/11 – 22/12 (326 – 356)
	D4	23/09 – 23/10 (266 – 296)
	D5	11/11 – 11/12 (315 – 345)
	D6	01/12 – 31/12 (335 – 365)
	R1	13/11 – 13/12 (317 – 347)
	R3	02/12 – 01/01 (336 – 1)
	R4	11/11 – 11/12 (315 - 345)
Potato	D3	30/04 – 30/05 (120 – 150)

Crop	Scenario	Application window used in modelling*
	D4	12/05 – 11/06 (132 – 162)
	D6	31/03 – 30/04 (90 – 120)
		26/07 – 25/08 (207 - 237)
	R1	25/04 – 25/05 (115 – 145)
	R2	05/03 – 04/04 (64 - 94)
	R3	31/03 – 30/04 (90 – 120)

* window proposed in AppDate version 3.06

8.9.2.1 Prosulfocarb and its metabolites

Table 8.9-3: Input parameters related to active substance prosulfocarb and metabolite prosulfocarb sulfoxide for PEC_{sw/sed} calculations STEP 1/2 and 3/(4)

Compound	Prosulfocarb	Prosulfocarb sulfoxide	Value in accordance to EU endpoint y/n/ Reference
Molecular weight (g/mol)	251.4	267.4	Y, EFSA, 2007
Saturated vapour pressure (Pa)	7.9 x 10 ⁻⁴ (at 20°C)	0	Y, EFSA, 2007
Water solubility (mg/L)	13.2	2332	Y, EFSA, 2007
Diffusion coefficient in water (m ² /d)	4.3 x 10 ⁻⁵	4.3 x 10 ⁻⁵	default
Diffusion coefficient in air (m ² /d)	0.43	0.43	default
K _{foc} (mL/g)	1799 (geomean, n = 6)	56.1 (geomean, n = 3)	Y, EFSA, 2007 Addendum, March 2011 Geometric mean used in accordance with EFSA Journal 2014;12(5):3662.
Freundlich Exponent 1/n	0.93 (arithmetic mean, n = 6)	0.91 (arithmetic mean, n = 3)	Y, EFSA, 2007 Addendum, March 2011
Plant Uptake	0	0	Worst case
Wash-Off factor from Crop (1/mm)	0.05 (MACRO) 0.50 (PRZM)	0.05 (MACRO) 0.50 (PRZM)	default
DT _{50,soil} (d)	12.1 (geomean, normalisation to pF2, 20 °C with Q ₁₀ of 2.58, n = 6)	2.5 (geomean, normalisation to pF2, 20 °C with Q ₁₀ of 2.58, n = 3)	Y, EFSA, 2007 Geometric mean used in accordance with EFSA Journal 2014;12(5):3662. Values for prosulfocarb renormalised using Q ₁₀ of 2.58.
DT _{50,water} (d)	1000 (default) or 331 (worst case from sediment water studies)	3.5	Y, EFSA, 2007 Addendum, April 2013
DT _{50,sed} (d)	331 (worst case from sediment water studies) or 1000 (default)	1000	Y, EFSA, 2007
DT _{50,whole system} (d)	331 (worst case from	3.5	Y, EFSA, 2007

Compound	Prosulfocarb	Prosulfocarb sulfoxide	Value in accordance to EU endpoint y/n/ Reference
	sediment water studies)		Addendum, April 2013
Maximum occurrence observed (% molar basis with respect to the parent)	-	Soil: 6.8 Water: Sediment: 1	Y, EFSA, 2007
Formation fraction in soil	-	1 (from parent)	Y, EFSA, 2007

Since the prosulfocarb K_{foc} is within the range 100-2000, two sets of Step 3 and 4 simulations with different water/sediment DT₅₀ inputs are required; one with the whole system DT₅₀ of 331 days applied to the water (DT₅₀ of 1000 days for sediment) (= “water degradation”) and one with the whole system DT₅₀ of 331 days applied to the sediment (DT₅₀ of 1000 days for water) (= “sediment degradation”).

At the results of Step 3, the concentrations shown are the maximum obtained from either the “water degradation” or “sediment degradation” analyses. In practice, the two different approaches can be considered equivalent. There were some small differences noted, mainly between the PEC_{sed} values, however, these have no impact on the risk assessment.

The Step 4 calculations for prosulfocarb and the metabolite prosulfocarb sulfoxide are based on the “sediment degradation” Step 3 calculations, since these are equal to or worst-case compared to the “water degradation” Step 3 calculations.

PEC_{sw/sed}

Table 8.9-4: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb following single application of GLOB1913H to winter cereals (pre-emergence, 4 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	386.19		347.21	6510
Step 2					
Northern Europe	Oct-Feb	153.13		145.01	2690
Southern Europe	Oct-Feb	125.05		117.88	2190
Step 3					
D1	ditch	23.05	Drainage	15.19	72.82
D1	stream	20.16	Drainage	0.8726	10.66
D2	ditch	23.08	Drainage	3.968	37.68
D2	stream	20.53	Drainage	3.272	33.17
D3	ditch	22.72	Drainage	0.8728	10.63
D4	pond	0.7860	Drainage	0.6574	5.345
D4	stream	19.70	Drainage	0.2719	3.972
D5	pond	0.7877	Drainage	0.6682	4.829
D5	stream	21.25	Drainage	0.3901	5.486

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D6	ditch	22.97	Drainage	6.937	42.77
R1	pond	2.251	Run-off	1.915	18.44
R1	stream	17.98	Run-off	0.6773	12.53
R3	stream	24.36	Run-off	2.762	666.7
R4	stream	15.07	Run-off	0.6070	9.104

