FINAL REGISTRATION REPORT

Part B

Section 8

Environmental Fate

Detailed summary of the risk assessment

Product code: MT-565SG-OR2-C

Product name(s): HAKSAR TOP 565 SG

Chemical active substance(s):

MCPA, 550 g/kg
Tribenuron methyl, 15 g/kg

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

(authorization)

Applicant: CIECH Sarzyna S.A.

Submission date: 1/2021

MS Finalisation date: 06/12/2021

Version history

When	What
January 2021	First submission of product authorization.
02/2021	Dossier sent for evaluation to Merit Mark (PL)
08/2021	zRMS finalised evaluation
December 2021	Final RR

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Evaluator comments:
The text highlighted in grey was provided by the evaluator.

8 Fate and behaviour in the environment (KCP 9)

8.1 Critical GAP and overall conclusions

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

GAP , date: January 2021

PPP (product name/code):	MT-565SG-OR2-C/HAKSAR TOP 565 SG	Formulation type:	SG [(a, b)]
Active substance 1:	MCPA	Conc. of as 1:	550 [(c)]
Active substance 2:	Tribenuron-methyl	Conc. of as 2:	15 [(c)]
Safener:	N/A	Conc. of safener:	N/A [(c)]
Synergist:	N/A	Conc. of synergist:	N/A [(c)]
Applicant:	CIECH Sarzyna S.A.	Professional use:	☒
Zone(s):	central [(d)]	Non professional use:	☐
Verified by MS:	~~no~~yes		

Field of use: herbicide

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Use-No. [(e)]	**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 [(f)]
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season	g or 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	Winter soft wheat (TRZAW), Winter rye (SECCW),	F	Annual dicotyledonous weeds	Broadcast - foliar	Autumn BBCH 13 – 23	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	

		Winter triticale (TTLWI), Winter barley (HORVW)								b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha			
2	PL	Winter soft wheat (TRZAW), Spring soft wheat (TRZAS), Winter rye (SECCW), Winter triticale (TTLWI) Winter barley (HORVW) Spring barley (HORVS) Oats (AVESA)	F	Annual dicotyledonous weeds	Broadcast - foliar	Spring BBCH 13 – 39	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	
3	DE	Winter soft wheat (TRZAW), Winter rye (SECCW), Winter triticale (TTLWI), Winter barley (HORVW)	F	Annual dicotyledonous weeds	Broadcast - foliar	Autumn BBCH 13 – 23	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	To be further submitted via Mutual Recognition procedure.
4	DE	Winter soft wheat (TRZAW), Spring barley (HORVS), Winter barley (HORVW) Winter rye (SECCW), Winter triticale (TTLWI),	F	Annual dicotyledonous weeds	Broadcast - foliar	Spring BBCH 13 – 39	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	To be further submitted via Mutual Recognition procedure.
5	HU	Winter soft wheat (TRZAW), Spring barley	F	Annual dicotyledonous weeds	Broadcast - foliar	Spring BBCH 13 – 39	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g	200 / 400	n.a.	To be further submitted via Mutual Recognition procedure.

		(HORVS)								as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha			
6	RO	Winter soft wheat (TRZAW), Spring barley (HORVS)	F	Annual dicotyledonous weeds	Broadcast - foliar	Spring BBCH 13 – 39	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	To be further submitted via Mutual Recognition procedure.
Minor uses according to Article 51 (zonal uses)													
7	PL	Durum wheat (TRZDU), Spelt wheat (TRZSP), einkorn wheat (TRZMO) emmer wheat (TRZDI)	F	Annual dicotyledonous weeds	Broadcast - foliar	Autumn BBCH 13 – 23	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	
8	PL	Durum wheat (TRZDU), Spelt wheat (TRZSP), Spring rye (SECCS), Spring triticale (TTLWS), einkorn wheat (TRZMO), emmer wheat (TRZDI)	F	Annual dicotyledonous weeds	Broadcast - foliar	Spring BBCH 13 – 39	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	
9	PL	Miscanthus sp. (MISSS)	F	Annual dicotyledonous weeds	Broadcast - foliar	BBCH 12 -14	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	

10	PL	Grasses grown for seeds	F	Annual dicotyledonous weeds	Broadcast - foliar	Spring BBCH 13 – 39	a) 1 b) 1	n.a.	a) 1,00 kg/ha; b) 1,00 kg/ha	a) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha b) MCPA 550 g as/ha; tribenuron methyl 15 g as/ha	200 / 400	n.a.	
Minor uses according to Article 51 (interzonal uses)													

* 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 MCPA concerning the Section Environmental Fate

1	2	3	4	5	6	7	8	9	10	11		12	13	14
Use-No.	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fnp G, Gn, Gnp 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
					Method / Kind	Timing / Growth stage of crop & season	Number min.-max.	Interval between applications (min.)	kg as/hL min.-max.	kg as/ha max.		Water L/ha min / max		
1	Various	Winter cereals – wheat , barley, rye, oats, triticale	F	Broadleaved weeds	High or low volume spraying with tractor munted	Spring, before first node detectable	1	n.a.	-	1.8		100/1000	n.a.	-

1	2	3	4	5	6	7	8	9	10	11		12	13	14
Use-No.	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fnp G, Gn, Gnp 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
					Method / Kind	Timing / Growth stage of crop & season	Number min.-max.	Interval between applications (min.)	kg as/hL min.-max.	kg as/ha max.		Water L/ha min / max		
					boom									
2	Various	Spring cereals – wheat , barley, rye, oats, triticale	F	Broadleaved weeds	High or low volume spraying with tractor munted boom	Spring, before first node detectable	1	n.a.	-	1.8		100/1000	n.a.	-
3	Various	Grassland (including pasture)	F	Broadleaved weeds	High or low volume spraying with knapsach sprayer or tractor munted boom	Spring to early summer	2	4 weeks	-	1.8		100/1000	n.a.	-
4	Various	Turf (including seed, new and established)	F	Broadleaved weeds	High or low volume spraying with knapsach sprayer or tractor munted boom	Spring to early summer	3	4 weeks	-	1.8		100/1000	n.a.	-
5	Various	Maize	F	Broadleaved weeds	Spray	Plant height 10 – 30 cm	1	n.a.	-	1.05		-	n.a.	-

n.a. – not applicable

Remarks table:

(1) Numeration necessary to allow references
(2) Use official codes/nomenclatures of EU
(3) For crops, the EU and Codex classifications (both) should be used; where relevant, the use situation should be described (*e.g.* fumigation of a structure)
(4) 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
(5) Scientific names and EPPO-Codes of target pests/diseases/ weeds or when relevant the common names of the pest groups (e.g. biting and sucking insects, soil born insects, foliar fungi, weeds) and the developmental stages of the pests and pest groups at the moment of application must be named
(6) Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench
Kind, e.g. overall, broadcast, aerial spraying, row, individual plant, between the plants - type of equipment used must be indicated
(7) Growth stage at first and last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application
(8) The maximum number of application possible under practical conditions of use must be provided
(9) Minimum interval (in days) between applications of the same product.
(10) For specific uses other specifications might be possible, e.g.: g/m³ in case of fumigation of empty rooms. See also EPPO-Guideline PP 1/239 Dose expression for plant protection products
(11) The dimension (g, kg) must be clearly specified. (Maximum) dose of a.s. per treatment (usually g, kg or L product / ha).
(12) If water volume range depends on application equipments (e.g. ULVA or LVA) it should be mentioned under “application: method/kind”.
(13) PHI - minimum pre-harvest interval
(14) Remarks may include: Extent of use/economic importance/restrictions

Table 8.1-3: Assessed (critical) uses during approval of Tribenuron-methyl concerning the Section Environmental Fate

1	2	3	4	5	6	7	8	9	10	11	12	13	14
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
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	kg or L product/ha a) max. rate per appl. b) max. total rate per crop/season	g as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min/max		
	EU	Spring Cereals without underlay [wheat, barley, oat, rye, triticale, durum]	F	Broadleafweeds	Broadcast foliar application	BBCH 30-39	1	-		22.5	100 - 400	Do not apply after BBCH 39. PHI n/a when harvest at maturity. 28 for harvest as forage/ silage before maturity.	DUP With or without non-ionic surfactant (i.e. Trend® 90 0.050.1% v/v) Cereals harvested at maturity or before maturity for forage/ silage.
	EU	Winter Cereals without underlay [wheat, barley, rye, triticale, oat, durum, spelt]	F	Broadleafweeds	Broadcast foliar application	BBCH 30-39 Spring application	1	-		24	100 - 500	Do not apply after BBCH 39. PHI n/a when harvest at maturity. 28 for harvest as forage/ silage	DUP With or without non-ionic surfactant (i.e. Trend® 90 0.050.1% v/v) Cereals harvested at maturity or before maturity for forage/ silage

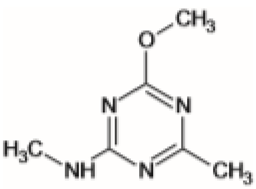
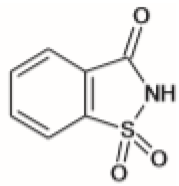
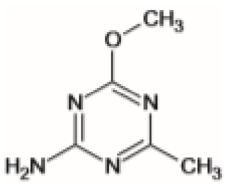
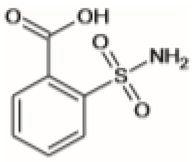
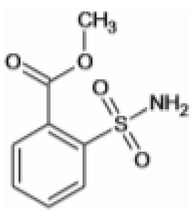
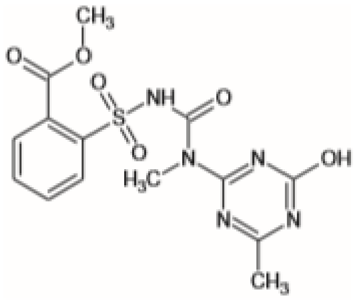
												before maturity.	
	EU	Pasture (Grass only)	F	Broadleafweeds	Broadcast foliar application	BBCH 59 Spring application	1	-		7.5	100 - 300	28	DUP With non-ionic surfactant (i.e. Trend® 90 0.05% v/
	EU	Sunflower (Tribenuronmethyltolerant varieties)	F	Broadleafweeds	Broadcast foliar application	BBCH 12-18 Spring application	1	-		30	100 - 400	30	DUP With non-ionicsurfactant (i.e. Trend® 90 0.1% v/v)
	EU	Olive	F	Broadleafweeds	Broadcast foliar application	Early spring application	1	-		20	100 - 500	28	DUP Downward directed broadcast foliar application within the access rows.1 With non-ionic surfactant (i.e. Trend® 90 0.1% v/v)
	EU	Winter cereals	F	Annual broadleavedweeds	Foliar spray	BBCH 12-29	1	-		15	100 - 400		TTF Autumn application
	EU	Winter cereals	F	Annual broadleavedweeds	Foliar spray	BBCH 12-39	1	-		30	100 - 400		TTF Spring application
	EU	Spring cereals	F	Annual broadleavedweeds	Foliar spray	BBCH 12-39	1	-		30	100 - 400		TTF Spring application

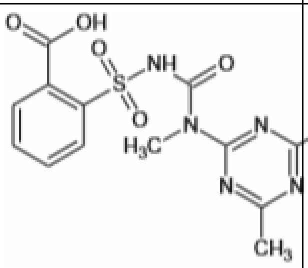
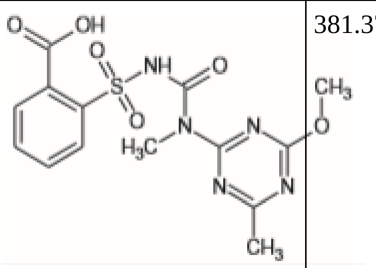
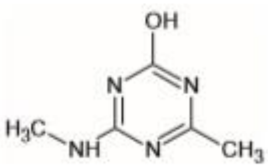
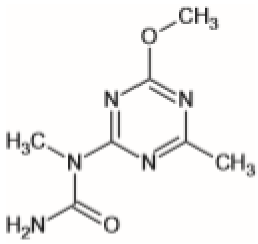
8.2 Metabolites considered in the assessment

Metabolites of MCPA potentially relevant for exposure assessment

No metabolites of MCPA were observed or identified

Table 8.2-2: Metabolites of Tribenuron methyl potentially relevant for exposure assessment

Metabolite	Chemical structure	Molar mass	Maximum observed occurence in compartements	Exposue assessment required due to
IN-L5296		154.17	Soil :85.7% Water/sediment: up to 88.9% (total system, 56 d), max 42% in water (14 d), max 86% in sediment (56 d)	Yes, required for all environmental compartments
IN-00581 saccharin		183.19	Soil :33.9% Water/sediment: up to 38.4% (total system, 14 d), max 32% in water (14 d), max 6.4% in sediment (14 d)	Yes, required for all environmental compartments
IN-A4098		10.14	Soil :12.6% Water/sediment: 0.0001% , 0.0001 % in water, 0.0001% in sediment	Yes, required for all environmental compartments
IN-D5119		201.20	Soil : 6.1% Water/sediment: up to 26.5% (total system, 56 d), max 19% in water (56 d), max 7.5% in sediment (56 d)	Yes , required for water and sediment compartments
IN-D5803		215.22	Soil :46.6% Water/sediment: 0.0001% , 0.0001 % in water, 0.0001% in sediment	Yes , required for water and sediment compartments
IN-GK521		381.37	Soil :32.1% Water/sediment: 0.0001% , 0.0001 % in water, 0.0001% in sediment	Yes , required for water and sediment compartments

Metabolite	Chemical structure	Molar mass	Maximum observed occurence in compartements	Exposue assessment required due to
IN-GN815		367.34	Soil : 6.8% Water/sediment: up to 13% (total system, 29 d), max 5.7% in water (42 d), max 9.2% in sediment (29 d)	Yes , required for water and sediment compartments
IN-R9803		381.37	Soil:9.1%	Requiring consideration for groundwater exposure
IN-R9805		140.15	Soil :7.6 % Water/sediment: up to 14.7% (total system, 71 d), max 9% in water (71 d), max 5.7% in sediment (71 d)	Yes, required for all environmental compartments
M2		197.19	Soil :16.2 % Water/sediment: 0.0001% , 0.0001 % in water, 0.0001% in sediment	Yes, required for all environmental compartments

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 both active substances.

8.3.1 Aerobic degradation in soil (KCP 9.1.1.1)

8.3.1.1 MCPA

The rate of degradation of MCPA in soil in laboratory conditions have previously been evaluated within an EU peer review process. No major metabolites of MCPA are identified in soil. The relevant endpoints are provided in SANCO/4062/2001 - final of 11.07.2008. Full summaries of studies are presented in respective EU DAR. No additional studies have been performed.

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

Soil type	pH	T °C	Moisture	DT_{50} (d)	DT_{50} (d) 20 °C, pF2 (Q_{10} = 2.58)	Kinetic, Fit	Reference
Sandy loam	8.0	23	12.7% FC	8.0	2.5	SFO	SANCO/4062/2001-final – 11/06/2008
Sandy loam	7.2	26	100% FC	32.0	56.5	SFO	
Clay loam	7.8	26	100% FC	41.0	72.4	SFO	
Clay loam	6.2	26	100% FC	15.0	26.5	SFO	
Loam	7.6	26	100% FC	14.0	24.7	SFO	
Loam	7.5	26	100% FC	22.0	38.9	SFO	
Clay	7.7	20	85% FC	7.0	6.2	SFO	
Clay loam	6.0	20	85% FC	7.0	6.2	SFO	
Sandy loam	7.6	20	85% FC	7.0	6.3	SFO	
Clay	7.7	20	85% FC	13.0	11.6	SFO	
Clay loam	6.0	20	85% FC	14.0	12.5	SFO	
Sandy loam	7.6	20	85% FC	14.0	12.5	SFO	
Sandy clay	5.2	23	100% FC	28.0	37.2	SFO	
Sandy clay	4.7	25	100% FC	40.0	64.2	SFO	
			normalised (d)		24		

* Geometric mean value of the reported normalized values is 17.6 days. The 24 days indicated in the box is derived from the mentioning in the List of endpoints: the DT50 value of 24 d (25°C) chosen for PECsoil calculations was obtained from the route of degradation study. For PECsoil the maximum non-normalised value of 41 days should be used and for PECgw and PECsw the geometric mean normalized DT50 of 17.6 days (n=14).

8.3.1.2 Tribenuron methyl and its metabolites

Data on aerobic degradation in soil of the active substance and its metabolites are presented in the following tables.