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-5: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb following single application of GLOB1913H to winter cereals (post-emergence, 4 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	386.19		347.21	6510
Step 2					
Northern Europe	Oct-Feb	153.13		145.01	2690
Southern Europe	Oct-Feb	125.05		117.88	2190
Step 3					
D1	ditch	23.05	Drainage	15.29	73.63
D1	stream	20.16	Drainage	0.8730	10.67
D2	ditch	22.92	Drainage	3.364	32.08
D2	stream	18.60	Drainage	0.08352	1.291
D3	ditch	22.70	Drainage	0.8309	10.23
D4	pond	0.7860	Drainage	0.6583	5.279
D4	stream	19.70	Drainage	0.2719	3.972
D5	pond	0.7887	Drainage	0.6692	4.863
D5	stream	21.25	Drainage	0.3901	5.487
D6	ditch	22.97	Drainage	6.937	42.81
R1	pond	2.238	Run-off	1.904	18.34
R1	stream	17.83	Run-off	0.6727	12.45
R3	stream	22.69	Run-off	1.130	12.56
R4	stream	26.04	Run-off	1.235	18.01

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-6: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb following single application of GLOB1913H to winter cereals (pre-emergence, 3.5 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	337.91		311.08	5700
Step 2					
Northern Europe	Oct-Feb	133.9		129.21	2360
Southern Europe	Oct-Feb	109.42		105.05	1920
Step 3					
D1	ditch	20.17	Drainage	13.27	63.91
D1	stream	17.64	Drainage	0.7635	9.345
D2	ditch	20.20	Drainage	3.470	33.05
D2	stream	17.96	Drainage	2.862	29.10
D3	ditch	19.88	Drainage	0.7636	9.313
D4	pond	0.6878	Drainage	0.5749	4.686
D4	stream	17.24	Drainage	0.2379	3.478
D5	pond	0.6892	Drainage	0.5844	4.235
D5	stream	18.60	Drainage	0.3414	4.805
D6	ditch	20.10	Drainage	6.065	37.56
R1	pond	1.960	Run-off	1.666	16.14
R1	stream	15.59	Run-off	0.5893	10.99
R3	stream	21.12	Run-off	2.399	586.9
R4	stream	13.18	Run-off	0.5275	7.945

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-7: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb following single application of GLOB1913H to winter cereals (post-emergence, 3.5 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	337.91		311.08	5700
Step 2					
Northern Europe	Oct-Feb	133.9		129.21	2360
Southern Europe	Oct-Feb	109.42		105.05	1920
Step 3					
D1	ditch	20.17	Drainage	13.36	64.62

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D1	stream	17.64	Drainage	0.7638	9.353
D2	ditch	20.05	Drainage	2.942	28.14
D2	stream	16.27	Drainage	0.07265	1.125
D3	ditch	19.87	Drainage	0.7270	8.964
D4	pond	0.6878	Drainage	0.5757	4.625
D4	stream	17.24	Drainage	0.2379	3.478
D5	pond	0.6900	Drainage	0.5852	4.264
D5	stream	18.60	Drainage	0.3414	4.805
D6	ditch	20.10	Drainage	6.065	37.59
R1	pond	1.949	Run-off	1.657	16.05
R1	stream	15.46	Run-off	0.5853	10.92
R3	stream	19.67	Run-off	0.9823	10.96
R4	stream	22.60	Run-off	1.073	15.71

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-8: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb following single application of GLOB1913H to potato

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	424.81		391.07	7160
Step 2					
Northern Europe	March-May	75.78		71.31	1300
	June-Sept	75.78		71.31	1300
Southern Europe	March-May	137.55		132.06	2410
	June-Sept	106.67		101.68	1850
Step 3					
D3	ditch	20.74	Drainage	1.135	12.60
D4	pond	0.8370	Drainage	0.6889	4.682
D4	stream	17.12	Drainage	0.04870	0.7782
D6, 1st	ditch	20.51	Drainage	0.4816	6.336
D6, 2nd	ditch	20.86	Drainage	3.792	26.64
R1	pond	1.448	Run-off	1.263	11.34
R1	stream	14.33	Run-off	0.6888	11.06
R2	stream	18.97	Run-off	0.6179	304.8
R3	stream	20.23	Run-off	1.237	21.98

* single applications should be marked.

** two-time as required by ecotox

FOCUS Step 4

Step 4 calculations were done with the following mitigation measures:

- spray drift reduction of 50% drift reducing nozzles
- spray drift reduction by buffer zones of 5 m, 10 m and 20 m
- run-off reduction by vegetated filter strip of 10 m

Since prosulfocarb is volatile, dry deposition was implemented in the Step 4 calculations using deposition rates calculated with the UBA tool EVA 3.0 rev2h (see table below).

Table 8.9-9: Dry deposition rates for prosulfocarb in Step 4 calculations (from EVA 3.0 rev2h)

Application pattern	Spray drift scenario/interception	Time after application (hours)	Deposition rates (g/ha)			
			1 m	5 m	10 m	20 m
1 x 3960 g a.s./ha	Arable crops/0%	0-4	0.0256	0.0213	0.0162	0.0094
		4-12	0.0132	0.0106	0.0081	0.0047
		12-24	0.0066	0.0053	0.0041	0.0023
1 x 3600 g a.s./ha		0-4	0.0240	0.0193	0.0147	0.0085
		4-12	0.0120	0.0097	0.0074	0.0043
		12-24	0.0060	0.0048	0.0037	0.0021
1 x 3150 g a.s./ha		0-4	0.0210	0.0169	0.0129	0.0075
		4-12	0.0105	0.0085	0.0064	0.0037
		12-24	0.0053	0.0042	0.0032	0.0019

Table 8.9-10: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (pre-emergence, 4 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb				
Nozzle reduction	Vegetative strip (m)	None	None	None	10	20
	No spray buffer (m)	5	10	20	10	20
None	D1 ditch	6.410	-	-	-	-
None	D1 stream	7.373	-	-	-	-
None	D2 ditch	6.428	-	-	-	-
None	D2 stream	7.509	-	-	-	-
None	D3 ditch	6.158	-	-	-	-
None	D4 stream	7.227	-	-	-	-
None	D5 stream	7.774	-	-	-	-
None	D6 ditch	13.53	-	-	-	-
None	R1 stream	17.98	17.98	17.98	8.051	-
50 %		17.98	-	-	-	-
None	R3 stream	24.36	24.36	24.36	11.12	5.83
None	R4 stream	14.01	-	-	6.32	-

Table 8.9-11: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (post-emergence, 4 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb				
Nozzle reduction	Vegetative strip (m)	None	None	None	10	20
	No spray buffer (m)	5	10	20	10	20
None	D1 ditch	6.413	-	-	-	-
None	D1 stream	7.373	-	-	-	-
None	D2 ditch	6.214	-	-	-	-
None	D2 stream	6.900	-	-	-	-
None	D3 ditch	6.155	-	-	-	-
None	D4 stream	7.227	-	-	-	-
None	D5 stream	7.774	-	-	-	-
None	D6 ditch	13.53	-	-	-	-
None	R1 stream	17.83	17.83	17.83	7.983	-
50 %		17.83	-	-	-	-
None	R3 stream	22.69	22.69	22.69	10.22	5.34
50 %		22.69	-	-	-	-
None	R4 stream	26.04	26.04	26.04	11.76	6.14
50 %		26.04	-	-	-	-

Table 8.9-12: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (pre-emergence, 3.5 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb				
Nozzle reduction	Vegetative strip (m)	None	None	None	10	20
	No spray buffer (m)	5	10	20	10	20
None	D1 ditch	5.610	-	-	-	-
None	D1 stream	6.451	-	-	-	-
None	D2 ditch	5.624	-	-	-	-
None	D2 stream	6.570	-	-	-	-
None	D3 ditch	5.389	-	-	-	-
None	D4 stream	6.324	-	-	-	-
None	D5 stream	6.802	-	-	-	-
None	D6 ditch	11.60	-	-	-	-

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb				
Nozzle reduction	Vegetative strip (m)	None	None	None	10	20
	No spray buffer (m)	5	10	20	10	20
None	R1 stream	15.59	15.59	15.59	6.980	-
50 %		15.59	-	-	-	-
None	R3 stream	21.12	21.12	21.12	9.639	5.05
50 %		21.12	-	-	-	-
None	R4 stream	12.16	12.16	12.16	5.49	-

Table 8.9-13: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (post-emergence, 3.5 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb				
Nozzle reduction	Vegetative strip (m)	None	None	None	10	20
	No spray buffer (m)	5	10	20	10	20
None	D1 ditch	5.612	-	-	-	-
None	D1 stream	6.451	-	-	-	-
None	D2 ditch	5.438	-	-	-	-
None	D2 stream	6.038	-	-	-	-
None	D3 ditch	5.386	-	-	-	-
None	D4 stream	6.324	-	-	-	-
None	D5 stream	6.802	-	-	-	-
None	D6 ditch	11.60	-	-	-	-
None	R1 stream	15.46	15.46	15.46	6.923	-
50 %		15.46	-	-	-	-
None	R3 stream	19.67	19.67	19.67	8.861	4.63
50 %		19.67	-	-	-	-
None	R4 stream	22.60	22.60	22.60	10.20	5.33
50 %		22.60	-	-	-	-

Table 8.9-14: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to potato according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb		
Nozzle reduction	Vegetative strip (m)	None	None	10
	No spray buffer (m)	5	10	10
None	D3 ditch	6.797	-	-
None	D4 stream	7.306	-	-
None	D6 ditch, 1st	6.721	-	-
None	D6 ditch, 2nd	6.889	-	-
None	R1 stream	10.80	-	4.89
None	R2 stream	8.143	-	-
None	R3 stream	15.52	15.52	7.081
50 %		15.52	-	-

Metabolite of prosulfocarb

Table 8.9-15: FOCUS Step 1, 2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (pre-emergence, 4 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	92.98		1.45	51.96
Step 2					
Northern Europe	Oct-Feb	18.20		4.58	10.20
Southern Europe	Oct-Feb	14.59		3.67	8.18
Step 3					
D1	ditch	75.75	Drainage	46.91	52.25
D1	stream	49.87	Drainage	32.09	34.49
D2	ditch	142.9	Drainage	54.63	73.55
D2	stream	90.98	Drainage	31.31	43.74
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	3.110	Drainage	2.659	2.913
D4	stream	5.772	Drainage	2.572	2.784
D5	pond	10.19	Drainage	7.438	8.978

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D5	stream	15.63	Drainage	4.624	7.079
D6	ditch	32.59	Drainage	9.122	31.77
R1	pond	0.4308	Run-off	0.2699	0.3449
R1	stream	15.96	Run-off	0.3272	2.009
R3	stream	13.01	Run-off	1.080	3.100
R4	stream	12.08	Run-off	0.3736	1.763