Table 8.3-2: Summary of aerobic degradation rates for Tribenuron-methyl- laboratory studies

Tribenuron-methyl, Laboratory studies, Dark aerobic conditions									
Soil name/ Soil type	**pH[a)]**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**DT50 (d) 20°C pF2/10kPa[b)]**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Gross-Umstadt silt loam	7.5 (media not stated)	20°C	42% (0 bar)	16.4	91.3	15.2	7	FOMC (pers.) SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Arrow sandy loam	5.9 (media not stated)	20°C	60%	1.7	11.9	3.6	7	FOMC: α=1.27 β=2.35	y/ EFSA Journal 2017;15(7):4912
Arrow sandy loam	5.9 (media not stated)	20°C	40%	1.8	13.1	- [c)]	6	HS: k1=0.378 k2=0.070 tb=4.5	y/ EFSA Journal 2017;15(7):4912
Arrow sandy loam	5.9 (media not stated)	10°C	60%	12.2	61.5	- [c)]	9	HS: k1=0.155 k2=0.033 tb=4.5	y/ EFSA Journal 2017;15(7):4912
Evesham clay loam	8.3 (media not stated)	20°C	100%	11.9	39.4	11.9	10	SFO	y/ EFSA Journal 2017;15(7):4912
Evesham clay loam	8.3 (media not stated)	10°C	100%	47.5	158	- [c)]	9	SFO	y/ EFSA Journal 2017;15(7):4912
Riverside sandy silt loam	6.8	20°C	40%	11.6	38.6	10.9	23	SFO	y/ EFSA Journal 2017;15(7):4912
Sion Hill silty loam	6.1	20°C	40%	5.4	17.8	4.2	12	DFOP (pers.) SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Gardena silt loam	7.5 (media not stated	25°C	70% FC (pF2)	5.1	58.9	23.1	23	HS (pers.) SFO (mod.)	y/ EFSA Journal 2017;15(7):4912
Nambsheim sandy loam	7.4	20°C	50%	16.7	55.3	16.7	5	SFO	y/ EFSA Journal 2017;15(7):4912
Lleida clay loam	7.5	20°C	50%	18.3	60.7	16.8	4	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer sand	5.8	20°C	50%	1.6	18.5	9.0	14	HS (pers.) FOMC (model.) α=0.667 β=0.976	y/ EFSA Journal 2017;15(7):4912
Speyer 5M sandy loam	7.2	20°C	FC	18.5	61.5	18.5	6	SFO	y/ EFSA Journal

Tribenuron-methyl, Laboratory studies, Dark aerobic conditions									
Soil name/ Soil type	**pH[a)]**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**DT50 (d) 20°C pF2/10kPa[b)]**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
			(pF2)						2017;15(7):4912
Am Fishteich silt loam	6.2	20°C	FC (pF2)	2.9	9.7	2.9	14	SFO	y/ EFSA Journal 2017;15(7):4912
Loehmingen loam	6.7	20°C	FC (pF2)	4.6	15.4	4.6	11	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 loamy sand	5.5	20°C	FC (pF2)	7.1	23.7	7.1	11	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)						(9.1)			
pH dependence, Yes or No						Yes			
Geometric mean soils with pH<7 (n=7)						5.4			
Geometric mean soils with pH >7 (n= 6)						16.7			

Table 8.3-1: Summary of aerobic degradation rates for IN-L5296 - laboratory studies

IN-L5296, Laboratory studies, Dark aerobic conditions. Parent dosed studies with precursor for the f.f.: parent. Also, two metabolite (IN-L5296) dosed studies and one metabolite (IN-R9803) dosed study										
Soil name / type	**pH[a)]**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa[b)]**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Gross-Umstadt silt loam	7.5 (media not stated)	20°C	42% (0bar)	281	934	0.77	185	11	FOMC-SFO (pers.) SFO-SFO (model.)	y/ EFSA Journal 2017;15(7):4912
	7.4	20°C	42% (0bar)	204	678	-[c)]	165	3	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer sand	5.8	20°C	50%	151	502	0.66	293	3	HS-SFO (pers.) FOMC-SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Arrow sandy loam	5.9	20°C	60%	337	1119	0.89	337	3	FOMC-SFO	y/ EFSA Journal 2017;15(7):4912
		20°C	40%	505	1678	0.87	-[c)]	4	FOMC-SFO	y/ EFSA Journal 2017;15(7):4912
Mattapex silt loam	6.6	20°C	47% (0bar)	105	348	-[c)]	96.5	6	SFO	y/ EFSA Journal 2017;15(7):4912
Tama silty clay loam	5.8	20°C	50% (0bar)	234	778	0.66[d]	234	7	DFOP-SFO	y/ EFSA Journal 2017;15(7):4912
Cajon loam	7.3	20°C	50% (0bar)	251	833	0.68[d]	243	7	DFOP-SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							207.5			

IN-L5296, Laboratory studies, Dark aerobic conditions. Parent dosed studies with precursor for the f.f.: parent. Also, two metabolite (IN-L5296) dosed studies and one metabolite (IN-R9803) dosed study										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Arithmetic mean						0.76				
pH-dependency: y/n							No			

a) pH measured in CaCl2 for all soils except where stated otherwise.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.
d) Formation fraction from precursor IN-R9803 (anaerobic metabolite), not included in mean.
e) Result not used to calculate mean.

Table 8.3-2: Summary of aerobic degradation rates for IN-A4098 - laboratory studies

IN-A4098, Laboratory studies, Dark aerobic conditions. Metabolite (IN-A4098) dosed studies. Also one metabolite (IN-L5296) dosed study.										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Arrow sandy loam	5.7	20°C	55%	44.7	97*	- c)	22.5*	14	Slow phase k in HS DT50 22.5*	y/ EFSA Journal 2017;15(7):4912
Gartenecker loam	6.9	20°C	FC (pF2)	102.2	339*	- c)	102.2*	4	SFO	y/ EFSA Journal 2017;15(7):4912
18 Acres, Sandy clay loam	5.0	20°C	FC (pF2)	249	828*	- c)	249*	1	SFO	y/ EFSA Journal 2017;15(7):4912
Krone Silt loam	4.9	20°C	FC (pF2)	191	634*	- c)	191*	4	SFO	y/ EFSA Journal 2017;15(7):4912
Honville Silt loam	6.7 (H_2O)	20°C	40%	260.1	864*	- c)	201.6*	-*	Slow phase k in HS DT50 26.1*	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 Loamy sand	5.7	20°C	45%	60.5	285	- c)	67.5	2	DFOP (pers.) SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Speyer 3A Sandy loam	7.3	20°C	45%	280.4	>1000	- c)	385	2	HS: : k1=0.013 k2=0.002 tb=20	y/ EFSA Journal 2017;15(7):4912
Speyer 6S Clay loam	7.1	20°C	45%	333	>1000	- c)	230	1	SFO	y/ EFSA Journal 2017;15(7):4912
Gross-Umstadt silt loam	7.4	20°C	42% (0bar)	68.9	228.9	1.0 d	55.6	16	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Mattapex silt loam	6.6	20°C	47% (0bar)	94.1	313	1.0 d	86.7	12	SFO-SFO	y/ EFSA Journal 2017;15(7):4912

IN-A4098, Laboratory studies, Dark aerobic conditions. Metabolite (IN-A4098) dosed studies. Also one metabolite (IN-L5296) dosed study.										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Already peer-reviewed endpoints from studies in other sulfonyl urea dossiers (metabolite applied as parent)										
Keyport Silt loam	4.3	25°C	70% FC	208	691*	-c)	254*	6	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.1 sand	5.5	20°C	pF2	112.5	374*	-c)	112.5*	3	SFO	y/ EFSA Journal 2017;15(7):4912
Soil 115 clay loam	8.6	20°C	pF2	175.2	582	-c)	175.2*	3	SFO	y/ EFSA Journal 2017;15(7):4912
Soil 243 sandy loam	5.6	20°C	pF2	96.4	320.2	-c)	69.4*	6	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							127.7			
Arithmetic mean						1.0d				
pH dependence, Yes or No							No			

a) pH measured in CaCl2 for all soils except where stated otherwise.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.
d) The f. f. for the formation from the precursor IN-L5296 was not optimised but set to 1.0 as a worst case.
* Peer-reviewed endpoint as presented in EFSA conclusion on thifensulfuron-methyl (EFSA, 2015c)
Values in brackets not used for calculation of overall mean (results will be subject to Expert's consultation)

Table 8.3-3: Summary of aerobic degradation rates for IN-00581- laboratory studies

IN-00581, Laboratory studies,Dark aerobic conditions. Metabolite (IN-00581) dosed studies.										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Mattapex Silt loam	6.4	20°C	55% (0 bar)	237.4	788.6*	-c)	237.4*	4	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 Loamy sand	5.7	20°C	45%	16.7	32.2*	-c)	9.7*	5	Mod. HS* (DT 90/3.32)	y/ EFSA Journal 2017;15(7):4912
Speyer 3A Sandy loam	7.3	20°C	45%	16.9	34*	-c)	9.5*	5	Mod. HS* (DT 90/3.32)	y/ EFSA Journal 2017;15(7):4912
Speyer 6S Clay loam	7.1	20°C	45%	49.3	99.2*	-c)	20.6*	6	Mod. HS* (DT 90/3.32)	y/ EFSA Journal 2017;15(7):4912
Already peer-reviewed endpoints from studies in other sulfonyl urea dossiers (metabolite applied as parent)										
Quincy loamy sand	6.4	20°C	8.2% moisture	22.7	75.4**	-c)	15.6**	7	SFO	y/ EFSA Journal 2017;15(7):4912

IN-00581, Laboratory studies,Dark aerobic conditions. Metabolite (IN-00581) dosed studies.										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Speyer 2.2	5.7	20°C	45%	14.8	49.2*	-c)	14.8*	13	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.3	6.9	20°C	45%	9.1	30.1*	-c)	8.45*	16	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 6S	7.2	20°C	45%	27.5	91.2*	-c)	20.47*	12	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							19.1			
Arithmetic mean						1d)				
pH dependence, Yes or No							No			

a) Media in which pH was measured is not reported.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.
d) No f.f. values available so default value of 1 presented for use in modelling.
* Peer-reviewed endpoints as presented in EFSA conclusion on metsulfuron-methyl (EFSA Journal 2015;13(1):3936)
** Peer-reviewed endpoint as presented in EFSA conclusion on propoxycarbazone (EFSA Journal 2016;14(10):4612)

Table 8.3-4: Summary of aerobic degradation rates for IN-R9805- laboratory studies

IN-R9805, Laboratory studies, Dark aerobic conditions. Metabolite (IN-R9805) dosed studies. Also one metabolite (IN-GK521) dosed study										
Soil name /type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Nambsheim sandy loam	7.5	20°C	FC (pF2)	91.6	304.4	-c)	91.6	5	SFO	y/ EFSA Journal 2017;15(7):4912
	7.3	20°C	50%	82.8	275.1	-c)	82.8	3	SFO	y/ EFSA Journal 2017;15(7):4912
Porterville loam	7.7	20°C	FC (pF2)	73.9	245	-c)	73.9	8	SFO	y/ EFSA Journal 2017;15(7):4912
Gross-Umstadt loam	6.3	20°C	FC (pF2)	172.4	921	-c)	330	5	DFOP: k1=0.179 k2=0.002 g=0.3	y/ EFSA Journal 2017;15(7):4912
Speyer loamy sand	5.5	20°C	50% (0 bar)	97.6	324	-c)	97.6*	2	SFO	y/ EFSA Journal 2017;15(7):4912
	5.3			355	1178	0.76d	355*	7	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Lleida silty clay	7.7	20°C	50% (0 bar)	86.5	287	-c)	79.2	3	SFO	y/ EFSA Journal 2017;15(7):4912
Tama silty clay loam	5.4	20°C	50% (0 bar)	91.5	304	-c)	84.4*	3	SFO	y/ EFSA Journal 2017;15(7):4912

IN-R9805, Laboratory studies, Dark aerobic conditions. Metabolite (IN-R9805) dosed studies. Also one metabolite (IN-GK521) dosed study										
Soil name /type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
	5.7			380	1262	0.77d	315*	3	DFOP-SFO	y/ EFSA Journal 2017;15(7):4912
Sassafras sandy loam	5.6	20°C	50% (0 bar)	90.8	302	-c)	90.8	3	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 loamy sand	5.5	20°C	~37%	26.0	86.5	-c)	26.0	5	SFO	y/ EFSA Journal 2017;15(7):4912
Fisilis silty clay loam	7.2	20°C	~47%	17.6	58.3	-c)	14.1	6	SFO	y/ EFSA Journal 2017;15(7):4912
LRA J3 clay loam	7.5	20°C	~41%	42.7	142	-c)	29.1	3	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							85.4*			
Arithmetic mean						1e)				
pH dependence, Yes or No						No				

a) pH measured in CaCl2 for all soils.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined
d) Formation fraction from precursor IN-GK521 (anaerobic metabolite).
e) No f.f. available except from the precursor IN-GK521. As this is a metabolite only formed in anaerobic conditions not relevant for use of TOSCANA, a default value of 1 is presented.
* In case of two or more values for the same soil (and same type of study) the geometric mean DT50 was first calculated. A single value was used for each soil to derive overall geomean.

Table 8.3-5: Summary of aerobic degradation rates for M2- laboratory studies

M2, Dark aerobic conditions. Metabolite (M2) dosed studies.										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Speyer 2.2. loamy sand	5.5	20°C	~37%	11.0	36.5	-c)	11.0	5	FOMC (pers.): α=2.16 β=25.3 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Fisilis silty clay loam	7.2	20°C	~46%	20.6	68.4	-c)	16.5	5	HS (pers.): k1=0.044 k2=0.015 tb=18.9 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
LRA J3 clay loam	7.5	20°C	~42%	23.3	77.2	-c)	16.1	3	HS (pers.): k1=0.045 k2=0.012 tb=16.9	y/ EFSA Journal 2017;15(7):4912

M2, Dark aerobic conditions. Metabolite (M2) dosed studies.										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
									SFO (model.)	
Arrow sandy loam	5.9	20°C	60%	73.2	244	0.04	73.2	17	FOMC-SFO	y/ EFSA Journal 2017;15(7):4912
		10°C	60%	64.3	214	0.06	-[d]	18	HS-SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							21.5			
Arithmetic mean						-[ce] 0.05				
pH dependence, Yes or No						No				

a) pH measured in CaCl2 for all soils.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.
d) Result not used to calculate mean.
e) According to EFSA Journal 2017;15(7):4912 the correct ff that should be used is 0.24

Table 8.3-6: Summary of aerobic degradation rates for IN-D5803 - laboratory studies

IN-D5803, Dark aerobic conditions. Metabolite (IN-D5803) dosed studies										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Lleida clay loam	8.0	20°C	50% (0 bar)	1.0	3.2*	-[c)]	0.9*	3	SFO	y/ EFSA Journal 2017;15(7):4912
Tama silty clay loam	6.1	20°C	50% (0 bar)	5.1	17.1*	-[c)]	4.1*	8	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 loamy sand	6.3	20°C	50% (0 bar)	1.9	6.1*	-[c)]	1.9*	21	SFO	y/ EFSA Journal 2017;15(7):4912
	5.7	20°C	45%	11.7	38.8*	-[c)]	11.7*	4	SFO	y/ EFSA Journal 2017;15(7):4912
Gross-Umstadt loam	7.3	20°C	50% (0 bar)	1.3	4.5*	-[c)]	1.2*	9	SFO	y/ EFSA Journal 2017;15(7):4912
Sassafras sandy loam	5.7	20°C	50% (0 bar)	9.2	87.7*	-[c)]	26.4*	-*	FOMC DT90/3.32	y/ EFSA Journal 2017;15(7):4912
Speyer 3A Sandy loam	7.3	20°C	45%	1.9	6.4*	-[c)]	1.8*	6	SFO	y/ EFSA Journal 2017;15(7):4912

IN-D5803, Dark aerobic conditions. Metabolite (IN-D5803) dosed studies										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Speyer 6S clay loam	7.1	20°C	45%	3.4	11.1*	-c)	2.3*	4	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							3.2			
Arithmetic mean						-c)				
pH dependence, Yes or No						No				

a) pH measured in CaCl2 for all soils.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.(* Peer-reviewed endpoints as presented in EFSA conclusion on metsulfuron-methyl (EFSA Journal 2015;13(1):3936)

Table 8.3-7: Summary of aerobic degradation rates for IN-R9803- laboratory studies

IN-R9803, Dark aerobic conditions. Metabolite (IN-R9803) dosed studies.										
Soil name /type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. (χ2)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Speyer loamy sand	5.2	20°C	50% (0 bar)	6.1	45.0	-c)	17.6	7	FOMC: α=0.95 β=5.63	y/ EFSA Journal 2017;15(7):4912
Lleida silty clay	7.5	20°C	50% (0 bar)	3.2	22.0	-c)	6.3	4	FOMC: α=1.3 β=4.49	y/ EFSA Journal 2017;15(7):4912
Tama silty clay loam	5.8	20°C	50% (0 bar)	3.3	43.3	-c)	13.0	4	FOMC: α=0.77 β=2.29	y/ EFSA Journal 2017;15(7):4912
Nambsheim sandy loam	7.3	20°C	50% (0 bar)	5.2	54.2	-c)	16.3	9	FOMC: α=0.89 β=4.41	y/ EFSA Journal 2017;15(7):4912
Cajon loam	7.3	20°C	45% (0 bar)	2.6	39.0	-c)	17.7	4	DFOP: k1=0.647 k2=0.038 g=0.6	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							13.3			
Arithmetic mean						-c)				
pH dependence, Yes or No						No				

a) pH measured in $CaCl_2$ for all soils.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.

Table 8.3-8: Summary of aerobic degradation rates for IN-GN815- laboratory studies

IN-GN815, Dark aerobic conditions. Metabolite (IN-GN815) dosed studies										
Soil name /type	**pH [a)]**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa [b)]**	**St. ($\chi 2$)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Speyer loamy sand	5.2	20°C	50% (0 bar)	7.0	29.1	-[c)]	7.9	3	DFOP (pers.): k1=0.965 k2=0.073 g=0.2 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Lleida silty clay	7.5	20°C	50% (0 bar)	6.3	32.9	-[c)]	6.8	5	DFOP (pers.): k1=0.574 k2=0.06 g=0.3 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Tama silty clay loam	5.6	20°C	50% (0 bar)	5.0	27.5	-[c)]	5.4	4	DFOP (pers.): k1=0.725 k2=0.077 g=0.3 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Nambsheim sandy loam	7.5	20°C	50% (0 bar)	9.2	40.9	-[c)]	10.9	4	DFOP (pers.): k1=0.861 k2=0.051 g=0.2 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Sassafras loamy sand	4.9	20°C	50% (0 bar)	7.2	30.9	-[c)]	8.2	4	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 loamy sand	5.5	20°C	37% (0 bar)	4.0	13.3	-[c)]	4.0	11	SFO	y/ EFSA Journal 2017;15(7):4912
Fisilis silty clay loam	6.1	20°C	46% (0 bar)	5.6	18.6	-[c)]	4.5	10	SFO	y/ EFSA Journal 2017;15(7):4912
LRA J3 clay loam	7.5	20°C	43% (0 bar)	23.5	78.0	-[c)]	16.2	6	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							7.2			
Arithmetic mean						1[d)]				
pH dependence, Yes or No						No				

a) pH measured in $CaCl_2$ for all soils.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.
d) No f.f. values available so default value of 1 presented for use in modelling.

Table 8.3-9: Summary of aerobic degradation rates for IN-GK521 - laboratory studies

IN-GK521, Dark aerobic conditions. Metabolite (IN-GK521) dosed studies.										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. ($\chi 2$)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Speyer loamy sand	5.3	20°C	50% (0 bar)	4.8	15.9	- c)	4.8	5	SFO	y/ EFSA Journal 2017;15(7):4912
Lleida silty clay	7.7	20°C	50% (0 bar)	38.8	128.8	- c)	32.6	9	SFO	y/ EFSA Journal 2017;15(7):4912
Tama silty clay loam	5.7	20°C	50% (0 bar)	5.0	25.7	- c)	4.2	4	DFOP (pers.): k1=0.725 k2=0.077 g=0.3 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Nambsheim sandy loam	7.5	20°C	50% (0 bar)	33.0	109.7	- c)	33.0	8	SFO	y/ EFSA Journal 2017;15(7):4912
Sassafras loamy sand	4.7	20°C	50% (0 bar)	7.9	31.5	- c)	8.8	3	DFOP (pers.): k1=1.97 k2=0.068 g=0.1 SFO (model.)	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 loamy sand	5.5	20°C	36%	9.4	31.3	- c)	9.4	11	SFO	y/ EFSA Journal 2017;15(7):4912
Fisilis silty clay loam	6.1	20°C	46%	9.5	31.5	- c)	7.7	10	SFO	y/ EFSA Journal 2017;15(7):4912
LRA J3 clay loam	7.5	20°C	40%	51.9	172	- c)	34.0	6	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							12.1			
Arithmetic mean						1)				
pH dependence, Yes or No						No				

a) pH measured in $CaCl_2$ for all soils.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.

Table 8.3-10: Summary of aerobic degradation rates for IN-D5119 - laboratory studies

IN-D5119, Dark aerobic conditions. Metabolite (IN-D5119) dosed studies										
Soil name / type	**pH a)**	**t.ºC**	**MWHC %**	**DT50 (d)**	**DT90 (d)**	**f. f. k_f / k_{dp}**	**DT50 (d) 20°C pF2/10kPa b)**	**St. ($\chi2$)**	**Kinetic model**	**Evaluated on EU level y/n/ Reference**
Lleida silty clay	7.9	20°C	50% (0 bar)	7.4	24.5*	-c)	6.6*	14	SFO	y/ EFSA Journal 2017;15(7):4912
Sassafras loamy sand	5.3	20°C	50% (0 bar)	15.6	51.8	-c)	15.6	8	SFO	y/ EFSA Journal 2017;15(7):4912
Tama silty clay loam	6.1	20°C	50% (0 bar)	5.9	19.6*	-c)	4.8*	8	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 loamy sand	6.3	20°C	50% (0 bar)	7.2	23.8*	-c)	7.2*	10	SFO	y/ EFSA Journal 2017;15(7):4912
Nambsheim sandy loam	7.4	20°C	50% (0 bar)	9.6	31.9*	-c)	9.0*	10	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 2.2 loamy sand	5.7	20°C	45%	10.1	33.7*	-c)	10.1*	7	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 3A sandy loam	7.3	20°C	45%	12.6	41.9*	-c)	11.8*	7	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 6S clay loam	7.1	20°C	45%	115.7	384.4*	-c)	79.9*	3	SFO	y/ EFSA Journal 2017;15(7):4912
Already peer-reviewed endpoints from studies in other sulfonyl urea dossiers (metabolite applied as parent)										
LUFA Speyer 2.2 loamy sand	5.5	-	-	36.2	120.2*	-c)	36.2*	6	SFO	y/ EFSA Journal 2017;15(7):4912
LUFA Speyer 3A sandy loam	6.8	-	-	17.7	58.8*	-c)	17.7*	8	SFO	y/ EFSA Journal 2017;15(7):4912
LUFA Speyer 6S clay	7.1	-	-	31.1	103.4*	-c)	31.1*	14	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							14.5			
Arithmetic mean						1-d)				
pH dependence, Yes or No						No				

a) pH measured in $CaCl_2$ for all soils.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Metabolite-dosed study, hence no formation fraction determined.
d) No f.f. values available so default value of 1 presented for use in modelling.
*Peer-reviewed endpoints as presented in EFSA conclusion on metsulfuron-methyl (EFSA Journal 2015;13(1):3936)

8.3.2 Anaerobic degradation in soil (KCP 9.1.1.1)

Studies on anaerobic degradation in soil with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substances as presented in the following tables

8.3.2.1 Anaerobic degradation in soil of MCPA

No studies on the anaerobic degradation in soil were conducted, none deemed necessary.

8.3.2.2 Anaerobic degradation in soil of Tribenuron mtehyl

Table 8.3-11: Rate of degradation in soil (anaerobic) laboratory studies Tribenuron-methyl

Tribenuron-methyl, Dark anaerobic conditions							
Soil type / Location	**pH[a)]**	**t. °C / % MWHC**	**DT50 / DT90 (d)**	**DT50 (d) 20 °C[b)]**	**St. (x^2)**	**Method of calculation**	**Evaluated on EU level y/n/ Reference**
Gross-Umstadt loam	6.1	20°C / flooded	72 / 239	-	4	SFO	y/ EFSA Journal 2017;15(7):4912
Bettlach Bh silt loam	7.3	20°C / flooded	45.6 / 151	-	6	SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 3A loam	7.2	20°C / flooded	123 / 409	-	3	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)				-			

a) pH measured in $CaCl_2$ for all soils.
b) Normalised using a Q10 of 2.58.

Table 8.3-12: Rate of degradation in soil (anaerobic) laboratory studies transformation products

IN-L5296 -Dark anaerobic conditions. Parent dosed studies with precursor for the f.f.: parent								
Soil type / Location	**pH[a)]**	**t. °C / % MWHC**	**DT50 / DT90 (d)**	**f.f.k_f / k_{dp}**	**DT50 (d) 20 °C[b)]**	**St. (x^2)**	**Method of calculation**	**Evaluated on EU level y/n/ Reference**
Gross-Umstadt loam	6.1	20°C / flooded	216 / 719	0.39	-	8	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)					-			
Arithmetic mean				0.39				

a) pH measured in $CaCl_2$.
b) Normalised using a Q10 of 2.58.

Table 8.3-13: Rate of degradation in soil (anaerobic) laboratory studies transformation products

IN-R9803 -Dark anaerobic conditions. Parent dosed studies with precursor for the f.f.: parent								
Soil type / Location	**pH[a)]**	**t. °C / % MWHC**	**DT50 / DT90 (d)**	**f.f.k_f / k_{dp}**	**DT50 (d) 20 °C[b)]**	**St. (x^2)**	**Method of calculation**	**Evaluated on EU level y/n/ Reference**
Gross-Umstadt loam	6.1	20°C / flooded	87.0/ 289.1	0.18	-	10	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Speyer 3A loam	7.2	20°C / flooded	73.4/ 244	0.35	-	10	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)					-			
Arithmetic mean				0.27				

a) pH measured in $CaCl_2$.
b) Normalised using a Q10 of 2.58.

Table 8.3-14: Rate of degradation in soil (anaerobic) laboratory studies transformation products

IN-GK521-Dark anaerobic conditions. Parent dosed studies with precursor for the f.f.: parent								
Soil type / Location	**pH[a)]**	**t. °C / % MWHC**	**DT50 / DT90 (d)**	**f.f.k_f / k_{dp}**	**DT50 (d) 20 °C[b)]**	**St. (x^2)**	**Method of calculation**	**Evaluated on EU level y/n/ Reference**
Speyer 3A loam	7.2	20°C / flooded	67.1 / 223	0.23	-	10	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)					-			
Arithmetic mean				0.23				

a) pH measured in $CaCl_2$.
b) Normalised using a Q10 of 2.58.

8.4 Field studies (KCP 9.1.1.2)

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

8.4.1.1 MCPA and its metabolites

Field studies with the formulation were not performed since it is possible to extrapolate from data obtained with the active substance. These studies have previously been evaluated within an EU peer review process.

8.4.1.2 Tribenuron methyl and its metabolites

Table 8.4-1: Rate of degradation field soil dissipation studies

Tribenuron-methyl, Field studies Aerobic conditions									
Soil type (indicate if bare or cropped soil was used).	**Location (country or USA state).**	**pH a)**	**Depth (cm)**	**DT50 (d) actual**	**DT90 (d) actual**	**St. (χ^2)**	**DT50 (d) Norm[b]**	**Method of calculation**	**Evaluated on EU level y/n/ Reference**
Clay loam (bare)	United Kingdom	7.6	0-30	34.7	115	6	10.4	SFO	y/ EFSA Journal 2017;15(7):4912
Silt loam (bare)	N Germany	6.6	0-30	2.6	8.7	7	2.7	FOMC DT90/3.32	y/ EFSA Journal 2017;15(7):4912
Clay (bare	Spain	8.1	0-30	5.8	19.3	8	5.1	SFO	y/ EFSA Journal 2017;15(7):4912
Loam (bare)	Italy	6.1	0-30	0.5	5.8	4	1.7	FOMC DT90/3.32	y/ EFSA Journal 2017;15(7):4912
Silt loam (bare)	N France	6.5	0-30	1.7 (3.4[c])	11.2	3	5.2	DFOP (slow phase)	y/ EFSA Journal 2017;15(7):4912
Saint Genouph	N France	7.9	0-30	1.5	5.1	-[d]	-[d]	-[d]	y/ EFSA Journal 2017;15(7):4912
Frankenhardt	S Germany	7.2	0-30	5.6	19	-[d]	-[d]	-[d]	y/ EFSA Journal 2017;15(7):4912
Saint Loubert	S France	5.2	0-30	0.58 (4.5[c])	10.7	8.8	2.2	SFO	y/ EFSA Journal 2017;15(7):4912
Villena	Spain	8.2	0-30	2.5 (3.5[c])	11.7	4	3.0	SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							3.6		y/ EFSA Journal 2017;15(7):4912
pH dependence, Yes or No				No					

a) Measured in water.
b) Values are DegT50matrix and normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7. c) Back-calculated DT50; DT50 = DT90/3.32 or slow phase DFOP.
d) Modelling endpoints cannot be calculated due to significant levels of residues of tribenuron-methyl in the deepest sampled soil layer

Table 8.4-2: Summary of aerobic degradation rates for IN-00581 - field studies

IN-00581, Field studies – Aerobic conditions. Parent dosed studies. Precursor for the f.f.: parent										
Soil type	**Location**	**pH a)**	**Depth (cm)**	**DT50 (d) actual**	**DT90 (d) actual**	**St. (x^2)**	**DT50 (d) Norm b)**	**f. f. k_f / k_{dp}**	**Method of calc.**	**Evaluated on EU level y/n/ Reference**
GochNierswalde	N Germany	6.6	0-30	4.5	15.0	9	4.5	0.61	FOMC-SFO	y/ EFSA Journal 2017;15(7):4912
Termens	Spain	8.1	0-30	10.6	35.1	8	10.6	0.39	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Graffignana	Italy	6.1	0-30	7.4	24.7	12	7.4	0.64	FOMC-SFO	y/ EFSA Journal 2017;15(7):4912
Douai	N France	6.5	0-30	6.5	21.6	17	6.5	0.55	FOMC-SFO	y/ EFSA Journal 2017;15(7):4912
Frankenhardt	Germany	6.7	0-30	26.4	87.7	- c)	- c)	- c)	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							6.9			y/ EFSA Journal 2017;15(7):4912
Arithmetic mean								0.55		y/ EFSA Journal 2017;15(7):4912
pH dependence, Yes or No					No					

a) Measured in water.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Modelling endpoints cannot be calculated due to significant levels of residues of tribenuron-methyl in the deepest sampled soil layer

Table 8.4-3: Summary of aerobic degradation rates for IN-L5296- field studies

IN-L5296, Field studies – Aerobic conditions. Parent dosed studies. Precursor for the f.f.: parent										
Soil type	**Location**	**pH a)**	**Depth (cm)**	**DT50 (d) actual**	**DT90 (d) actual**	**St. (x^2)**	**DT50 (d) Norm b)**	**f. f. k_f / k_{dp}**	**Method of calc.**	**Evaluated on EU level y/n/ Reference**
Graffignana	Italy	6.1	0-30	171	1312	- d	- d	- d	DFOP c	y/ EFSA Journal 2017;15(7):4912
Douai	N France	6.5	0-30	431	1433	- d	- d	- d	SFO c	y/ EFSA Journal 2017;15(7):4912
Frankenhardt,	Germany	6.7	0-30	93.8	312	- e	- e	- e	SFO-SFO	y/ EFSA Journal 2017;15(7):4912
Saint Loubert	S France	5.2	0-30	47.5	490	- d	- d	- d	HS c	y/

										EFSA Journal 2017;15(7):4912
Villena	Spain	8.2	0-30	174	578	12	174	0.31	DFOP-SFO	y/ EFSA Journal 2017;15(7):4912
Geometric mean (if not pH dependent)							174			y/ EFSA Journal 2017;15(7):4912
Arithmetic mean								0.31		y/ EFSA Journal 2017;15(7):4912
pH dependence, Yes or No					No					

a) Measured in water.
b) Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7.
c) Decline fit from peak level
d) No acceptable fit for monitoring
e) Modelling endpoints cannot be calculated due to significant levels of residues of tribenuron-methyl in the deepest sampled soil layer

8.4.2 Soil accumulation testing (KCP 9.1.1.2.2)

MCPA

No studies on soil accumulation were conducted, none deemed necessary.

Tribenuron methyl

No study available, not requested. For calculated PEC,plateau see section on PECsoil (EFSA Journal 2017;15(7):4912)

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 both active substances.

8.5.1 MCPA and its metabolites

The results of the adsorption/desorption studies in the soil for above active substance are presented below. These studies were evaluated during EU reviews. The relevant endpoints are provided in SANCO/4062/2001 - final of 11.07.2008. Full summaries of studies are presented in respective EU DAR. No additional studies have been performed.

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

Soil selection	Kd (mL/g)	Kf (mL/g)	Koc (mL/g)			1/n (-)		
	range	range	range	mean	median	range	mean	median
8 soils (USA)	0.05-1.99	0.21-1.11	10-157	74	-	0.5-0.72	0.68	-
pH dependence	Yes. Adsorption coefficients decrease with increasing of soil pH value; this effect is significant in the whole environmentally significant pH range							

* based on the observed pH dependency and the fact that no pH-KfOC relationship is available. The lowest KfOC value (10 L/kg) in combination with the arithmetic mean 1/n (0.68) should be used for groundwater exposure modelling, according to the

recommendation to use a realistic worst-case conservative estimate (generic guidance groundwater, version 2.2, 2014[1])

8.5.2 Tribenuron methyl and its metabolites

Table 8.5-2: Summary of soil adsorption/desorption for Tribenuron-methyl

Tribenuron-methyl								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
LRA A0, Sandy loam	1.51	5.4			0.98	65.3	0.99	y/ EFSA Journal 2017;15(7):4912
LR AD, Silty clay	2.61	5.7			0.63	24.2	0.99	
Tama, Loam	1.91	5.4			1.12	58.9	1.11	
Lleida, Silty clay	1.1	7.7			0.05	4.55	0.92	
Nambsheim, Sandy loam	1.45	7.3			0.12	8	0.99	
Gross-Umstadt, Silt loam	1.2	7.7			0.1	9.8	0.99	
Arrow, Sandy loam	2.3	5.7			1.7	73.7	0.9	
Mattapex, Silt loam	2.6	6.4			0.3	11.3	0.99	
Matapeake, Loam	1.7	6.5			0.8	44.6	0.92	
Nambsheim, Sandy loam	0.7	8.2			0.1	15.1	1.08	
Geometric mean (if not pH dependent) **						(21.3)	-	
Arithmetic mean							0.99	
pH-dependency y/n						y		
Geometric mean for pH < 7 => $K_{F, OC}$ = 38.9 (36.7–41.0)* l/kg_{OC} (n = 6) Geometric mean for pH > 7 => $K_{F, OC}$ = 8.6 (6.4–10.8)* l/kg_{OC} (n = 4)								

a) All 10 soil pH-values were measured in calcium chloride 0.01 M with a soil:solution ratio 1:1 or 1:2.
* Ranges in paranthesis is the 95% confidence interval (from Excel Add In Analysis ToolPak)

Table 8.5-3: Summary of soil adsorption/desorption for M2

M2								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
LRA J3, Clay loam	1.8	7.5			1.74	96.5	0.85	y/ EFSA Journal 2017;15(7):4912
Fislis, Silty clay loam	2.2	6.1			2.18	98.9	0.88	
Speyer 2.2 *	1.6	5.5	-	-	0.637	39.5	0.84	
Geometric mean (if not pH dependent)						72.2	-	
Arithmetic mean (if not pH dependent)							0.86	

[1] Generic Guidance for Tier 1 FOCUS Ground Water Assessments , 2014, https://esdac.jrc.ec.europa.eu/public_path/projects_data/focus/gw/NewDocs/GenericGuidance2_2.pdf

M2								
Soil name/ type	**OC (%)**	**Soil pH[a)]**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
pH-dependency y/n						No (only two samples)		

a) Measured in 0.01 M calcium chloride solution, soil: solution ratio was not stated (for pH).
* will depend on outcome of Evaluation Table (Data Requirement 4.6 + Data Requirement 4.9) and the corresponding Reporting

Table 8.5-4: Summary of soil adsorption/desorption for IN-00581

Metabolite Saccharin (IN-00581)								
Soil name/ type	**OC (%)**	**Soil pH**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Gross- Umstadt, Silt loam	1.2	7.7 [f]			0.2	20.2	0.94	y/ EFSA Journal 2017;15(7):4912
Arrow, Sandy loam	2.3	5.7 [f]			0.3	14.2	0.88	
Mattapex, Silt loam	2.6	6.4 [f]			0.3	11.7	0.94	
2.2, Loamy sand	1.97	5.4 [a]	0.09 [c]	4.4 [c]	Na	Na	Na	
3A, Sandy loam	2.42	7.3 [a]	0.04 [c]	1.5 [c]	Na	Na	Na	
6S, Clay loam	1.84	6.9 [a]	0.06 [c]	3 [c]	Na	Na	Na	
BBA 2.2 loamy sand e	2.5	6.1 [b]			0.13 [d]	5.2 [d]	0.95 [d]	
Höfchen silt e	2.7	7.8 [b]			0.12 [d]	4.6 [d]	0.94 [d]	
Laacherhof silt loam e	0.86	8.1 [b]			0.044 [d]	5.2 [d]	0.97 [d]	
Ephrata loamy sand e	0.37	6.8 [b]			0.025 [d]	6.7 [d]	0.95 [d]	
Stilwell silty clay e	1.6	6.7 [b]			0.25 [d]	15.5 [d]	0.92 [d]	
Speyer 2.1 sand e	0.56	6 [f]			0.01	1.8	0.92	
Soil 115 clay loam e	1.7	7.4 [f]			0.038	2.2	0.71	
Soil 164 silt loam e	3	6.5 [f]			0.125	4.2	0.93	
Soil 243 sandy loam e	1.1	4.3 [f]			0.0445	4	1.01	
Maryland clay e	-	-			-	3	0.94	
Maryland sandy loam e	-	-			-	3	1.05	
California loam e	-	-			-	6	0.53	
Geometric mean (if not pH dependent)						5.6	-	
Arithmetic mean (if not pH dependent)							0.90	
pH-dependency y/n						No		

a) Measured in [medium to be stated, usually calcium chloride solution or water].
b) Measured in H_2O.
c) at 19–20 mg/l.
d) Results for all soils are considered uncertain/highly uncertain (low adsorption; product [Kd x (soil:solution ratio)] <0.3).
e) Results from other dossiers, refer to EFSA conclusions on the peer review of the active substance metsulfuronmethyl (EFSA, 2015), propoxycarbazone (EFSA, 2016) and oxasulfuron (EFSA, in progress).
f) Medium not stated.