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-16: FOCUS Step 1, 2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (post-emergence, 4 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	92.98		1.45	51.96
Step 2					
Northern Europe	Oct-Feb	18.20		4.58	10.20
Southern Europe	Oct-Feb	14.59		3.67	8.18
Step 3					
D1	ditch	85.34	Drainage	58.20	67.08
D1	stream	53.48	Drainage	38.38	43.02
D2	ditch	126.6	Drainage	43.27	69.57
D2	stream	80.18	Drainage	25.05	1.287
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	4.793	Drainage	4.087	4.357
D4	stream	8.961	Drainage	3.946	3.971
D5	pond	10.19	Drainage	7.439	9.128
D5	stream	15.63	Drainage	4.624	7.169
D6	ditch	32.39	Drainage	8.914	11.53
R1	pond	0.4280	Run-off	0.2681	0.3424
R1	stream	15.78	Run-off	0.3235	1.987
R3	stream	14.60	Run-off	0.5429	2.144
R4	stream	17.17	Run-off	0.5408	2.479

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-17: FOCUS Step 1, 2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (pre-emergence, 3.5 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	81.36		19.26	45.47
Step 2					
Northern Europe	Oct-Feb	15.92		4.01	8.93
Southern Europe	Oct-Feb	12.77		3.22	7.16
Step 3					
D1	ditch	65.73	Drainage	40.83	45.62
D1	stream	43.24	Drainage	27.89	30.18
D2	ditch	123.6	Drainage	47.16	64.12
D2	stream	78.77	Drainage	27.21	38.12
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	2.715	Drainage	2.321	2.557
D4	stream	5.033	Drainage	2.246	2.445
D5	pond	8.886	Drainage	6.488	7.872
D5	stream	13.59	Drainage	4.029	6.202
D6	ditch	28.61	Drainage	7.991	10.24
R1	pond	0.3793	Run-off	0.2376	0.3048
R1	stream	13.93	Run-off	0.2856	1.762
R3	stream	11.35	Run-off	0.9454	2.739
R4	stream	10.60	Run-off	0.3282	1.555

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-18: FOCUS Step 1, 2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (post-emergence, 3.5 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	81.36		19.26	45.47
Step 2					
Northern Europe	Oct-Feb	15.92		4.01	8.93
Southern Europe	Oct-Feb	12.77		3.22	7.16
Step 3					
D1	ditch	74.22	Drainage	50.66	58.57

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D1	stream	46.51	Drainage	33.35	37.55
D2	ditch	110.2	Drainage	37.64	60.68
D2	stream	69.78	Drainage	21.79	36.26
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	4.184	Drainage	3.568	3.824
D4	stream	7.814	Drainage	3.446	3.511
D5	pond	8.887	Drainage	6.489	8.004
D5	stream	13.59	Drainage	4.029	6.282
D6	ditch	28.43	Drainage	7.806	10.15
R1	pond	0.3768	Run-off	0.2360	0.3026
R1	stream	13.77	Run-off	0.2823	1.743
R3	stream	12.76	Run-off	0.4741	1.884
R4	stream	15.03	Run-off	0.4739	2.181

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-19: FOCUS Step 1, 2 and 3 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to potato

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
Step 1	---	102.28		24.22	57.16
Step 2					
Northern Europe	March-May	8.11		2.04	4.55
	June-Sept	8.11		2.04	4.55
Southern Europe	March-May	16.05		4.04	9.00
	June-Sept	12.08		3.04	6.77
Step 3					
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	0.05040	Drainage	0.04383	0.06248
D4	stream	0.08796	Drainage	0.04296	0.07898
D6, 1st	ditch	9.192	Drainage	1.129	2.367
D6, 2nd	ditch	10.32	Drainage	2.199	2.594
R1	pond	0.6865	Run-off	0.3939	0.4632
R1	stream	13.22	Run-off	0.8070	2.114
R2	stream	14.77	Run-off	1.075	4.582
R3	stream	21.87	Run-off	1.248	4.437

* single applications should be marked.

** two-time as required by ecotox

FOCUS Step 4

Step 4 calculations were done with the following mitigation measures:

- spray drift reduction of 50% drift reducing nozzles
- spray drift reduction by buffer zones of 5 m, 10 m and 20 m
- run-off reduction by vegetated filter strip of 10 m

Since prosulfocarb is volatile, dry deposition was implemented in the Step 4 calculations using deposition rates calculated with the UBA tool EVA 3.0 rev2h (see table below).

Table 8.9-20: Dry deposition rates for prosulfocarb in Step 4 calculations (from EVA 3.0 rev2h)

Application pattern	Spray drift scenario/interception	Time after application (hours)	Deposition rates (g/ha)			
			1 m	5 m	10 m	20 m
1 x 3960 g a.s./ha	Arable crops/0%	0-4	0.0256	0.0213	0.0162	0.0094
		4-12	0.0132	0.0106	0.0081	0.0047
		12-24	0.0066	0.0053	0.0041	0.0023
1 x 3600 g a.s./ha		0-4	0.0240	0.0193	0.0147	0.0085
		4-12	0.0120	0.0097	0.0074	0.0043
		12-24	0.0060	0.0048	0.0037	0.0021
1 x 3150 g a.s./ha		0-4	0.0210	0.0169	0.0129	0.0075
		4-12	0.0105	0.0085	0.0064	0.0037
		12-24	0.0053	0.0042	0.0032	0.0019