Na: not analyzed for isotherm (only Tier 1 & 2).

Table 8.5-5: Summary of soil adsorption/desorption for IN-A4098

Metabolite IN-A4098 (a.k.a. AE F059411, CGA150829, triazine amine, 2-amino-4-methoxy-6-methyl-triazin, 4-methoxy-6methyl-1,3,5-triazin-2-amine, BCS-CN85650)								
Soil name/ type	**OC (%)**	**Soil pH**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Gross- Umstadt, Silt loam	1.2	7.7 [c]			0.225	18.8	1.05	y/ EFSA Journal 2017;15(7):4912
Arrow, Sandy loam	2.3	5.7 [c]			0.682	29.7	0.94	
Mattapex, Silt loam	2.6	6.4 [c]			0.433	16.7	0.96	
SL S, silt loam	2.1	7.0 [a]			0.433	21.3	0.87	
LS 2.2, loamy sand	2.0	6.0 [a]			0.298	15.3	0.91	
SL V , sandy loam	0.4	6.0 [a]			0.315	73.3	0.84	
3A, Silty Sand	2.42	7.3 [a]			0.435	17.97	0.76	
6S, Sandy Loam	1.84	6.9 [a]			0.0543	2.951	1.42	
2.2, Clay Loam	1.97	5.4 [a]			0.3728	18.92	0.64	
Myaka, sandy soil	0.58	6.2 [a]			0.264	46	0.87	
Sassafras, sandy loam	0.46	6.3 [a]			0.621	134	0.78	
Matapeake, silt loam	1.1	5.3 [a]			2.36	214	0.84	
Drummer, silty clay loam	3	5.7 [a]			6.8	226	0.84	
Laacher Hof Wurmwiese, loam	1.8	5.3 [b]			1.321	73.4	0.92	
Hoefchen Am Hohenseh 4a, silt loam	2.4	6.6 [b]			0.481	20.0	0.98	
Les Cayades, clay loam	0.9	7.6 [b]			0.561	62.3	0.92	
Guadalupe, sandy loam	0.7	6.7 [b]			0.675	96.5	0.95	
Springfield, silt loam	1.7	6.6 [b]			3.147	185.1	0.90	
Honville loamy silt d	0.9	6.7 [a]						
Speyer 2.1 d	0.56	6.0 [e]						
Standard soil no. 115 d	1.7	7.4 [e]						
Standard soil no. 164 d	3	6.5 [e]						
Standard soil no. 243 d	1.1	4.3 [e]						
Agricultural sand §	0.35	7.9 [a]						
Sandy Loam §	0.99	7.8 [a]						
Silt Loam §	1.7	6.5 [a]						
Silty Clay Loam §	0.70	6.9 [a]						
Geometric mean (if not pH dependent)						45.6	-	
Arithmetic mean (if not pH dependent)							0.90	

Metabolite IN-A4098 (a.k.a. AE F059411, CGA150829, triazine amine, 2-amino-4-methoxy-6-methyl-triazin, 4-methoxy-6methyl-1,3,5-triazin-2-amine, BCS-CN85650)								
Soil name/ type	**OC (%)**	**Soil pH**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Median (since N > 9)						46	-	
pH-dependency y/n						No (no correlation of $K_{F,OC}$ versus pH, neither for log $K_{F,OC}$ versus pH)		

a) Solution in which pH was measured is not stated.
b) Measured in $CaCl_2$.
c) Reported as "pH in H_2O".
§ Kesterson (1990) study (values agreed in the EFSA Conclusion on iodosulfuron-methyl-sodium)

Table 8.5-6: Summary of soil adsorption/desorption for IN-D5119

Metabolite IN-D5119								
Soil name/ type	**OC (%)**	**Soil pH**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Drummer, Clay Loam	2.9	6.4 [a]			0.19	7	0.96	y/ EFSA Journal 2017;15(7):4912
Porterville, Loam	0.5	8.2 [a]			0.02	4	0.84	
Nambsheim, Sandy Loam	1.4	7.7 [a]			0.04	3	1.00	
Lleida, Silty Clay	1.8	7.6 [a]			0.09	2	0.83	
Sassafras #16, Sandy Loam	1.2	5.7[a]				8	0.99	
Soil 2.2, Loamy sand	1.97	5.4 [b]	0.056	3.6	-	-	-	
LUFA Speyer 2.2 loamy sand	1.87	5.5 [b]				3	1.01	
LUFA Speyer 2.3 sandy loam	0.94	6.8 [b]				3	1.02	
LUFA Speyer 6S clay	1.64	7.1 [b]				3	0.96	
Geometric mean (if not pH dependent)						3.5	-	
Arithmetic mean (if not pH dependent)							0.92	
pH-dependency y/n						No		

a) Measured in 0.01 M $CaCl_2$ and soil:solution ratio 1:2.
b) Solution composition is not stated.

Table 8.5-7: Summary of soil adsorption/desorption for IN-D5803

Metabolite IN-D5803								
Soil name/ type	**OC (%)**	**Soil pH [a)]**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Soil 2.2, Loamy sand	1.97	5.4 [a]	0.29 [c]	14.7 [c]	-	-	-	y/

Metabolite IN-D5803								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Soil 3A, Sandy loam	2.42	7.3 [a]	0.54 [d]	22.3 [d]	-	-	--	EFSA Journal 2017;15(7):4912
Soil 6S, Clay loam	1.84	6.9 [a]	0.70 [d]	37.8 [d]	-	-	-	
Drummer, Clay Loam	2.9	6.4 [b]			1.25	43.2	0.92	
Porterville, Loam	0.5	8.2 [b]			0.05	11.0	0.86	
Nambsheim, Sandy Loam	1.4	7.7 [b]			0.11	7.58	0.84	
Lleida, Silty Clay	1.8	7.6 [b]			0.33	18.5	0.98	
Sassafras #16, Sandy Loam	1.2	5.7 [b]			0.28	23.7	0.95	
Geometric mean (if not pH dependent)						17.7	-	
Arithmetic mean (if not pH dependent)							0.91	
pH-dependency y/n						No (p > 0.05 for correlations investigated)		

a) Solution composition not stated.
b) In 0.01 M $CaCl_2$.
c) at 15 mg/l. d) at 8 mg/l.

Table 8.5-8: Summary of soil adsorption/desorption for IN-GK521

Metabolite IN-GK521								
Soil name/ type	**OC (%)**	**Soil pH**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Gross-Umstadt, loam	1.04	7.4 [a]			0.277	27.7	1.02	y/ EFSA Journal 2017;15(7):4912
Lleida, Silty Clay	1.86	8 [a]			0.238	12.5	1.00	
Tama, Silty clay loam	1.97	6.2 [a]			0.98	14.9	1.01	
Nambsheim, Sandy loam	1.28	7.8 [a]			0.222	17.1	1.05	
Sassafras, Loamy sand	0.75	5 [a]			0.12	15.0	1.05	
LRA J3, Clay loam	1.8	7.5 [a]	0.24 [b]	14 [b]	-	-	-	
Geometric mean (if not pH dependent)						16.8	-	
Arithmetic mean (if not pH dependent)							1.03	
pH-dependency y/n						No (no linear correlation found; U-curve not further investigated)		

a) In 0.01 M calcium chloride and soil:solution ratio 1:1.
b) At 0.6–1 mg/l.

Table 8.5-9: Summary of soil adsorption/desorption for IN-GN815

Metabolite IN-GN815								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Gross-Umstadt, Loam	1.04	7.4			0.189	18.9	1.01	y/ EFSA Journal 2017;15(7):4912
Lleida, Clay	1.97	7.7			0.222	11.1	1.00	
Tama, Silty clay loam	2.49	6			0.332	13.3	1.00	
Nambsheim, Sandy loam	1.39	7.7			0.468	33.4	0.98	
Sassafras, Loamy sand	1.21	5.4			0.131	10.9	0.99	
Geometric mean (if not pH dependent)						15.9	-	
Arithmetic mean (if not pH dependent)							1.00	
pH-dependency y/n						No (p > 0.05 for correlations investigated)		

a) Measured in 0.01 calcium chloride solution, and soil:solution ratio 1:1.

Table 8.5-10: Summary of soil adsorption/desorption for IN-L5296

Metabolite IN-L5296								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Gross- Umstadt, Silt loam	1.2	7.7			0.929	77.4	0.72	y/ EFSA Journal 2017;15(7):4912
Arrow, Sandy loam	2.3	5.7			3.18	138	0.82	
Mattapex, Silt loam	2.6	6.4			1.37	52.7	0.89	
Geometric mean (if not pH dependent)						82.6	-	
Arithmetic mean (if not pH dependent)							0.80	
pH-dependency y/n						No		

a) reported as “pH water”.

Table 8.5-11: Summary of soil adsorption/desorption for IN-R9803

Metabolite IN-R9803								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Speyer 2.2, Sandy loam	1.6	5.4			0.315	19.7	1.04	y/ EFSA Journal 2017;15(7):4912
Lleida, Silty Clay	1.9	7.7			0.943	49.6	0.98	
Tama, Silty clay loam	2.3	6.2			0.724	31.5	1.00	
Nambsheim, Sandy loam	1.6	7.6			0.963	60.2	0.98	

Metabolite IN-R9803								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Cajon, loam	0.7	7.6			1.25	178.6	1.07	
Geometric mean (if not pH dependent)						50.6	-	
Arithmetic mean (if not pH dependent)							1.00	
pH-dependency y/n						No (p > 0.05)		

a) Measured in 0.01 M calcium chloride solution, and soil:solution ratio 1:1.

Table 8.5-12: Summary of soil adsorption/desorption for IN-R9805

Metabolite IN-R9805								
Soil name/ type	**OC (%)**	**Soil pH a)**	**K_d(mL/g)**	**K_{doc}(mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n (-)**	**Evaluated on EU level y/n/ Reference**
Nambsheim, Sandy loam	1.5	7.8			0.30	20	0.95	y/ EFSA Journal 2017;15(7):4912
Tama, Silty clay loam	1.1	6.2			16.6	1509	0.93	
Porterville, Loam	0.46	8.0			0.49	107	0.95	
Gross-Umstadt, Loam	1.2	6.6			0.45	37.5	0.91	
LRA-D, Sandy loam	3.0	5.6			0.49	16.3	0.96	
Geometric mean (if not pH dependent)						105	-	
Arithmetic mean (if not pH dependent)							0.93	
pH-dependency y/n						No (no linear correlations, but possibly an inverted-U relation; not further invetigasted)		

a) Measured in 0.01 M calcium chloride solution, and soil:solution ratio 1:1.

8.5.3 Column leaching (KCP 9.1.2.1)

MCPA

No data submitted and none required

Tribenuron methyl

Not available, not requested. (EFSA Journal 2017;15(7):4912)

8.5.4 Lysimeter studies (KCP 9.1.2.2)

Lysimeter studies with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substances.

MCPA

These studies have previously been evaluated within an EU peer re-view process. The relevant endpoints are provided in SANCO/4062/2001 - final of 11.07.2008. Full summaries of studies are presented in respective EU DAR. No additional studies have been performed.

Tribenuron methyl

According to EFSA Journal 2017;15(7):4912, the following Lysimeter/ field leaching study is available:

Location: Germany	EFSA Journal 2017;15(7):4912
Study type: lysimeter	
Soil properties: clayey silt loam, pH = 6.5-6.9, OC= , ≤1.1%	
Dates of application: 18 May 1999, end of study 8th November 2000	
Crop: Non-cropped conditions	
Number of applications: 1	
Application rate: 37-40 g/as/ha	
Average annual rainfall (mm): total 1170 mm, approx. 780 mm/year	
Average annual leachate volume (mm): total 540 mm, approx. 360 mm/year	
% radioactivity in leachate (maximum/year): max <0.003% AR (first leachate after two weeks)	
Amount of radioactivity in the soils at the end of the study = 36%	
Note that the lysimeter results are only considered as supportive information.	
The results should not be used for risk assessment.	

8.5.5 Field leaching studies (KCP 9.1.2.3)

Lysimeter studies with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substances.

MCPA

These studies have previously been evaluated within an EU peer re-view process. The relevant endpoints are provided in SANCO/4062/2001 - final of 11.07.2008. Full summaries of studies are presented in respective EU DAR. No additional studies have been performed

Tribenuron methyl

See point 8.5.4

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 substances and metabolites as presented below.

8.6.1 MCPA and its metabolites

These studies have previously been evaluated within an EU peer review process. The relevant endpoints are provided in SANCO/4062/2001 - final of 11.07.2008. Full summaries of studies are presented in respective EU DAR.

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

Water/sediment system	$DegT_{50}$ / $DegT_{90}$ whole system	Method of calculation, Fit	$DissT_{50}$/ $DissT_{90}$ water	Method of calculation, Fit	$DissT_{50}$/ $DissT_{90}$ sed.	Method of calculation, Fit	Reference
I) Kromme Rijn, Clay loam	16.9/56.2	SFO 0.889	13.6/-	SFO 0.962	n.a.	-	(SANCO/4062/2001-final – 11/06/2008)
II) TNO, Sandy clay loam	16.9/56.2	SFO 0.882	13.3/-	SFO 0.908	n.a.	-	
Geometric mean DT_{50} (n=2)	16.9						

8.6.2 Tribenuron-methyl and its metabolites

Table 8.6-2: Summary of degradation in water/sediment of Tribenuron-methyl

Tribenuron-methyl Distribution; mainly distributed to water phase										
Water/sediment system	**pH water phase**	**pH sed[a)]**	**t. °C**	**DT50/ DT90 whole syst. (d)**	**St. (χ2)**	**DT50 / DT90 water[b] (d)**	**St. (χ2)**	**DT50 /DT90 sed[c] (d)**	**St. (χ2)**	**Evaluated on EU level y/n/ Reference**
Brandywine river	6.8-8.3	6.5-7.5	20	26.2/ 86.9	7	22.5/ 74.8	7	18.8/87.6[c)]	4	y/ EFSA Journal 2017;15(7):4912
Lums pond	4.9-7.7	4.9-5.4	20	12.6/ 42.1	7-19[d)]	10.7/ 41.1	8-19[d)]	10.1/33.6	31-35 [d)]	
Geometric mean at 20°C[b)]				18.2		-		-		

a) Measured in water.
b) DisT50/DisT90 in water column
c) DisT50/DisT90 in sediment (decline from peak)
d) Range of χ2-error from the fitting of data derived with two different radiolabels.

Table 8.6-3: Summary of observed metabolites

IN-L5296 Water/sediment system	Distribution; up to 88.9% (total system, 56 d), max 42% in water (14 d), max 86% in sediment (56 d)	y/ EFSA Journal 2017;15(7):4912
IN-00581 Water/sediment system	Distribution; up to 38.4% (total system, 14 d), max 32% in water (14 d), max 6.4% in sediment (14 d)	y/ EFSA Journal 2017;15(7):4912
IN-D5119 Water/sediment system	Distribution; up to 26.5% (total system, 56 d), max 19% in water (56 d), max 7.5% in sediment (56 d)	y/ EFSA Journal 2017;15(7):4912

IN-GN815 Water/sediment system	Distribution; up to 13% (total system, 29 d), max 5.7% in water (42 d), max 9.2% in sediment (29 d)	y/ EFSA Journal 2017;15(7):4912
IN-R9805 Water/sediment system	Distribution; up to 14.7% (total system, 71 d), max 9% in water (71 d), max 5.7% in sediment (71 d)	y/ EFSA Journal 2017;15(7):4912

8.7 Predicted Environmental Concentrations in soil (PEC_{soil}) (KCP 9.1.3)

zRMS Comments:

The used endpoints for both active substances used in PECs assessment were agreed at the EU level.

The submitted PEC_S values for tribenuron-methyl applied at rate of 15.0 g a.s./ha and for MCPA at rate of 550 g a.s./ha with no interception were accepted.

The PECs values for metabolites were accepted.

Tribenuron-methyl. The initial PEC_S values for active substance and its metabolites are presented in following table:

Winter cereals in autumn and spring application at rate of 15.0 g a.s./ha

Compound	**PECs mg/kg soil**	**PECs, accum mg/kg soil**
Tribenuron-methyl	0.020	nr
IN-L5296	0.0067	0.0092
IN-A4098	0.0009	0.0010
IN-00581	0.0031	0.0035
IN-D5803	0.0051	nr
IN-R9805	0.0005	0.0007
M2	0.0016	nr
IN-GK521	0.0062	nr
IN-R9803	0.0018	nr

nr – not relevant

MCPA. The initial PEC_S values for active substance was assessed of 0.7333 mg a.s./kg soil.

Formulation. The application rate of formulation of 1000 g formulation/ha was used in PECs assessment; the PECs = 1.333 mg/kg soil.

These values will be used in further risk assessment.

There are no deviations from the EU agreed endpoints.

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

For determination of the predicted environmental concentrations of the active substances and relevant metabolites in soil the following guideline was used: “Soil persistence models and EU registration” (The final report of the work of the Soil Modelling Work group of FOCUS).

The PEC of MCPA and tribenuron methyl and its relevant metabolites in soil have been assessed with the ESCAPE model (version 2.0), the focus groundwater interception values taken from FOCUS guidance (Generic Guidance for Tier 1 FOCUS Ground Water Assessments (version: 2.2, May 2014) and the maximum DT_{50} values established in the EU peer review for active substances.

The PEC of MCPA have been assessed with the FOCUS model, FOCUS groundwater interception values and the max. DT_{50} values established in the EU review i.e. SANCO/4062/2001 - final of 11.07.2008. During the degradation studies of MCPA in soil, no significant metabolites were found. Therefore, no predicted environmental concentrations in soil for metabolites were calculated.

The endpoints used for the risk assessment of the product are those presented in EFSA Journal 2017;15(7):4912 for the active substance of tribenuron methyl and its metabolites. Table 8.7-1 and 8.7-2 provide the input parameters used in the PEC_{soil} calculations.

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

Use No.	1-5
Crop	Winter wheat, winter rye, winter triticale, winter barley Spring wheat, spring barley
Application rate (g as/ha)	MCPA - 550 g as/ha tribenuron-methyl - 15 g as/ha
Number of applications/interval	n.a
Crop interception (%)	0 %
Depth of soil layer (relevant for plateau concentration) (cm)	20 cm

Table 8.7-2: Input parameter for active substance of tribenuron-methyl and relevant metabolites for PEC_{soil} calculation

Compound	**Molecular weight (g/mol)**	**Max. occurrence (%)**	**Max. DT_{50} (days)**	**Value in accordance to EU endpoint y/n/ Reference**
tribenuron methyl	395.4	-	DT50 (d): 34.7 days from field dissipation study (SFO Kinetics)	Yes / EFSA Journal 2017;15(7):4912
IN-L5296	154.2	85.7	505	Yes / EFSA Journal 2017;15(7):4912
IN-A4098	140.1	12.6	260.1	Yes / EFSA Journal 2017;15(7):4912
IN-00581	183.2	33.9	237.4	Yes / EFSA Journal 2017;15(7):4912
IN-D5803*	215.2	46.6	26.4	Yes / EFSA Journal 2017;15(7):4912
IN-R9805*	140.2	7.6	380	Yes / EFSA Journal 2017;15(7):4912

Compound	Molecular weight (g/mol)	Max. occurrence (%)	Max. DT_{50} (days)	Value in accordance to EU endpoint y/n/ Reference
M2	197.2	16.2	73.2	Yes / EFSA Journal 2017;15(7):4912
IN-GK521	381.4	32.1	51.9	Yes / EFSA Journal 2017;15(7):4912
IN-R9803	381.4	9.1	18.2	Yes / EFSA Journal 2017;15(7):4912

**According to experts' consultation (PPR TC 139, March 2017) it was agreed not to consider metabolite IN-R9803 and IN-D5803in the risk assessment*

Table 8.7-3: Input parameter for active substance of MCPA and relevant metabolites for PEC_{soil} calculation

Compound	Molecular weight (g/mol)	Max. occurrence (%)	Max. DT_{50} (days)	Value in accordance to EU endpoint y/n/ Reference
MCPA	200.6	-	41.0	Yes / SANCO/4062/2001 - final of 11.07.2008

8.7.1.1 Tribenuron-methyl

Table 8.7-4: PEC_{soil} for tribenuron metyl on spring cereals (spring spraying) and wintercereals (autumn and spring spraying)

PEC_{soil} (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.020	-	-	-
Short term	24h	0.0196	0.0198	Not required	Not required
	2d	0.0192	0.0196		
	4d	0.0185	0.0192		
Long term	7d	0.0174	0.0187		
	14d	0.0151	0.0174		
	21d	0.0131	0.0163		
	28d	0.0114	0.0153		
	42d	0.0086	0.0135		
	50d	0.0074	0.0126		
	100d	0.0027	0.0087		
Plateau concentration		Not required	-		-
$PEC_{accumulation}$ (PEC_{act} + $PEC_{soil\ plateau}$)		Not required			

PEC$_{soil}$ of metabolites

PECsoil calculations were performed for a standard soil considering a dry soil bulk density of 1.5 g/cm3 and 5 cm soil depth in agreement with the recommendation of the EU guideline FOCUS (1997). For accumulation, the standard tillage depth of 20 cm for annual field crops was considered.

Table 8.7-5: PEC$_{soil}$ for IN-L5296 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC$_{soil}$ (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0067	-	-	-
Short term	24h	0.0067	0.0067	Not required	Not required
	2d	0.0067	0.0067		
	4d	0.0066	0.0067		
Long term	7d	0.0066	0.0066		
	14d	0.0066	0.0066		
	21d	0.0065	0.0066		
	28d	0.0064	0.0066		
	42d	0.0063	0.0065		
	50d	0.0062	0.0065		
	100d	0.0058	0.0062		
Plateau concentration (20 cm) after year 10		0.0026			-
PEC$_{accumulation}$ (PEC$_{act}$ +PEC$_{soil\ plateau}$)		0.0092			

Table 8.7-6: PEC$_{soil}$ for IN-A4098 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC$_{soil}$ (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0009	-	-	-
Short term	24h	0.0009	0.0009	Not required	Not required
	2d	0.0009	0.0009		
	4d	0.0009	0.0009		
Long term	7d	0.0009	0.0009		
	14d	0.0009	0.0009		
	21d	0.0008	0.0009		

	28d	0.0008	0.0009		
	42d	0.0008	0.0008		
	50d	0.0008	0.0008		
	100d	0.0007	0.0008		
Plateau concentration (20 cm) after year 10		0.0001			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0010			

Table 8.7-7: PEC_{soil} for IN-00581 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC_{soil} (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0031	-	-	-
Short term	24h	0.0031	0.0031	Not required	Not required
	2d	0.0031	0.0031		
	4d	0.0031	0.0031		
Long term	7d	0.0031	0.0031		
	14d	0.0030	0.0031		
	21d	0.0030	0.0031		
	28d	0.0029	0.0030		
	42d	0.0028	0.0030		
	50d	0.0027	0.0029		
	100d	0.0023	0.0027		
Plateau concentration (20 cm) after year 10		0.0004			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0035			

Table 8.7-8: PEC_{soil} for IN-D5803 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC_{soil} (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0051	-	-	-
Short term	24h	0.0049	0.0050	Not required	Not required
	2d	0.0048	0.0049		
	4d	0.0046	0.0048		
Long term	7d	0.0042	0.0046		

	14d	0.0035	0.0042		
	21d	0.0029	0.0039		
	28d	0.0024	0.0036		
	42d	0.0017	0.0031		
	50d	0.0014	0.0028		
	100d	0.0004	0.0018		
Plateau concentration (20 cm) after year 10		Not required	-	-	-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		Not required			

Table 8.7-9: PEC_{soil} for IN-R9805 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC_{soil} (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0005	-	-	-
Short term	24h	0.0005	0.0005	Not required	Not required
	2d	0.0005	0.0005		
	4d	0.0005	0.0005		
Long term	7d	0.0005	0.0005		
	14d	0.0005	0.0005		
	21d	0.0005	0.0005		
	28d	0.0005	0.0005		
	42d	0.0005	0.0005		
	50d	0.0005	0.0005		
	100d	0.0004	0.0005		
Plateau concentration (20 cm) after year 11		0.0001	-	-	-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0007			

Table 8.7-10: PEC_{soil} for M2 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC_{soil} (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0016	-	-	-
Short term	24h	0.0016	0.0016	Not required	Not required
	2d	0.0016	0.0016		

	4d	0.0016	0.0016		
Long term	7d	0.0015	0.0016		
	14d	0.0014	0.0015		
	21d	0.0013	0.0015		
	28d	0.0012	0.0014		
	42d	0.0011	0.0013		
	50d	0.0010	0.0013		
	100d	0.0006	0.0010		
Plateau concentration (20 cm) after year 10		Not required	-	-	-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		Not required			

Table 8.7-11: PEC_{soil} for GK521 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC_{soil} (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0062	-	-	-
Short term	24h	0.0061	0.0061	Not required	Not required
	2d	0.0060	0.0061		
	4d	0.0059	0.0060		
Long term	7d	0.0056	0.0059		
	14d	0.0051	0.0056		
	21d	0.0047	0.0054		
	28d	0.0043	0.0052		
	42d	0.0035	0.0047		
	50d	0.0032	0.0045		
	100d	0.0016	0.0034		
Plateau concentration (20 cm) after year 10		Not required	-	-	-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		Not required			

Table 8.7-12: PEC_{soil} for R9803 on spring cereals (spring spraying) and winter cereals (autumn and spring spraying)

PEC_{soil} (mg/kg)	spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
	Single application		Multiple applications	
	Actual	TWA	Actual	TWA
Initial	0.0018	-	-	-

Short term	24h	0.0017	0.0017	Not required	Not required
	2d	0.0016	0.0017		
	4d	0.0015	0.0016		
Long term	7d	0.0013	0.0015		
	14d	0.0010	0.0014		
	21d	0.0008	0.0012		
	28d	0.0006	0.0011		
	42d	0.0004	0.0009		
	50d	0.0003	0.0008		
	100d	<0.0001	0.0005		
Plateau concentration (20 cm) after year 10		Not required	-	-	-
$PEC_{accumulation}$ (PEC_{act} + $PEC_{soil\ plateau}$)		Not required			

8.7.1.2 MCPA and its metabolites

Table 8.7-13: PEC_{soil} for MCPA on winter & spring cereals

PEC_{soil} (mg/kg)		spring cereals (spring spraying) and winter cereals (autumn and spring spraying)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.7333	-	-	-
Short term	24h	0.7210	0.7272	Not required	Not required
	2d	0.7090	0.7211		
	4d	0.6854	0.7091		
Long term	7d	0.6515	0.6916		
	14d	0.5788	0.6530		
	21d	0.5142	0.6173		
	28d	0.4588	0.5842		
	42d	0.3605	0.5251		
	50d	0.3149	0.4950		
	100d	0.1352	0.3538		
Plateau concentration		not required		-	-
$PEC_{accumulation}$ (PEC_{act} + $PEC_{soil\ plateau}$)		not required			

8.7.1.3 PEC_{soil} of HAKSAR TOP 565 SG

Table 8.7-3: PEC_{soil} for HAKSAR TOP 565 SG on winter and spring cereals

Active substances	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)
MCPA and Tribenuron-methyl	1000	1.333	NA	5	Not required	Not required

*based on the recommended crop interception, soil density of 1.5 g/cm^3 and soil depth of 5 cm

8.8 Predicted Environmental Concentrations in groundwater (PEC_{gw}) (KCP 9.2.4)

zRMS Comments:	Calculations of PEC_{GW} for active substances and their relevant metabolites were accepted. The recommended FOCUS models were used: FOCUS PELMO, FOCUS PEARL and FOCUS MACRO. All used endpoints were agreed at the EU level. For winter and spring cereals and grasses the relevant application rates were considered. The proposed application dates were accepted. The plant uptake factor of 0 was used for both active substances and relevant metabolites. An interception of 0% for winters & spring cereals (represents the worst case) and 60% for grasses were taken into consideration, so submitted calculations were accepted. **Tribenuron-methyl**. For tribenuron-methyl the pH dependence approach was considered and accepted. The geometric mean of Kfoc was used. A tiered approach was taken into consideration: Tier 1 with DT_{50} = 5.4 d (lab) (pH <7), 16.7 days (pH >7), and Tier 2 with DT_{50} = 3.6 d (field) and was accepted. **Winter cereals**. As the soil pH dependency (acidic and alkaline soils) was considered**; for alkaline soils the autumn application in winter cereals is acceptable if the formulation is used every third year.** The relevant mitigation measures will be decided at the Member State level. **Spring cereals**. Based on Tier 2 modelling results, the maximum PEC_{GW} values for active substance were below the trigger value of 0.1 µg/L. **Grass and Miscanthus**. Based on Tier 2 modelling results, the maximum PEC_{GW} values for active substance were below the trigger value of 0.1 µg/L. The metabolite relevance (PEC_{GW} values above 0.1 µg/L) was considered in Section 10. **MCPA**. For active substance the pH dependence approach was considered and accepted. The lowest value of Koc was used. A tiered approach was taken into consideration: Tier 1: no pH dependence and Tier 2: pH dependence – acidic, neutral and alkaline soils. The maximum PEC_{GW} values for MCPA in all scenarios were below the trigger value of 0.1 µg/L.

8.8.1 Justification for new endpoints

No new endpoints presented.

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

Details of the substances and use input parameters used in groundwater modelling are presented in the following tables.

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

Use No.	1-10			
Crop	Winter cereals	Spring cereals	Winter cereals	Grass
Application rate (kg as/ha)	active substance 1: MCPA: 550 (g as/ha) active substance 2: tribenuron-methyl: 15 (g as/ha)			
Application time	spring application		autumn spraying	spring application
Number of applications/interval (d)	1/ Not applicable			
Relative application date	-	10 days after crop emergence		-
Crop interception (%)	0			60%
Frequency of application	annual application		triennial application	annual application
Models used for calculation	FOCUS PEARL v4.4.4, FOCUS PELMO v5.5.3, FOCUS MACRO v5.5.3			FOCUS PEARL v4.4.4, FOCUS PELMO v5.5.3

Table 8.8-2: Application dates used for groundwater risk assessment

Crop	Scenario	Application dates (absolute)
winter cereals (*spring spraying*)	Châteaudun	1st April
	Hamburg	
	Jokioinen	
	Kremsmünster	
	Okehampton	
	Piacenza	
	Porto	
	Sevilla	
	Thiva	
Grass	Châteaudun	1st March (for all scenarios)
	Hamburg	
	Kremsmünster	

Table 8.8-3: Application dates for growth stages estimated using AppDate 3.05

Individual crop	**Winter Cereals, autumn app.**		**Spring cereals, spring app.**	
Scenario	Emergence date		Emergence date	
	Date	Julian day	Date	Julian day
Châteaudun	26.10	299	10.03	69
Hamburg	01.11	305	01.04	91
Jokioinen	20.09	263	18.05	138
Kremsmünster	05.11	309	01.04	91
Okehampton	17.10	290	01.04	91
Piacenza	01.12	335	-	-
Porto	30.11	334	10.03	69
Sevilla	30.11	334	-	-
Thiva	30.11	334	-	-

8.8.2.1 MCPA

Table 8.8-4: Input parameters related to active substance MCPA for PEC_{GW} calculations

<table>
<tr><th colspan="2">Compound</th><th>MCPA</th><th>Value in accordance to EU endpoint y/n
Reference</th></tr>
<tr><td colspan="2">Molecular weight (g/mol)</td><td>200.6</td><td>Yes / SANCO/4062/2001 - final of 11.07.2008</td></tr>
<tr><td colspan="2">Solubility in water (mg/L) at 25°C (at pH7)</td><td>293900</td><td>Yes / SANCO/4062/2001 - final of 11.07.2008</td></tr>
<tr><td colspan="2">Henry's Law constant
($Pa \cdot m^3/mol$) at 25°C</td><td>5.5×10^{-5}</td><td>Yes / SANCO/4062/2001 - final of 11.07.2008</td></tr>
<tr><td colspan="2">Saturated vapour pressure (Pa)
at 32°C (set to 30 °C in PEARL as this is the upper limit in the model)</td><td>4×10^{-4}</td><td>Yes / SANCO/4062/2001 - final of 11.07.2008</td></tr>
<tr><td colspan="2">$DT_{50,soil}$ (d)</td><td>17.6*</td><td>geometric mean value of 14 endpoints (SFO, normalized to 20°C and pF2)</td></tr>
<tr><td colspan="2">$K_{oc,foc}$ (mL/g)
(geometric mean/worst-case**)</td><td>57/10</td><td>Yes / SANCO/4062/2001 - final of 11.07.2008</td></tr>
<tr><td colspan="2">K_{fom} (mL/g)
(geometric mean/worst-case**)</td><td>33/5.8</td><td>Calculated from K_{foc} (K_{fom}= K_{foc}/1.724)</td></tr>
<tr><td colspan="2">Freundlich Exponent 1/n
arithmetic mean</td><td>0.68</td><td>Yes / SANCO/4062/2001 - final of 11.07.2008</td></tr>
<tr><td colspan="2">Plant crop uptake</td><td>0</td><td>default value</td></tr>
<tr><td colspan="2">Activation energy (kJ/mol)</td><td>65.4</td><td>EFSA recommendation (Q10 2.58)</td></tr>
<tr><th colspan="4">Sorption parameters</th></tr>
<tr><td rowspan="3">for soils with pH<7</td><td>K_{fOC} [mL/g]</td><td>65
geometric mean value</td><td rowspan="6">MCPA SANCO.4062/2001-final;
11 July 2008</td></tr>
<tr><td>K_{fom} [mL/g] Calculated from K_{foc} (K_{fom}= K_{foc}/1.724)</td><td>37.7</td></tr>
<tr><td>1/n</td><td>0.71
arithmetic mean value</td></tr>
<tr><td rowspan="3">for soils with pH≥7</td><td>K_{fOC} [mL/g]</td><td>32
geometric mean value</td></tr>
<tr><td>K_{fom} [mL/g] Calculated from K_{foc} (K_{fom}= K_{foc}/1.724)</td><td>18.56</td></tr>
<tr><td>1/n</td><td>0.65
arithmetic mean value</td></tr>
</table>

* for derivation see table 8.3-1
** based on the generic guidance for groundwater (v2.2, 2014) in the case of pH dependency a realistic worst-case (conservative estimate) is used as a first tier (in the absence of a proper pH-Koc relationship). Applicant selected the lowest KfOC of 10 L/kg listed in the agreed endpoints (measured at pH_{H2O} of 7.3, information retrieved from DAR) in combination with the arithmetic mean 1/n value (0.68). The worst-case values are used for the leaching assessment.

<u>Tier I; pH dependence not taken into account</u>

Table 8.8-5: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an autumn application to winter cereals (550 g a.s./ha) - (values that exceed

0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /winter cereals (autumn application); 10 days after crop emergence		
Crop	**Scenario**	**Parent (µg/L)**
PEARL 4.4.4 winter cereals (autumn spraying)	Châteaudun	**2.612392**
	Hamburg	**24.426547**
	Jokioinen	**14.040641**
	Kremsmünster	**9.587598**
	Okehampton	**18.398583**
	Piacenza	**5.544355**
	Porto	**13.815494**
	Sevilla	0.000000
	Thiva	0.000000

PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence		
Crop	**Scenario**	**Parent (µg/L)**
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	**1.356**
	Hamburg	**29.149**
	Jokioinen	**20.221**
	Kremsmünster	**10.258**
	Okehampton	**20.463**
	Piacenza	**12.501**
	Porto	**22.366**
	Sevilla	0.002
	Thiva	**0.605**

Table 8.8-6: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an spring application to winter cereals (550 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /winter cereals (spring application); absolute application date 1 April		
Crop	**Scenario**	**Parent (µg/L)**
PEARL 4.4.4 winter cereals (spring spraying)	Châteaudun	**0.182152**
	Hamburg	**2.510614**
	Jokioinen	**0.908237**
	Kremsmünster	**2.701811**

	Okehampton	**3.843371**
	Piacenza	**1.767856**
	Porto	**0.347363**
	Sevilla	0.000000
	Thiva	0.000000
PELMO 5.5.3/winter cereals (spring application); absolute application date 1 April		
Crop	**Scenario**	**Parent (µg/L)**
PELMO 5.5.3 winter cereals (spring spraying)	Châteaudun	**0.064**
	Hamburg	**1.507**
	Jokioinen	**1.428**
	Kremsmünster	**3.169**
	Okehampton	**3.917**
	Piacenza	**1.199**
	Porto	**0.498**
	Sevilla	0.000
	Thiva	0.000

Table 8.8-7: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an spring application to spring cereals (550 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /spring cereals (spring application); 10 days after crop emergence		
Crop	**Scenario**	**Parent (µg/L)**
PEARL 4.4.4 spring cereals (spring spraying)	Châteaudun	**0.150186**
	Hamburg	**3.446217**
	Jokioinen	**1.343151**
	Kremsmünster	**2.951847**
	Okehampton	**3.128301**
	Porto	**0.194262**
PELMO 5.5.3/spring cereals (spring application); 10 days after crop emergence		
Crop	**Scenario**	**Parent (µg/L)**
PELMO 5.5.3 spring cereals (spring spraying)	Châteaudun	0.029
	Hamburg	**1.045**
	Jokioinen	**1.144**
	Kremsmünster	**2.688**

	Okehampton	**3.054**
	Porto	**0.536**

Table 8.8-8: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an application to grass (550 g a.s./ha; with 60% interception). *The calculations were made for minor use.*

PEARL 4.4.4 /grass; absolute application date 1 March		
Crop	**Scenario**	**Parent (µg/L)**
PEARL 4.4.4 / grass	Châteaudun	**0.176670**
	Hamburg	**0.552154**
	Kremsmünster	**0.298318**
PELMO 5.5.3/ grass; absolute application date 1 March		
Crop	**Scenario**	**Parent (µg/L)**
PELMO 5.5.3 / grass	Châteaudun	0.035
	Hamburg	**0.599**
	Kremsmünster	**0.229**

The results of the simulations in FOCUS PEARL 4.4.4 and PELMO 5.5.3 indicate that the overall maximum PEC_{GW} of MCPA exceed the trigger value of 0.1 µg/L in the majority of the scenarios considered.