Table 8.9-21: Global maximum PEC_{sw} values for prosulfocarb sulfoxide, following single application of GLOB1913H to winter cereals (pre-emergence, 4 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide			
Nozzle reduction	Vegetative strip (m)	None	None	None	10
	No spray buffer (m)	5	10	20	10
None	D1 ditch	75.75	75.75	75.75	-
50 %		75.75	-	-	-
None	D1 stream	49.87	49.87	49.87	-
50 %		49.87	-	-	-
None	D2 ditch	142.9	142.9	142.9	-
50 %		142.9	-	-	-
None	D2 stream	90.98	90.98	90.98	-
50 %		90.98	-	-	-
None	D5 stream	15.63	15.63	15.63	-
50 %		15.63	-	-	-
None	D6 ditch	32.59	32.59	32.59	-
50 %		32.59	-	-	-

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide			
Nozzle reduction	Vegetative strip (m)	None	None	None	10
	No spray buffer (m)	5	10	20	10
None	R1 stream	15.96	15.96	15.96	7.152
50 %		15.96	-	-	-

Table 8.9-22: Global maximum PEC_{sw} values for prosulfocarb sulfoxide, following single application of GLOB1913H to winter cereals (post-emergence, 4 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide			
Nozzle reduction	Vegetative strip (m)	None	None	None	10
	No spray buffer (m)	5	10	20	10
None	D1 ditch	85.34	85.34	85.34	-
50 %		85.34	-	-	-
None	D1 stream	53.48	53.48	53.48	-
50 %		53.48	-	-	-
None	D2 ditch	126.6	126.6	126.6	-
50 %		126.6	-	-	-
None	D2 stream	80.18	80.18	80.18	-
50 %		80.18	-	-	-
None	D5 stream	15.63	15.63	15.63	-
50 %		15.63	-	-	-
None	D6 ditch	32.39	32.39	32.39	-
50 %		32.39	-	-	-
None	R1 stream	15.78	15.78	15.78	7.072
50 %		15.78	-	-	-
None	R4 stream	17.17	17.17	17.17	7.751
50 %		17.17	-	-	-

Table 8.9-23: Global maximum PEC_{sw} values for prosulfocarb sulfoxide, following single application of GLOB1913H to winter cereals (pre-emergence, 3.5 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide		
Nozzle reduction	Vegetative strip (m)	None	None	None
	No spray buffer (m)	5	10	20
None	D1 ditch	65.73	65.73	65.73
None	D1 stream	43.24	43.24	43.24
None	D2 ditch	123.6	123.6	123.6
None	D2 stream	78.77	78.77	78.77
None	D6 ditch	28.61	28.61	28.61

Table 8.9-24: Global maximum PEC_{sw} values for prosulfocarb sulfoxide, following single application of GLOB1913H to winter cereals (post-emergence, 3.5 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide			
Nozzle reduction	Vegetative strip (m)	None	None	None	10
	No spray buffer (m)	5	10	20	10
None	D1 ditch	74.22	74.22	74.22	-
None	D1 stream	46.51	46.51	46.51	-
None	D2 ditch	110.2	110.2	110.2	-
None	D2 stream	69.78	69.78	69.78	-
None	D6 ditch	28.43	28.43	28.43	-
None	R4 stream	15.03	15.03	15.03	6.785

Table 8.9-25: Global maximum PEC_{sw} values for prosulfocarb sulfoxide, following single application of GLOB1913H to potato according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide		
Nozzle reduction	Vegetative strip (m)	None	None	10
	No spray buffer (m)	5	10	10
None	R3 stream	21.87	21.87	9.797

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide		
Nozzle reduction	Vegetative strip (m)	None	None	10
	No spray buffer (m)	5	10	10
50 %		21.87	-	-

For prosulfocarb sulfoxide, a tiered approach was followed at Step 3-4: At Tier 1, prosulfocarb sulfoxide was implemented as a normal metabolite of prosulfocarb in SWASH. However, since the true formation fraction of prosulfocarb sulfoxide in soil is uncertain, a refined simulation for prosulfocarb sulfoxide was undertaken, as a ‘Tier 2’, simulating the metabolite as a pseudo-parent. This approach is consistent with that previously established at EU level.

Prosulfocarb sulfoxide is a metabolite of prosulfocarb forming in soil but not in water or sediment. The maximum observed amount of prosulfocarb sulfoxide in laboratory soil degradation studies was 6.8%. The application rate of prosulfocarb was factored to account for the difference in molar mass between prosulfocarb (251.4 g/mol) and prosulfocarb sulfoxide (267.4 g/mol) and the maximum observed amount of prosulfocarb sulfoxide in soil, leading to an application rate of 227.8 g/ha (3.5 L/ha), 260.4 g/ha (4 L/ha) and 286.4 g/ha (4.4 L/ha) for prosulfocarb sulfoxide.

In the Step 3 simulations, ground spray was considered and the application method was set to CAM-1 because prosulfocarb sulfoxide is a metabolite formed in soil but not on plants. Since spray drift is not a possible route of exposure for metabolites formed in soil, a SWAN run with 100% drift reduction was performed in order to eliminate drift entries.

The maximum amount of prosulfocarb sulfoxide was found in laboratory degradation studies at day 18 after application of the parent substance prosulfocarb. Thus, for the present calculations for prosulfocarb sulfoxide, the appropriate application window for the metabolite starts 18 days later than the respective window for the parent substance. The length of the window was set to 30 days.

Although the application timing of the metabolite is later compared to the parent due to this shifted application window, and thus could potentially lead to an increased crop interception applied by the model in the D scenarios, the resulting PEC_{sw} values of the metabolite are slightly higher when using this shifted application window, probably due to climatological conditions.

The results can be found in Table 8.9-27 to 8.9-31 below.