The next step is to carrying out the calculations by proposing a refinement of the pH dependent sorption parameters for MCPA.

The calculations were carried out using two modelling tools recommended by FOCUS: FOCUS PELMO 5.5.3 and FOCUS PEARL 4.4.4. All calculation results are placed in tables below.

<u>pH-dependence of soil sorption taken into consideration</u>

Table 8.8-9: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an autumn application to winter cereals (550 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /winter cereals (autumn application); 10 days after crop emergence			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PEARL 4.4.4 winter cereals (autumn spraying)	Châteaudun	0.000000	0.000000
	Hamburg	0.018644	0.000000
	Jokioinen	0.000000	0.000000
	Kremsmünster	0.000010	0.000000
	Okehampton	0.011404	0.000000
	Piacenza	0.017239	0.000000
	Porto	0.000763	0.000000
	Sevilla	0.000000	0.000000
	Thiva	0.000000	0.000000
PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.000	0.000
	Hamburg	0.012	0.000
	Jokioinen	0.000	0.000
	Kremsmünster	0.000	0.000
	Okehampton	0.011	0.000
	Piacenza	0.010	0.000
	Porto	0.028	0.000
	Sevilla	0.000	0.000
	Thiva	0.000	0.000

Table 8.8-10: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an spring application to winter cereals (550 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /winter cereals (spring application); absolute application date 1 April			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PEARL	Châteaudun	0.000000	0.000000

	Hamburg	0.000000	0.000000
	Jokioinen	0.000000	0.000000
	Kremsmünster	0.000000	0.000000
	Okehampton	0.000000	0.000000
	Piacenza	0.000000	0.000000
	Porto	0.000000	0.000000
	Sevilla	0.000000	0.000000
	Thiva	0.000000	0.000000

PELMO 5.5.3/winter cereals (spring application); absolute application date 1 April			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PELMO 5.5.3 winter cereals (spring spraying)	Châteaudun	0.000	0.000
	Hamburg	0.000	0.000
	Jokioinen	0.000	0.000
	Kremsmünster	0.000	0.000
	Okehampton	0.000	0.000
	Piacenza	0.000	0.000
	Porto	0.000	0.000
	Sevilla	0.000	0.000
	Thiva	0.000	0.000

Table 8.8-11: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an spring application to spring cereals (550 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /spring cereals (spring application); 10 days after crop emergence			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PEARL 4.4.4 spring cereals (spring spraying)	Châteaudun	0.000000	0.000000
	Hamburg	0.000000	0.000000
	Jokioinen	0.000000	0.000000
	Kremsmünster	0.000000	0.000000
	Okehampton	0.000000	0.000000
	Porto	0.000000	0.000000

PELMO 5.5.3/spring cereals (spring application); 10 days after crop emergence			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PELMO 5.5.3 spring cereals (spring spraying)	Châteaudun	0.000	0.000
	Hamburg	0.000	0.000
	Jokioinen	0.000	0.000
	Kremsmünster	0.000	0.000
	Okehampton	0.000	0.000
	Porto	0.000	0.000

Table 8.8-12: PECgw (µg/l) values of MCPA using PEARL and PELMO models after an application to grass (550 g a.s./ha; with 60% interception). The calculations were made for minor uses.

PEARL 4.4.4 /grass; absolute application date 1 March			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PEARL 4.4.4 / grass	Châteaudun	0.000000	0.000000
	Hamburg	0.000000	0.000000
	Kremsmünster	0.000000	0.000000
PELMO 5.5.3/ grass; absolute application date 1 March			
Crop	**Scenario**	**Parent (µg/L)**	
		pH≥7	**pH<7**
PELMO 5.5.3 / grass	Châteaudun	0.000	0.000
	Hamburg	0.000	0.000
	Kremsmünster	0.000	0.000

Conclusions: The results of the simulations in FOCUS PEARL 4.4.4 and PELMO 5.5.3 indicate that PEC_{GW} of active substance MCPA stayed below 0.1 µg/L in all scenarios considered.

8.8.2.2 Tribenuron-methyl and its metabolites

Table 8.8-5: Input parameters related to active substance tribenuron methyl and metabolite(s) for PEC_{gw} calculations

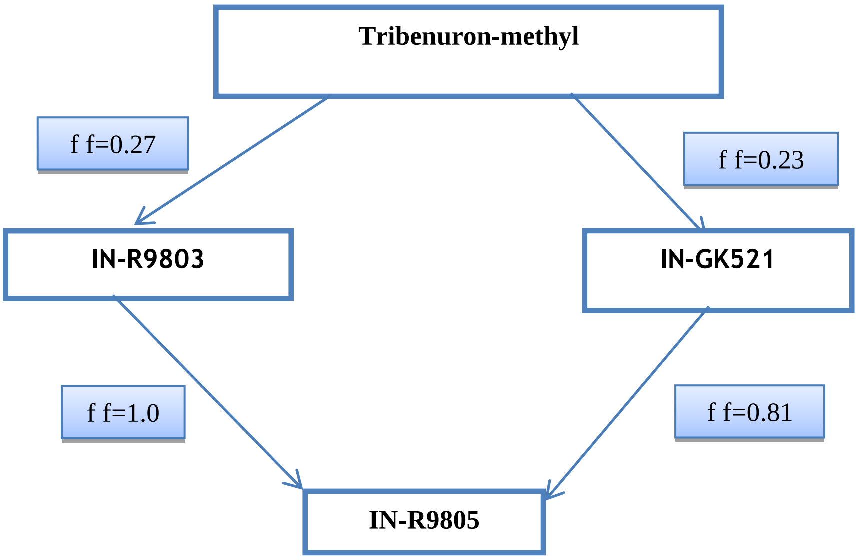
Compound	**Tribenuron methyl**	**IN-L5296**	**IN-A4098**	**IN-00581**	**IN-R9805**	**M2**	**IN- GK 521**	**IN-R9803**	**Value in accordance with EU endpoint y/n/ Reference***
Molecular weight (g/mol)	395.4	154.2	140.1	183.2	140.2	197.2	381.4	381.4	
Water solubility (mg/l):	2483 at pH 7 and 20°C	2483 at pH 7 and 20°C	456 at pH 7 and 20°C	2483 at pH 7 and 20°C	2483 at pH 7 and 20°C	2483 at pH 7 and 20°C	2483 at pH 7 and 20°C	2483 at pH 7 and 20°C	
Saturated vapour pressure (Pa):	5.99×10^{-9} at 20°C	0	1.9×10^{-4} Pa at 25°C	0	0	0	0	0	
DT_{50} in soil (d)	Geometric mean lab DT50 (standard calc.): 5.4 days (pH <7), 16.7 days (pH >7), 3.6 days (field) *	Geometric mean lab DT50 : 207.5 d	Geometric mean lab DT50 : 127.7 d	Geometric mean lab DT50 : 19.1d	Geometric mean lab DT50 : 85.4 d	Geometric mean lab DT50 : 21.5 d	Geometric mean lab DT50 : 67.1d	Geometric mean lab DT50 : 13.3d	
K_{foc} (mL/g)/K_{fom}	Geometric mean Kf_{OC} (mL/g): 38.9 (pH <7), 8.6(pH >7)	Geometric mean K_{FOC} : 82.6 mL/g	Geometric mean K_{fOC} (mL/g): 45.6	Geometric mean K_{fOC} (mL/g): 5.6	Geometric mean K_{fOC} (mL/g): 105	Geometric mean K_{fOC} (mL/g): 72.2	Geometric mean K_{fOC} (mL/g): 16.8	Geometric mean K_{fOC} (mL/g): 50.6	
Calculated from K_{foc} (K_{fom}= K_{foc}/1.724)	22.6 (pH <7), 5.0 (pH >7)	47.9	26.5	3.2	60.9	41.9	9.7	29.4	y/ EFSA Journal 2017;15(7):4912
1/n	0.98 (pH <7), 1.0 (pH >7)	0.80	0.90	0.90	0.93	0.86	1.00	1.00	
Plant uptake factor	0	0	0	0	0	0	0	0	
Formation fraction	-	0.76 from parent	1.0 from IN-L5296	1.0 from parent	ff=1.0 or ff = 0.5 for	0.24 from parent	from: Tribenuron methyl; 0.23	from: Tribenuron	

Compound	Tribenuron methyl	IN-L5296	IN-A4098	IN-00581	IN-R9805	M2	IN- GK 521	IN-R9803	Value in accordance with EU endpoint y/n/ Reference*
					refinement from IN-L5296 ** from IN-GK521; 0.81 from IN-R9803; 1.0			methyl; 0.27	

*PECgw modelling using the field DT_{50} for tribenuron-methyl was used as a refinement.
**PECgw modelling using an ff of 0.5 for metabolite IN-R9805 was used as a refinement

Scheme no. 1: Soil metabolic pathway for tribenuron methyl considered in FOCUS groundwater modelling

The following anaerobic metabolic pathways was considered



Scheme no. 2: Soil metabolic pathway for tribenuron methyl considered in FOCUS groundwater modelling

Three different aerobic metabolic pathways were considered as follows:

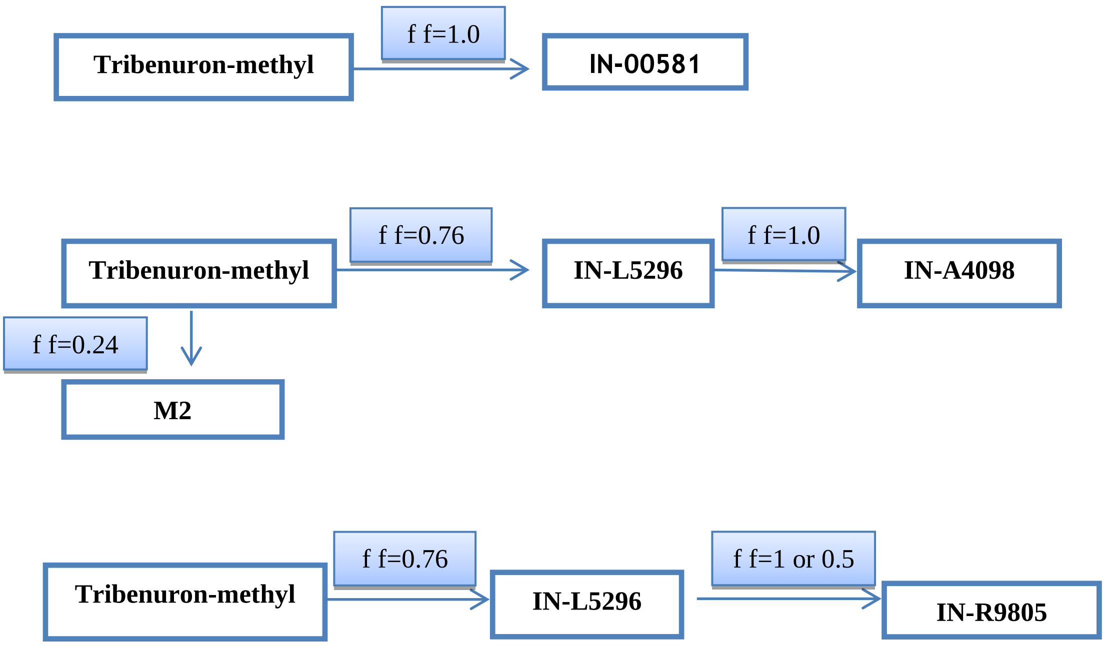


Table 8.8-14 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an autumn application to winter cereals (15 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

Scheme no.1

PEARL 4.4.4 / winter cereals (autumn application); 10 days after crop emergence

Crop	Scenario	Parent (µg/L)		IN-GK521		INR9805 Anaerobic conditions	
		<pH7	>pH 7	<pH7	>pH 7	<pH7 ff=0.81	>pH 7 ff=0.81
PEARL 4.4. 4 winter cereals (autumn spraying)	Châteaudun	0.000063	**0.276187**	**0.455497**	**0.593209**	0.081073	**0.160383**
	Hamburg	0.003924	**1.290113**	**0.685940**	**0.825114**	**0.130019**	**0.201337**
	Jokioinen	0.001253	**1.643466**	**0.961419**	**1.16579**	0.078566	**0.146578**
	Kremsmünster	0.000625	**0.532252**	**0.435402**	**0.524355**	0.093041	**0.166272**
	Okehampton	0.004272	**0.894895**	**0.479021**	**0.452751**	**0.107333**	**0.117871**
	Piacenza	0.000561	**0.317596**	**0.312633**	**0.414410**	0.089069	**0.143449**
	Porto	0.006245	**0.741796**	**0.340735**	**0.355751**	0.064677	0.075832
	Sevilla	0.000000	0.000000	0.084063	**0.106932**	0.004466	0.009970
	Thiva	0.000012	0.067682	**0.411852**	**0.574576**	0.082587	**0.150994**

Scheme no.2

PEARL 4.4.4 / winter cereals (autumn application); 10 days after crop emergence

Crop	Scenario	Parent (µg/L)		IN-L5296		IN-A4098		IN-00581	
		<pH7	>pH 7	<pH7	>pH 7	<pH7	>pH 7	<pH7	>pH 7
PEARL 4.4.4 4 winter cereals (autumn spraying)	Châteaudun	0.000063	**0.276187**	0.031004	**0.278843**	**0.388316**	**0.555574**	**0.136428**	**0.300791**
	Hamburg	0.003924	**1.290113**	**0.156434**	**0.474893**	**0.536404**	**0.453915**	**0.493777**	**0.699940**
	Jokioinen	0.001253	**1.643466**	0.038953	**0.294792**	**0.447505**	**0.460187**	**0.61398**	**1.147740**
	Kremsmünster	0.000625	**0.532252**	0.092842	**0.379278**	**0.375414**	**0.366968**	**0.228844**	**0.423923**
	Okehampton	0.004272	**0.894895**	**0.115233**	**0.271746**	**0.359524**	**0.268093**	**0.420290**	**0.480362**
	Piacenza	0.000561	**0.317596**	0.091576	**0.313944**	**0.334655**	**0.441404**	**0.143395**	**0.261404**
	Porto	0.006245	**0.741796**	0.064652	**0.140140**	**0.280062**	**0.273927**	**0.304963**	**0.297189**
	Sevilla	0.000000	0.000000	0.000262	0.015777	0.038896	**0.104532**	0.000000	0.000096
	Thiva	0.000012	0.067682	0.026387	**0.198760**	**0.481288**	**0.760784**	0.037307	**0.103157**

PEARL 4.4.4 / winter cereals (autumn application); 10 days after crop emergence

Crop	Scenario	INR9805 Aerobic conditions				M2	
		<pH 7 ff=0.5	<pH 7 ff=1	>pH 7 ff=0.5	>pH 7 ff=1	<pH7	>pH 7
PEAR	Châteaudun	0.042942	**0.092995**	**0.105376**	**0.219822**	0.000013	0.013215

	Hamburg	0.097617	**0.204841**	**0.107981**	**0.224585**	0.001529	0.062394
	Jokioinen	0.052802	**0.115134**	0.086628	**0.181336**	0.000407	0.028716
	Kremsmünster	0.065884	**0.138478**	0.089593	**0.185261**	0.000230	0.029623
	Okehampton	0.073341	**0.154170**	0.068076	**0.140803**	0.001102	0.025924
	Piacenza	0.058584	**0.123093**	0.095389	**0.197732**	0.000707	0.026022
	Porto	0.050210	**0.105253**	0.053823	**0.112688**	0.000421	0.007920
	Sevilla	0.001280	0.002876	0.010060	0.021699	0.000000	0.000000
	Thiva	0.036785	0.080599	**0.113392**	**0.239974**	0.000001	0.001863

Scheme no.1

PELMO 5.5.3/ winter cereals (autumn application); 10 days after crop emergence

Crop	**Scenario**	**Parent (µg/L)**		**IN-GK521**		**INR9805** Anaerobic conditions	
		<pH7	>pH 7	<pH7	>pH 7	<pH7 ff=0.81	>pH 7 ff=0.81
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.000	0.240	**0.449**	**0.589**	0.084	**0.163**
	Hamburg	0.013	**1.726**	**0.793**	**0.815**	**0.139**	**0.187**
	Jokioinen	0.004	**1.870**	**0.858**	**0.924**	**0.083**	**0.123**
	Kremsmünster	0.001	**0.624**	**0.533**	**0.665**	**0.110**	**0.197**
	Okehampton	0.009	**1.119**	**0.508**	**0.456**	**0.112**	**0.119**
	Piacenza	0.005	**0.826**	**0.518**	**0.623**	**0.105**	**0.165**
	Porto	0.026	**1.104**	**0.389**	**0.330**	0.066	0.063
	Sevilla	0.000	0.054	0.097	**0.146**	0.013	0.031
	Thiva	0.000	**0.101**	**0.296**	**0.441**	0.056	**0.113**

Scheme no.2

PELMO 5.5.3/ winter cereals (autumn application); 10 days after crop emergence

Crop	**Scenario**	**Parent (µg/L)**		**IN-L5296**		**IN-A4098**		**IN-00581**	
		<pH7	>pH 7	<pH7	>pH 7	<pH7	>pH 7	<pH7	>pH 7
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.000	0.240	0.022	**0.266**	**0.367**	**0.548**	**0.103**	**0.242**
	Hamburg	0.013	**1.726**	**0.171**	**0.449**	**0.577**	**0.405**	**0.635**	**0.813**
	Jokioinen	0.004	**1.870**	0.048	**0.260**	**0.474**	**0.454**	**0.741**	**1.041**
	Kremsmünster	0.001	**0.624**	**0.110**	**0.431**	**0.445**	**0.427**	**0.261**	**0.518**
	Okehampton	0.009	**1.119**	**0.125**	**0.266**	**0.378**	**0.270**	**0.501**	**0.497**
	Piacenza	0.005	**0.826**	**0.110**	**0.347**	**0.451**	**0.511**	**0.270**	**0.324**
	Porto	0.026	**1.104**	0.087	**0.109**	**0.293**	**0.226**	**0.453**	**0.363**
	Sevilla	0.000	0.054	0.001	0.030	0.099	**0.188**	0.015	0.026
	Thiva	0.000	**0.101**	0.012	**0.157**	**0.338**	**0.546**	0.054	**0.129**

PELMO 5.5.3/ winter cereals (autumn application); 10 days after crop emergence							
Crop	Scenario	INR9805				M2	
		Aerobic conditions					
		<pH 7 ff=0.5	<pH 7 ff=1	>pH 7 ff=0.5	>pH 7 ff=1	<pH7	>pH 7
PELMO 5.5.3winter cereals (autumn spraying)	Châteaudun	0.036	0.077	**0.110**	**0.229**	0.000	0.008
	Hamburg	0.106	**0.224**	**0.101**	**0.209**	0.003	0.066
	Jokioinen	0.059	**0.127**	0.084	**0.117**	0.001	0.023
	Kremsmünster	0.075	**0.158**	**0.113**	**0.234**	0.001	0.033
	Okehampton	0.077	**0.162**	0.067	**0.139**	0.002	0.025
	Piacenza	0.071	**0.151**	**0.110**	**0.228**	0.002	0.031
	Porto	0.059	**0.122**	0.048	0.099	0.001	0.006
	Sevilla	0.002	0.005	0.021	0.045	0.000	0.000
	Thiva	0.025	0.053	0.089	**0.187**	0.000	0.002

Table 8.8-15 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an spring application to winter cereals (15 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /winter cereals (spring application); absolute application date 1 April									
Crop	Scenario	Parent (µg/L)		IN-L5296		IN-A4098		IN-00581	
		<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	>pH 7	< pH 7	> pH 7
PEARL 4.4.4 winter cereals (spring spraying)	Châteaudun	0.000000	0.054203	0.017189	0.096746	**0.347868**	**0.454373**	0.043435	**0.117449**
	Hamburg	0.000030	**0.291453**	0.085040	**0.200198**	**0.492126**	**0.516476**	**0.207811**	**0.406323**
	Jokioinen	0.000012	**0.300436**	0.011989	0.097880	**0.395843**	**0.489505**	**0.164835**	**0.446333**
	Kremsmünster	0.000040	**0.216375**	0.061656	**0.207609**	**0.355821**	**0.381560**	**0.134028**	**0.282423**
	Okehampton	0.000066	**0.241206**	0.081265	**0.228665**	**0.357584**	**0.343963**	**0.159479**	**0.308065**
	Piacenza	0.000036	**0.136907**	0.051138	**0.164415**	**0.306239**	**0.438815**	0.076410	**0.170890**
	Porto	0.000001	0.059430	0.033271	0.085276	**0.253452**	**0.302503**	0.040909	**0.103107**
	Sevilla	0.000000	0.001704	0.000019	0.000300	0.030900	0.041997	0.001405	0.005861
	Thiva	0.000000	0.005598	0.010129	0.029775	**0.418378**	**0.500183**	0.004812	0.017620

PEARL 4.4.4 /winter cereals (spring application); absolute application date 1 April							
Crop	Scenario	INR9805				M2	
		Aerobic conditions					
		>pH 7 ff=0.5	>pH 7 ff=1	<pH 7 ff=0.5	<pH 7 ff=1	<pH 7	>pH 7
PEARL	Châteaudun	0.067972	**0.143585**	0.031669	0.069126	0.000000	0.001583

	Hamburg	0.094678	**0.198472**	0.077337	**0.163346**	0.000005	0.010085
	Jokioinen	0.066600	**0.142861**	0.035975	0.079433	0.000000	0.004702
	Kremsmünster	0.078869	**0.164366**	0.057254	**0.120952**	0.000010	0.010801
	Okehampton	0.080886	**0.167944**	0.065883	**0.138765**	0.000026	0.011870
	Piacenza	0.075308	**0.157640**	0.049751	**0.105341**	0.000042	0.007827
	Porto	0.055167	**0.116252**	0.039960	0.084999	0.000000	0.000952
	Sevilla	0.001309	0.002822	0.000480	0.001183	0.000000	0.000012
	Thiva	0.037720	0.082785	0.023706	0.053068	0.000000	0.000077

PELMO 5.5.3/winter cereals (spring application); absolute application date 1 April

Crop	**Scenario**	**Parent (µg/L)**		**IN-L5296**		**IN-A4098**		**IN-00581**	
		<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	> pH 7
PELMO 5.5.3 winter cereals (spring spraying)	Châteaudun	0.000	0.044	0.009	**0.072**	**0.334**	**0.463**	0.029	**0.101**
	Hamburg	0.000	**0.223**	0.090	**0.214**	**0.547**	**0.576**	**0.133**	**0.339**
	Jokioinen	0.000	**0.407**	0.012	**0.111**	**0.420**	**0.518**	**0.194**	**0.489**
	Kremsmünster	0.000	**0.254**	0.068	**0.272**	**0.416**	**0.463**	**0.154**	**0.333**
	Okehampton	0.000	**0.261**	0.089	**0.254**	**0.377**	**0.362**	**0.161**	**0.314**
	Piacenza	0.000	**0.141**	0.057	**0.203**	**0.401**	**0.490**	0.058	**0.202**
	Porto	0.000	0.054	0.046	0.093	**0.280**	**0.308**	0.035	**0.095**
	Sevilla	0.000	0.002	0.000	0.000	0.078	0.090	0.002	0.007
	Thiva	0.000	0.002	0.002	0.004	**0.265**	**0.297**	0.001	0.006

PELMO 5.5.3/winter cereals (spring application); absolute application date 1 April

Crop	**Scenario**	**INR9805**				**M2**	
		Aerobic conditions					
		<pH 7 ff=0.5	<pH 7 ff=1	>pH 7 ff=1	>pH 7 ff=0.5	<pH 7	>pH 7
PELMO 5.5.3 winter cereals (spring spraying)	Châteaudun	0.026	0.057	**0.130**	0.061	0.000	0.001
	Hamburg	0.086	**0.183**	**0.234**	**0.112**	0.000	0.006
	Jokioinen	0.042	0.093	**0.156**	0.073	0.000	0.005
	Kremsmünster	0.064	**0.136**	**0.200**	0.096	0.000	0.013
	Okehampton	0.072	**0.152**	**0.186**	0.089	0.000	0.011
	Piacenza	0.057	**0.121**	**0.189**	0.089	0.000	0.009
	Porto	0.050	**0.106**	**0.127**	0.060	0.000	0.001
	Sevilla	0.001	0.002	0.003	0.001	0.000	0.000
	Thiva	0.012	0.026	0.035	0.016	0.000	0.000

Table 8.8-16 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an application to spring cereals (15 g a.s./ha) - (values that exceed 0.1 µg/L are highlighted in bold typeface)

PEARL 4.4.4 /spring cereals (spring application); 10 days after crop emergence									
Crop	**Scenario**	**Parent (µg/L)**		**IN-L5296**		**IN-A4098**		**IN-00581**	
		<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	>pH 7	< pH 7	> pH 7
PEARL 4.4.4 spring cereals (spring spraying)	Châteaudun	0.000000	0.044438	0.014232	0.075893	**0.304863**	**0.405896**	0.034128	**0.102524**
	Hamburg	0.000044	**0.378300**	0.098168	**0.228924**	**0.618000**	**0.656129**	**0.267292**	**0.517567**
	Jokioinen	0.000013	**0.335875**	0.007114	0.088428	**0.347113**	**0.401812**	**0.205037**	**0.428845**
	Kremsmünster	0.000039	**0.228476**	0.063072	**0.217835**	**0.063072**	**0.420434**	**0.145642**	**0.298082**
	Okehampton	0.000041	**0.209425**	0.077739	**0.214764**	**0.362412**	**0.358728**	**0.139569**	**0.283573**
	Porto	0.000002	0.038842	0.030900	0.071851	**0.244584**	**0.263579**	0.023842	0.074891

PEARL 4.4.4 /spring cereals (spring application); 10 days after crop emergence							
Crop	**Scenario**	**INR9805**				**M2**	
		Aerobic conditions					
		>pH 7 ff=0.5	>pH 7 ff=1	<pH 7 ff=0.5	<pH 7 ff=1	<pH 7	>pH 7
PEARL 4.4.4 spring cereals (spring spraying)	Châteaudun	0.057405	**0.122309**	0.027967	0.060954	0.000000	0.001114
	Hamburg	**0.112900**	**0.238302**	0.086740	**0.184214**	0.000006	0.014092
	Jokioinen	0.060166	**0.127763**	0.032590	0.072160	0.000000	0.005247
	Kremsmünster	0.087036	**0.181485**	0.059915	**0.126727**	0.000009	0.011380
	Okehampton	0.084016	**0.174752**	0.066374	**0.140163**	0.000013	0.008960
	Porto	0.052670	**0.110945**	0.039708	0.085194	0.000000	0.000500

PELMO 5.5.3/spring cereals (spring application); 10 days after crop emergence									
Crop	**Scenario**	**Parent (µg/L)**		**IN-L5296**		**IN-A4098**		**IN-00581**	
		<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	>pH 7
PELMO 5.5.3 spring cereals (spring spraying)	Châteaudun	0.000	0.033	0.007	0.052	**0.266**	0.069	0.022	0.069
	Hamburg	0.000	**0.153**	0.073	**0.155**	**0.502**	**0.270**	**0.114**	**0.270**
	Jokioinen	0.000	**0.328**	0.006	0.065	**0.334**	**0.401**	**0.193**	**0.401**
	Kremsmünster	0.000	**0.212**	0.057	**0.226**	**0.385**	**0.309**	**0.137**	**0.301**
	Okehampton	0.000	**0.216**	0.072	**0.195**	**0.344**	**0.279**	**0.137**	**0.279**
	Porto	0.000	0.061	0.041	0.090	**0.253**	**0.104**	0.038	**0.104**

PELMO 5.5.3/spring cereals (spring application); 10 days after crop emergence							
Crop	Scenario	INR9805				M2	
		Aerobic conditions					
		<pH 7 ff=0.5	<pH 7 ff=1	>pH 7 ff=1	>pH 7 ff=0.5	<pH 7	>pH 7
PELMO 5.5.3 spring cereals (spring spraying)	Châteaudun	0.020	0.044	0.097	0.045	0.000	0.001
	Hamburg	0.075	**0.160**	**0.202**	0.096	0.000	0.004
	Jokioinen	0.029	0.064	**0.109**	0.051	0.000	0.004
	Kremsmünster	0.057	**0.121**	**0.182**	0.088	0.000	0.010
	Okehampton	0.063	**0.134**	**0.170**	0.082	0.000	0.008
	Porto	0.046	0.097	**0.119**	0.057	0.000	0.002

The risk assessment for GW has been performed for three PL scenarios; Châteaudun, Hamburg and Kremsmünster which are the most appropriate to reflect the soil and climatic conditions occurring in Poland (PL). The predicted environmental concentrations (PEC) of tribenuron-methyl and its metabolites in groundwater have been determined for application of HAKSAR TOP 565 SG in winter & spring cereals. Two recommended models were used, i.e. FOCUS PELMO (ver. 5.5.3) and FOCUS PEARL (ver. 4.4.4).

As shown above a number of scenarios result in PECgw for tribenuron-methyl and metabolites IN-L5296, IN-A4098, IN-GK521, IN-9805 and IN-00581 that exceed the regulatory trigger value of 0.1 µg/L. To refine the groundwater modeling, a refined soil DT_{50} for tribenuron-methyl of 3.6 days derived from field studies was used according to EFSA Journal 2017;15(7):4912.

In addition, according to the EFSA Journal 2017;15(7):4912 a refined exposure assessment was not provided for acidic conditions, as the field DT_{50} is lower than the acidic soils endpoint (DT_{50}= 5.4 days). In addition, the calculated PECgw for tribenuron-methyl were below the trigger of 0.1 µg/L in acidic soils, for all of the assessed scenarios.

The results of this modelling are presented in the following tables.

Table 8.8-17 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an autumn application to winter cereals (15 g a.s./ha) - field data

Scheme no. 1				
PEARL 4.4.4 /winter cereals (autumn application) ; 10 days after crop emergence				
Crop	Scenario	Parent (µg/L)	IN-GK521	IN-R9805
				Anaerobic conditions
		>pH 7	>pH 7	>pH 7 ff=0.81
PEARL 4.4.4 winter cereals (autumn	Châteaudun	0.003886	**0.477987**	0.093178
	Hamburg	**0.125357**	**0.794307**	**0.163007**
	Jokioinen	**0.106469**	**1.087156**	**0.103536**

	Kremsmünster	0.017442	**0.488990**	**0.129690**
	Okehampton	0.052922	**0.492526**	**0.109289**
	Piacenza	0.020884	**0.341686**	**0.106735**
	Porto	0.079358	**0.336458**	0.067217
	Sevilla	0.000000	0.081794	0.005349
	Thiva	0.000887	**0.435751**	0.092555

Scheme no. 2

Crop	Scenario	Parent (µg/L)	IN-L5296	IN-A4098	IN-00581
		>pH 7	>pH 7	>pH 7	> pH 7
PEARL 4.4.4 winter cereals (autumn spraying)	Châteaudun	0.003886	0.046634	**0.401994**	**0.175488**
	Hamburg	**0.125357**	**0.259890**	**0.533913**	**0.718771**
	Jokioinen	**0.106469**	0.088302	**0.459820**	**0.861804**
	Kremsmünster	0.017442	**0.168207**	**0.384391**	**0.325984**
	Okehampton	0.052922	**0.153362**	**0.354089**	**0.522593**
	Piacenza	0.020884	**0.151008**	**0.347998**	**0.198881**
	Porto	0.079358	0.079087	**0.280189**	**0.387255**
	Sevilla	0.000000	0.002345	0.047326	0.000000
	Thiva	0.000887	0.034471	**0.497419**	0.050598

PEARL 4.4.4 /winter cereals (autumn application) ; 10 days after crop emergence

Crop	Scenario	IN-R9805	M2
		Aerobic conditions	
		>pH 7 ff=0.5	>pH 7
PEARL 4.4.4 winter cereals (autumn spraying)	Châteaudun	0.049016	0.000396
	Hamburg	**0.103755**	0.022749
	Jokioinen	0.064069	0.006480
	Kremsmünster	0.077713	0.006795
	Okehampton	0.075686	0.005024
	Piacenza	0.066038	0.005634
	Porto	0.052692	0.002363
	Sevilla	0.002641	0.000000
	Thiva	0.041150	0.000063

Scheme no. 1				
PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence				
Crop	**Scenario**	**Parent (µg/L)**	**IN-GK521**	**INR9805** **Anaerobic conditions**
		>pH 7	>pH 7	>pH 7 ff=0.81
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.005	**0.485**	0.094
	Hamburg	**0.268**	**0.857**	**0.167**
	Jokioinen	**0.258**	**0.967**	0.099
	Kremsmünster	0.043	**0.608**	**0.154**
	Okehampton	0.092	**0.544**	**0.114**
	Piacenza	**0.104**	**0.564**	**0.127**
	Porto	**0.176**	**0.389**	0.062
	Sevilla	0.011	**0.114**	0.019
	Thiva	0.007	**0.338**	0.066

Scheme no. 2					
PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.005	0.037	**0.386**	**0.143**
	Hamburg	**0.268**	**0.264**	**0.554**	**0.834**
	Jokioinen	**0.258**	0.099	**0.475**	**0.990**
	Kremsmünster	0.043	**0.199**	**0.470**	**0.363**
	Okehampton	0.092	**0.166**	**0.371**	**0.612**
	Piacenza	**0.104**	**0.177**	**0.450**	**0.370**
	Porto	**0.176**	0.095	**0.283**	**0.544**
	Sevilla	0.011	0.003	**0.109**	0.023
	Thiva	0.007	0.025	**0.364**	0.066

PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence			
Crop	**Scenario**	**INR9805** **Aerobic conditions**	**M2**
		>pH 7 ff=0.5	>pH 7
PELMO 5.5.3 winter cereals (autumn	Châteaudun	0.042	0.000
	Hamburg	**0.108**	0.020
	Jokioinen	0.064	0.008

	Kremsmünster	0.087	0.007
	Okehampton	0.079	0.007
	Piacenza	0.077	0.008
	Porto	0.057	0.003
	Sevilla	0.004	0.000
	Thiva	0.031	0.000

Table 8.8-18 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an autumn application to winter cereals (15 g a.s./ha - every third year) - field data

Scheme no. 1; Every 3rd year				
PEARL 4.4.4 /winter cereals (autumn application) ; 10 days after crop emergence				
Crop	**Scenario**	**Parent (µg/L)**	**IN-GK521**	**IN-R9805 Anaerobic conditions**
		>pH 7	>pH 7	>pH 7 ff=0.81
PEARL 4.4.4 winter cereals (autumn spraying)	Châteaudun	0.001024	**0.167299**	0.032355
	Hamburg	0.050645	**0.242500**	0.049097
	Jokioinen	0.041353	**0.326676**	0.033336
	Kremsmünster	0.007536	**0.165690**	0.042356
	Okehampton	0.016328	**0.156177**	0.035992
	Piacenza	0.009279	**0.132636**	0.035436
	Porto	0.034145	**0.119124**	0.022060
	Sevilla	0.000046	0.063749	0.003992
	Thiva	0.000408	**0.176427**	0.028599

Scheme no. 2; Every 3rd year					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
PEARL 4.4.4 winter cereals (autumn spraying)	Châteaudun	0.001024	0.008217	**0.114418**	0.061057
	Hamburg	0.050645	0.069694	**0.162702**	**0.263359**
	Jokioinen	0.041353	0.023586	**0.130330**	**0.320909**
	Kremsmünster	0.007536	0.051511	**0.129286**	**0.118709**
	Okehampton	0.016328	0.037429	**0.110583**	**0.161769**
	Piacenza	0.009279	0.039629	**0.101028**	0.073467
	Porto	0.034145	0.017783	0.086483	**0.147748**
	Sevilla	0.000046	0.000211	0.017198	0.001493
	Thiva	0.000408	0.002846	**0.133574**	0.014268