Table 8.9-26: FOCUS Step 3 Scenario related input parameters for PEC_{sw/sed} calculations for the application of GLOB1913H

Crop	Scenario	Application window used in modelling
Winter cereals, pre-emergence	D1	03/10 – 02/11 (276 - 306)
	D2	02/11 – 02/12 (306 – 336)
	D3	29/11 – 29/12 (333 – 363)
	D4	30/09 – 30/10 (273-303)
	D5	18/11 – 18/12 (322 – 352)
	D6	08/12 – 07/01 (342 – 7)

Crop	Scenario	Application window used in modelling
	R1	20/11 – 20/12 (324 – 354)
	R3	09/12 – 08/01 (343 – 8)
	R4	18/11 – 18/12 (322 - 352)
Winter cereals, post-emergence	D1	14/10 – 13/11 (287 - 317)
	D2	13/11 – 13/12 (317 – 347)
	D3	10/12 – 09/01 (344 – 9)
	D4	11/10 – 10/11 (284 – 314)
	D5	29/11 – 29/12 (333 – 363)
	D6	19/12 – 18/01 (353 – 18)
	R1	01/12 – 31/12 (335 – 365)
	R3	20/12 – 19/01 (354 – 19)
	R4	29/11 – 29/12 (333 - 363)
Potato	D3	18/05 – 17/06 (138 – 168)
	D4	30/05 – 29/06 (150 – 180)
	D6	18/04 – 18/05 (108 – 138)
		13/08 – 12/09 (225-255)
	R1	13/05 – 12/06 (133 – 163)
	R2	23/03 – 22/04 (82-112)
	R3	18/04 – 18/05 (108 – 138)

Table 8.9-27: Tier 2 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (pre-emergence, 4 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D1	ditch	3.766	Drainage	2.794	4.368
D1	stream	2.383	Drainage	1.739	2.809
D2	ditch	16.95	Drainage	4.040	4.193
D2	stream	10.83	Drainage	2.340	2.479
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	0.01576	Drainage	0.01321	0.01733
D4	stream	0.02755	Drainage	0.01261	0.01734
D5	pond	0.05651	Drainage	0.04887	0.08206
D5	stream	0.3501	Drainage	0.07211	0.1009
D6	ditch	3.656	Drainage	0.6302	0.8406
R1	pond	0.1274	Run-off	0.07567	0.08205
R1	stream	11.92	Run-off	0.2438	1.519
R3	stream	16.26	Run-off	0.4603	2.236

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
R4	stream	2.551	Run-off	0.07592	0.3946

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-28: Tier 2 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (post-emergence, 4 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D1	ditch	14.43	Drainage	6.967	9.369
D1	stream	9.515	Drainage	5.268	6.514
D2	ditch	11.71	Drainage	3.059	2.968
D2	stream	7.529	Drainage	1.784	1.795
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	0.3640	Drainage	0.2969	0.3349
D4	stream	0.6538	Drainage	0.2765	0.3325
D5	pond	0.06033	Drainage	0.05220	0.08727
D5	stream	0.3741	Drainage	0.07707	0.1073
D6	ditch	1.254	Drainage	0.1395	0.2876
R1	pond	0.001814	Run-off	0.001083	0.001608
R1	stream	1.564	Run-off	0.007096	0.07577
R3	stream	13.07	Run-off	0.3336	1.801
R4	stream	2.551	Run-off	0.07592	0.3946

* single applications should be marked.

** twa-time as required by ecotox

Table 8.9-29: Tier 2 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (pre-emergence, 3.5 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D1	ditch	3.297	Drainage	2.450	3.855
D1	stream	2.086	Drainage	1.525	2.479
D2	ditch	14.77	Drainage	3.512	3.667
D2	stream	9.446	Drainage	2.039	2.169
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	0.01378	Drainage	0.01155	0.01524
D4	stream	0.02423	Drainage	0.01102	0.01522
D5	pond	0.04959	Drainage	0.04285	0.07213

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D5	stream	0.3066	Drainage	0.06317	0.08903
D6	ditch	3.205	Drainage	0.5523	0.7422
R1	pond	0.1110	Run-off	0.06592	0.07189
R1	stream	10.38	Run-off	0.2124	1.331
R3	stream	14.18	Run-off	0.4017	1.960
R4	stream	2.241	Run-off	0.06677	0.3483

* single applications should be marked.

** two-time as required by ecotox

Table 8.9-30: Tier 2 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to winter cereals (post-emergence, 3.5 L/ha)

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D1	ditch	12.45	Drainage	6.040	8.272
D1	stream	8.200	Drainage	4.557	5.682
D2	ditch	10.13	Drainage	2.653	2.596
D2	stream	6.531	Drainage	1.547	1.570
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	0.3181	Drainage	0.2595	0.2944
D4	stream	0.5705	Drainage	0.2419	0.2922
D5	pond	0.05295	Drainage	0.04577	0.07670
D5	stream	0.3277	Drainage	0.06752	0.09467
D6	ditch	1.099	Drainage	0.1217	0.2528
R1	pond	0.001579	Run-off	0.000944	0.001425
R1	stream	1.362	Run-off	0.006193	0.06615
R3	stream	11.40	Run-off	0.2909	1.579
R4	stream	2.241	Run-off	0.0667	0.3483

* single applications should be marked.

** two-time as required by ecotox

Table 8.9-31: Tier 2 PEC_{sw} and PEC_{sed} for prosulfocarb sulfoxide following single application to potato

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D3	ditch	< 0.000001	Drainage	< 0.000001	< 0.000001
D4	pond	0.000014	Drainage	0.000013	0.000061
D4	stream	0.000039	Drainage	0.000038	0.000188

Scenario FOCUS	Waterbody	Max PEC _{sw} (µg/L)*	Dominant entry route	21 d- PEC _{sw, twa} (µg/L)**	Max PEC _{sed} (µg/kg)*
D6, 1st	ditch	2.109	Drainage	0.1939	0.5073
D6, 2nd	ditch	0.07144	Drainage	0.01402	0.02672
R1	pond	0.2113	Run-off	0.09044	0.1028
R1	stream	5.186	Run-off	0.1348	0.7846
R2	stream	1.087	Run-off	0.3038	0.1722
R3	stream	0.007077	Run-off	0.000331	0.001509

* single applications should be marked.

** two-time as required by ecotox

FOCUS Step 4

Step 4 calculations were done with the following mitigation measures:

- spray drift reduction of 100%
- spray drift reduction by buffer zones of 5 m, 10 m and 20 m
- run-off reduction by vegetated filter strip of 10 m

Table 8.9-32: Global maximum Tier 2 PEC_{sw} values for prosulfocarb sulfoxide, following single application of GLOB1913H to winter cereals (pre-emergence, 4 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb sulfoxide			
Nozzle reduction	Vegetative strip (m)	None	None	None	10
	No spray buffer (m)	5	10	20	10
100	D2 ditch	16.95	16.95	16.95	-
100	R3 stream	16.26	16.26	16.26	7.340

PEC_{sw/sed} of GLOB1913H

The PEC_{sw} of the formulation GLOB1913H was also calculated. The calculator tool from the FOCUS SWASH model was used for this purpose. The density of the product is 1.0375 g/mL, so the application rate of the formulation is 4150 for 4 L/ha, 3631 for 3.5 L/ha and 4565 g/ha for 4.4 L/ha. These PEC_{sw} were calculated for the ditch, pond and stream scenarios. On top, to allow for the 20% spray drift contribution from the upstream catchment in the case of streams, the drift values of the calculator have been multiplied with a factor 1.2 for the stream scenario. The results of these calculations are provided below in the table below.

Table 8.9-33: Maximum PEC_{sw} for GLOB1913H

Cropping scenario	FOCUS scenario	1 m		5 m		10 m		12 m		14 m	
		% drift	Max. PEC _{sw}	% drift	Max. PEC _{sw}	% drift	Max. PEC _{sw}	% drift	Max. PEC _{sw}	% drift	Max. PEC _{sw}

			(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)
Winter cereals, 4 L/ha	Ditch	1.9274	26.6623	0.5224	7.2270	0.2771	3.8329	0.2336	3.2314	0.2020	2.7945
	Pond	0.3282	1.3620	0.1896	0.7866	0.1363	0.5656	0.1235	0.5124	0.1131	0.4694
	Stream	1.9274	26.6623	0.5224	7.2270	0.2771	3.8329	0.2336	3.2314	0.2020	2.7945
		-	31.9948*	-	8.6724*	-	4.5995*	-	3.8777*	-	3.3534*
Winter cereals, 3.5 L/ha	Ditch	1.9274	23.3279	0.5224	6.3232	0.2771	3.3535	0.2336	2.8482	0.2020	2.4450
	Pond	0.3282	1.1917	0.1896	0.6883	0.1363	0.4948	0.1235	0.4483	0.1131	0.4107
	Stream	1.9274	23.3279	0.5224	6.3232	0.2771	3.3535	0.2336	2.8273	0.2020	2.4450
		-	27.9935*	-	7.5878*	-	4.0242*	-	3.3928*	-	2.3940*
Potatoes, 1 x 4.4 L/ha	Ditch	1.9274	29.3285	0.5224	7.9497	0.2771	4.2162	0.2336	3.5545	0.2020	3.0740
	Pond	0.3282	1.4982	0.1896	0.8653	0.1363	0.6221	0.1235	0.5636	0.1131	0.5164
	Stream	1.9274	29.3285	0.5224	7.9497	0.2771	4.2162	0.2336	3.5545	0.2020	3.0740
		-	35.1942*	-	9.5396*	-	5.0594*	-	4.2654*	-	3.6888*

*taking into account the 20% contribution from the upstream catchment

Evaluation by zRMS	PEC _{sw} (KCP 9.2.5)																			
Inputs for Modelling	<p>For the active substance prosulfocarb and its metabolite prosulfocarb sulfoxide the calculations presented here are accepted.</p> <p>Predicted environmental concentrations in surface water (PEC_{sw}) and sediment (PEC_{sed}) has been calculated for prosulfocarb and its metabolite prosulfocarb sulfoxide after single application of the product GLOB1913H to winter cereals and potato according to the central EU zone GAP (Table 8.1-1), considering the pathways spray drift, drainage and runoff.</p> <p>The PEC_{sw} and PEC_{sed} were calculated in compliance with relevant FOCUS scenarios in stepwise procedure (Steps 1, 2, 3 and 4). The mitigation measures were proposed.</p> <p>zRMS calculated additional PEC_{sw} values of prosulfocarb in step 4 for scenarios R1, R3 and R4, taking into account the increased no spray buffer zone and vegetative strip.</p> <p>The new PEC_{sw} values were provided in:</p> <p>-Tables 8.9-10 Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (pre-emergence, 4 L/ha) according to the central EU zone GAP according to surface water Step 4</p> <table><tr><th>PEC_{sw} (µg/L)</th><th>Scenario</th><th colspan="2">STEP 4 Prosulfocarb</th></tr><tr><td rowspan="2">Nozzle reducti on</td><td>Vegetative strip (m)</td><td>10</td><td>20</td></tr><tr><td>No spray buffer (m)</td><td>10</td><td>20</td></tr><tr><td>None</td><td>R3 stream</td><td>-</td><td>5.83</td></tr><tr><td>None</td><td>R4 stream</td><td>6.32</td><td>-</td></tr></table> <p>- Table 8.9-11: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (post-emergence, 4 L/ha) according to the central EU zone GAP according to surface water Step 4</p>	PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb		Nozzle reducti on	Vegetative strip (m)	10	20	No spray buffer (m)	10	20	None	R3 stream	-	5.83	None	R4 stream	6.32	-
PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb																		
Nozzle reducti on	Vegetative strip (m)	10	20																	
	No spray buffer (m)	10	20																	
None	R3 stream	-	5.83																	
None	R4 stream	6.32	-																	

PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb
Nozzle reducti on	Vegetative strip (m)	20
	No spray buffer (m)	20
None	R3 stream	5.34
50 %		-
None	R4 stream	6.14
50 %		-

- Table 8.9-12: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (pre-emergence, 3.5 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenar- io	STEP 4 Prosulfocarb				
Nozzle reducti on	Vegetati ve strip (m)	None	None	None	10	20
	No spray buffer (m)	5	10	20	10	20
None	R3 stream	-	-	-	-	5.05
50 %		-	-	-	-	-
None	R4	12.16	12.16	12.16	5.49	-

- Table 8.9-13: Global maximum PEC_{sw} values for prosulfocarb, following single application of GLOB1913H to winter cereals (post-emergence, 3.5 L/ha) according to the central EU zone GAP according to surface water Step 4

PEC _{sw} (µg/L)	Scenar- io	STEP 4 Prosulfocarb				
Nozzle reducti on	Vegetati ve strip (m)	None	None	None	10	20
	No spray buffer (m)	5	10	20	10	20
None	R3 stream	-	-	-	-	4.63
50 %		-	-	-	-	-
None	R4 stream	-	-	-	-	5.33
50 %		-	-	-	-	-

- Table 8.9-14: Global maximum PEC_{sw} values for prosulfocarb, following

	single application of GLOB1913H to potato according to the central EU zone GAP according to surface water Step 4				
	PEC _{sw} (µg/L)	Scenario	STEP 4 Prosulfocarb		
	Nozzle reduction	Vegetative strip (m)	None	None	10
		No spray buffer (m)	5	10	10
	None	R1 stream	-	-	4.89
<p>PEC_{sw} values calculated by zRMS were used for risk assessment.</p> <p>In the case of the metabolite of prosulfocarb. The tiered approach was submitted: at Tier 1 the metabolite prosulfocarb sulfoxide was implemented as a normal metabolite of prosulfocarb in SWASH and at Tier 2 – the metabolite was treated as a pseudo-parent. The worst case was accepted (Tier 1) and the Tier 2 could be accepted at the Member State level.</p> <p>The submitted calculations using EVA 3.0 rev2h was not evaluated. This approach could be considered at the Member State level.</p> <p>The presented assumptions and calculations PEC values submitted by applicant are acceptable.</p> <p>GLOB 1913H-1310aH</p> <p>Calculations of PEC_{sw} values for formulation has been provided by applicant. The calculations are accepted.</p> <p>Presented calculations may be used for risk assessment.</p>					
Agreed endpoints	Please refer to: Tables 8.9-4 to 8.9-8 Tables 8.9-10 to 8.9-19 Tables 8.9-21 to 8.9-25 Tables 8.9-27 to 8.9-32 Table 8.9-33				
Implication for risk assessment	Please refer to Part B, Section 9 of this dRR.				

8.10 Fate and behaviour in air (KCP 9.3, KCP 9.3.1)

Table 8.10-1 Summary of atmospheric degradation and behaviour - prosulfocarb

Compound	Prosulfocarb
Direct photolysis in air	Not studied – no data requested
Quantum yield of direct phototransformation	Not required

Photochemical oxidative degradation in air	DT50 (h): 3.9 derived by the Atkinson model
Volatilisation	From plant surfaces: 46.7% had volatilised from leaf surfaces after 24 h From soil surfaces: 18% had volatilised after 24 h
Metabolites	No available data – no data requested

The vapour pressure at 20 °C of the active substance prosulfocarb is $> 10^{-4}$ Pa. Hence the active substance prosulfocarb is regarded as volatile (volatilisation from soil and plant surfaces). Therefore exposure of adjacent surface waters and terrestrial ecosystems by the active substance prosulfocarb due to volatilization with subsequent deposition should be considered. However, due to the short half-life of prosulfocarb (3.9 hours), its transport via air is expected to be low.

Evaluation by zRMS	Fate and behaviour in air (KCP 9.3)
Comments	The data on the atmospheric degradation and behaviour for the active substance prosulfocarb follows the EU assessment and is therefore agreed by the zRMS.

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
KCP 9.2.4	Truyens, S.	2022	Estimations of the PECgw of prosulfocarb and relevant metabolites GLOB1913HGW Globachem NV non GLP Unpublished	N	Globachem NV
KCP 9.2.5	Truyens, S.	2021	Estimations of the PECsw of prosulfocarb and relevant metabolites GLOB1913HSW Globachem NV non GLP Unpublished	N	Globachem NV

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
None					

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
KCP XX	Author	YYYY	Title Company Report N Source GLP/non GLP/GEP/non GEP Published/Unpublished	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
KCP XX	Author	YYYY	Title Company Report N Source GLP/non GLP/GEP/non GEP Published/Unpublished	Y/N	Owner

Appendix 2 Detailed evaluation of the new Annex II studies

No new studies were submitted.

Appendix 3 Additional information provided by the applicant (e.g. detailed modelling data)

No additional information submitted.