PEARL 4.4.4 /winter cereals (autumn application) ; 10 days after crop emergence			
Crop	Scenario	IN-R9805	M2
		Aerobic conditions	
		>pH 7 ff=0.5	>pH 7
PEARL 4.4.4 winter cereals (autumn spraying)	Châteaudun	0.012670	0.000119
	Hamburg	0.032191	0.007746
	Jokioinen	0.017101	0.001617
	Kremsmünster	0.025053	0.001912
	Okehampton	0.023320	0.001701
	Piacenza	0.021405	0.003111
	Porto	0.015382	0.000937
	Sevilla	0.000603	0.000008
	Thiva	0.008919	0.000026

Scheme no. 1; Every 3rd year				
PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence				
Crop	Scenario	Parent (µg/L)	IN-GK521	IN-R9805
				Anaerobic conditions
		>pH 7	>pH 7	>pH 7 ff=0.81
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.002	**0.157**	0.031
	Hamburg	0.077	**0.272**	0.052
	Jokioinen	0.066	**0.312**	0.033
	Kremsmünster	0.018	**0.203**	0.052
	Okehampton	0.029	**0.169**	0.037
	Piacenza	0.045	**0.161**	0.041
	Porto	0.094	**0.124**	0.021
	Sevilla	0.001	0.055	0.004
	Thiva	0.003	**0.125**	0.021

Scheme no. 2; Every 3rd year					
PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence					
Crop	Scenario	Parent (µg/L)	IN-L5296	IN-A4098	IN-00581
		>pH 7	>pH 7	>pH 7	> pH 7
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.002	0.006	**0.113**	0.045
	Hamburg	0.077	0.065	**0.175**	**0.304**
	Jokioinen	0.066	0.025	**0.141**	**0.340**
	Kremsmünster	0.018	0.061	**0.148**	**0.141**
	Okehampton	0.029	0.041	**0.116**	**0.188**

	Piacenza	0.045	0.052	**0.130**	**0.142**
	Porto	0.094	0.022	0.092	**0.195**
	Sevilla	0.001	0.000	0.022	0.004
	Thiva	0.003	0.003	0.099	0.020

PELMO 5.5.3/winter cereals (autumn application); 10 days after crop emergence			
Crop	**Scenario**	**IN-R9805**	**M2**
		Aerobic conditions	
		>pH 7 ff=0.5	>pH 7
PELMO 5.5.3 winter cereals (autumn spraying)	Châteaudun	0.011	0.000
	Hamburg	0.034	0.007
	Jokioinen	0.019	0.002
	Kremsmünster	0.029	0.002
	Okehampton	0.024	0.002
	Piacenza	0.026	0.003
	Porto	0.018	0.001
	Sevilla	0.001	0.000
	Thiva	0.007	0.000

Tier 2 assessment for groundwater for metabolite IN-GK521:

According to the Peer Review Report on Tribenuron-methyl (June, 2017, 815-816) it was agreed that soil DT_{50} derived from aerobic degradation studies (of 12.1 d instead of anaerobic 67.1 d.) can be used in PECgw calculation for the anaerobic metabolite IN-GK521.

This results from the fact that soils are mainly aerobic over time and should anaerobic conditions prevail for sufficient time so that the metabolite is formed. As noticed further in the Peer Review Report on Tribenuron-methyl (June, 2017) this approach was already taken for another active substance - lambda-cyhalothrin. In that case, it had been also decided for anaerobic metabolite, that it was acceptable to use the aerobic DT_{50} in the PEC groundwater calculations.

Additionally, due to absence of formation fraction for metabolite IN-GK521 under soil aerobic conditions it was further proposed in the Peer Review Report on Tribenuron-methyl (June, 2017 to model directly the metabolite applied as the parent with the a.s. application rate corrected in relation to the maximum occurrence of the metabolite in soil.

Taken all above into account Tier 2 assessment for metabolite IN-GK521 for HAKSAR TOP 565 SG (autumn application) is proposed with the following input parameters:

$DT_{50\ soil}$ = 12.1 days

Dosage of metabolite IN-GK521 (kg/ha) =
Dosage of tribenuron-methyl · Molar mass IN-GK521/Molar mass tribenuron methyl · Max %AR soil

Dosage of metabolite IN-GK521 (kg/ha) = 0.015 kg/ha · 381.4/395.4 · 32.1% = **0.0046 kg/ha**

Please notice that the other input parameters for metabolite IN-GK521 and IN-R9805 remained the same as in Tier 1.

Table 8.8-19 Tier 2 PEC_{GW} for metabolite IN-GK521 and IN-R9805 (with PEARL 4.4.4 and PELMO 5.5.3)

PEARL 4.4.4 /winter cereals (autumn application)					
Crop	**Scenario**	**IN-GK521 (µg/L)**	**IN-R9805**	**IN-GK521 (µg/L)**	**IN-R9805**
		every year		every other year	
		>pH 7	>pH 7	>pH 7	>pH 7
PEARL 4.4.4 winter cereals, 1×15 g/ha* autumn spraying	Châteaudun	0.017542	0.037432	0.008823	0.019567
	Hamburg	**0.133803**	**0.104451**	0.083949	0.052099
	Jokioinen	**0.136083**	0.063328	0.085611	0.033111
	Kremsmünster	0.049682	0.069835	0.026398	0.034423
	Okehampton	**0.111126**	0.066234	0.060444	0.032888
	Piacenza	0.028278	0.057841	0.013674	0.030816
	Porto	**0.102735**	0.035611	0.058497	0.019074
	Sevilla	0.000000	0.000147	0.000030	0.001398
	Thiva	0.002826	0.018773	0.001187	0.010156

PELMO 5.5.3/ winter cereals (autumn application)					
Crop	**Scenario**	**IN-GK521 (µg/L)**	**IN-R9805**	**IN-GK521 (µg/L)**	**IN-R9805**
		every year		every other year	
		>pH 7	>pH 7	>pH 7	> pH 7
PELMO 5.5.3 winter cereals, 1×15 g/ha* autumn spraying	Châteaudun	0.016	0.033	0.007	0.016
	Hamburg	**0.215**	**0.108**	**0.115**	0.054
	Jokioinen	**0.202**	0.068	**0.107**	0.034
	Kremsmünster	0.056	0.083	0.032	0.040
	Okehampton	**0.151**	0.069	0.077	0.033
	Piacenza	0.094	0.071	0.039	0.037
	Porto	**0.185**	0.034	**0.109**	0.018
	Sevilla	0.004	0.003	0.001	0.002
	Thiva	0.008	0.016	0.004	0.009

PELMO 5.5.3/ winter cereals (autumn application)			
Crop	**Scenario**	**IN-GK521 (µg/L)**	**IN-R9805**
		every 3rd year	
		>pH 7	>pH 7
PELMO 5.5.3	Châteaudun	0.005	0.010

	Hamburg	0.084	0.035
	Jokioinen	0.065	0.021
	Kremsmünster	0.023	0.029
	Okehampton	0.043	0.023
	Piacenza	0.035	0.024
	Porto	0.071	0.012
	Sevilla	0.001	0.001
	Thiva	0.003	0.006

* 15 g/ha refers to the active substance application rate; for the purpose of Tier 2 modelling for metabolite IN-GK521 4.64 g/ha was assumed according to the EFSA proposal as explained above.

Conclusion

Taking into consideration the relevant scenarios for Poland (Châteaudun, Hamburg and Kremsmünster) the results of modelling with FOCUS PELMO (v 5.5.3) & PEARL (v 4.4.4) show that the active substance tribenuron methyl and its metabolites (IN-L5296, IN-A4098, IN-00581, IN-R9805 and IN-GK 521) are exceed the concentrations of ≥ 0.1µg/L in the intended uses of HAKSAR TOP 565 SG in winter cereals (autumn application) according to use max. application rate 15 g a.s./ ha, in every year.

However, when one application every three years was considered at the maximum rate to winter cereals (autumn application) the results showed that PECgw of tribenuron methyl in all FOCUS scenarios was < 0.1 µg/L. The metabolites IN-A4098 and IN-00581 were above trigger value of 0.1 µg/L but stayed below 0.75 µg/L.

This demonstrated that the one application every 3rd year use of tribenuron methyl at the rate of 15 g a.s./ha would not result in any risk to groundwater contamination. The results are summarised in above tablets.

Table 8.8-20 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an spring application to winter cereals (15 g a.s./ha) - field data

PEARL 4.4.4 /winter cereals (spring application); absolute application date 1 April					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
PEARL 4.4.4 winter cereals (spring spraying)	Châteaudun	0.000002	0.022051	**0.359592**	0.041978
	Hamburg	0.000156	0.101533	**0.501622**	**0.202307**
	Jokioinen	0.000187	0.023807	**0.416829**	**0.171817**
	Kremsmünster	0.000277	0.080222	**0.361797**	**0.150867**
	Okehampton	0.000282	0.097457	**0.362989**	**0.172907**
	Piacenza	0.000206	0.070223	**0.339189**	0.095740
	Porto	0.000035	0.039000	**0.260928**	0.041684
	Sevilla	0.000000	0.000028	0.032721	0.001450
	Thiva	0.000000	0.012188	**0.428266**	0.004491

PEARL 4.4.4 /winter cereals (spring application); absolute application date 1 April			
Crop	**Scenario**	**INR9805** Aerobic conditions >pH 7 ff=0.5	**M2** >pH 7
PEARL 4.4.4 winter cereals (spring spraying)	Châteaudun	0.035633	0.000001
	Hamburg	0.082432	0.000135
	Jokioinen	0.042034	0.000071
	Kremsmünster	0.060568	0.000190
	Okehampton	0.070178	0.000298
	Piacenza	0.053892	0.000499
	Porto	0.042188	0.000016
	Sevilla	0.000583	0.000000
	Thiva	0.025472	0.000000

PELMO 5.5.3/winter cereals (spring application); absolute application date 1 April					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
PELMO 5.5.3 winter cereals (spring spraying)	Châteaudun	0.000	0.015	**0.360**	0.035
	Hamburg	0.000	**0.118**	**0.560**	**0.160**
	Jokioinen	0.004	0.036	**0.454**	**0.244**
	Kremsmünster	0.001	0.103	**0.430**	**0.175**
	Okehampton	0.001	**0.119**	**0.380**	**0.183**
	Piacenza	0.004	0.085	**0.423**	0.099
	Porto	0.000	0.053	**0.282**	0.040
	Sevilla	0.000	0.000	0.079	0.002
	Thiva	0.000	0.002	**0.269**	0.002

PELMO 5.5.3/winter cereals (spring application); absolute application date 1 April			
Crop	**Scenario**	**INR9805** **Aerobic conditions** >pH 7 ff=0.5	**M2** >pH 7
PELMO 5.5.3 winter cereals (spring spraying)	Châteaudun	0.032	0.000
	Hamburg	0.094	0.000
	Jokioinen	0.053	0.000
	Kremsmünster	0.072	0.001
	Okehampton	0.079	0.001
	Piacenza	0.064	0.001

	Porto	0.052	0.000
	Sevilla	0.001	0.000
	Thiva	0.012	0.000

Conclusion

Taking into account the three scenarios (Châteaudun, Hamburg and Kremsmünster) for which calculation has been performed, it may be noted that results of the PEC_{GW} for tribenuron methyl were < 0.1 µg/L for all scenarios (Châteaudun, Hamburg and Kremsmünster) with all models (PELMO & PEARL). In addition, PEC_{GW} for the metabolite M2 were always < 0.1 µg/L.

PEC_{GW} for IN-L5296, IN-A4098 and IN-00581 exceeded the trigger 0.1 µg/L but were < 0.75 µg/L. Therefore, a groundwater concentration for IN-L5296, IN-A4098 and IN-00581 ≥ 0.1 µg/L cannot be excluded for the application in winter cereals (April applications) according to the results of the groundwater simulations. An assessment of the metabolite IN-L5296, IN-A4098 and IN-00581 regarding the relevance for groundwater is necessary.

The information concerning the environmental metabolites IN-L5296, IN-A4098 and IN-00581 assessment of their potential relevance with respect to the current SANCO guidance (SANCO/221/2000 rev.10, 25/02/2003) is provided in this dRR, Section 10 (Assessment of the relevance of metabolites in groundwater).

Table 8.8-21 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an application to spring cereals (15 g a.s./ha) - field data

PEARL 4.4.4 /spring cereals (spring application); 10 days after crop emergence					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
PEARL 4.4.4 spring cereals (spring spraying)	Châteaudun	0.000001	0.019114	**0.320415**	0.036031
	Hamburg	0.000173	**0.108939**	**0.631222**	**0.263308**
	Jokioinen	0.000334	0.012918	**0.355005**	**0.210371**
	Kremsmünster	0.000153	0.081083	**0.402472**	**0.162448**
	Okehampton	0.000110	0.095094	**0.368557**	**0.148224**
	Porto	0.000139	0.038633	**0.247600**	0.028458

PEARL 4.4.4 /spring cereals (spring application); 10 days after crop emergence			
Crop	**Scenario**	**INR9805**	**M2**
		Aerobic conditions	
		>pH 7 ff=0.5	>pH 7
PEARL 4.4.4 spring cereals (spring spraying)	Châteaudun	0.031659	0.000000
	Hamburg	0.091026	0.000120
	Jokioinen	0.035829	0.000042
	Kremsmünster	0.063813	0.000215

	Okehampton	0.069485	0.000195
	Porto	0.041791	0.000038

PELMO 5.5.3/spring cereals (spring application); 10 days after crop emergence					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
PELMO 5.5.3 spring cereals (spring spraying)	Châteaudun	0.000	0.011	**0.285**	0.024
	Hamburg	0.000	0.080	**0.512**	**0.111**
	Jokioinen	0.000	0.010	**0.340**	**0.198**
	Kremsmünster	0.000	0.076	**0.397**	**0.149**
	Okehampton	0.000	0.088	**0.349**	**0.157**
	Porto	0.001	0.052	**0.253**	0.045

PELMO 5.5.3/spring cereals (spring application); 10 days after crop emergence			
Crop	**Scenario**	**INR9805**	**M2**
		Aerobic conditions	
		>pH 7 ff=0.5	>pH 7
PELMO 5.5.3 spring cereals (spring spraying)	Châteaudun	0.024	0.000
	Hamburg	0.078	0.000
	Jokioinen	0.032	0.000
	Kremsmünster	0.063	0.000
	Okehampton	0.067	0.000
	Porto	0.048	0.000

Conclusion

Calculations of the predicted environmental concentrations (PEC_{gw}) for the active substance and metabolites were performed for Châteaudun, Hamburg and Kremsmünster scenarios in which this product will be used in Poland.

The PEC_{GW} for tribenuron methyl and the metabolites M2 & IN-R9805 were < 0.1 µg/L for all scenarios (Châteaudun, Hamburg and Kremsmünster) with all models (PELMO & PEARL).

PEC_{GW} for IN-L5296, IN-A4098 and IN-00581 exceeded the trigger 0.1 µg/L but were < 0.75 µg/L. Therefore, a groundwater concentration for IN-L5296, IN-A4098 and IN-00581 ≥ 0.1 µg/L cannot be excluded for the application in spring cereals (spring applications) according to the results of the groundwater simulations. An assessment of the metabolite IN-L5296, IN-A4098 and IN-00581 regarding the relevance for groundwater is necessary. The information concerning the environmental metabolites IN-L5296, IN-A4098 and IN-00581 assessment of their potential relevance with respect to the current SANCO guidance (SANCO/221/2000 rev.10, 25/02/2003) is provided in this dRR, Section 10 (Assessment of the relevance of metabolites in groundwater).

Table 8.8-22: The PEC_{GW} for tribenuron-methyl and required metabolites in winter and spring cereals (with MACRO 5.5.4 in FOCUS)

Crop	Scenario	PECGW (µg/L)								
		No. of Julian	Tribenuron-methyl	IN-L5296	IN-00581	IN-9805	M2	IN-4098	IN-GK521	IN-R9803
winter cereals, *(spring spraying)*	Châteaudun	91	3.41E-07	0.00128	0.0033	0.000	3.11E-10	0.00185	0.000865	7.74E-10
spring cereals, *(spring spraying)*	Châteaudun	309	6.36E-05	0.00129	0.0128	0.000	9.2E-07	0.00273	0.00565	1.91E-06
winter cereals, *(autumn spraying)*	Châteaudun	79	2.51E-07	0.00115	0.00274	0.000	8.66E-11	0.0017	0.000661	2.01E-09

Results from MACRO in FOCUS v5.5.4

Calculation results were performed for Châteaudun FOCUS scenario depends on the selected crop. The results of the simulations in MACRO 5.5.4 in FOCUS indicate that PEC_{GW} of active substance tribenuron methyl and its metabolites stayed below 0.1 µg/L in Châteaudun scenario.

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The table 8.8-23 & 8.8-24 present minor use (i.e.: grass) of the plant protection product HAKSAR TOP 565 SG.

Table 8.8-23 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an application to grass (15 g a.s./ha; with 60% interception). The calculations were made for minor use.

Scheme no. 2;									
PEARL 4.4.4 / Grass (spring application); absolute application date 1 March									
Crop	Scenario	Parent (µg/L)		IN-L5296		IN-A4098		IN-00581	
		<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	>pH 7	< pH 7	> pH 7
Grass	Châteaudun	0.000002	0.053584	0.011011	0.059213	**0.142950**	**0.176086**	0.033046	0.086802
	Hamburg	0.000017	**0.121797**	0.022090	0.079329	**0.200706**	**0.221847**	0.086438	**0.188190**
	Kremsmünster	0.000006	0.061544	0.012168	0.068038	**0.128979**	**0.158684**	0.039271	0.091062

PEARL 4.4.4 / Grass (spring application); absolute application date 1 March							
Crop	**Scenario**	**INR9805** Aerobic conditions				**M2**	
		>pH 7 ff=0.5	>pH 7 ff=1	<pH 7 ff=0.5	<pH 7 ff=1	<pH 7	>pH 7
Grass	Châteaudun	0.035070	0.073373	0.019353	0.041536	0.000000	0.001611
	Hamburg	0.044109	0.092735	0.030017	0.064336	0.000008	0.004134
	Kremsmünster	0.031829	0.066523	0.017462	0.037425	0.000001	0.002732

PELMO 5.5.3/ Grass (spring application); absolute application date 1 March									
Crop	**Scenario**	**Parent (µg/L)**		**IN-L5296**		**IN-A4098**		**IN-00581**	
		<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	>pH 7	<pH 7	> pH 7
Grass	Châteaudun	0.000	0.029	0.007	0.040	**0.121**	**0.152**	0.020	0.057
	Hamburg	0.000	0.097	0.014	0.061	**0.160**	**0.177**	0.045	**0.114**
	Kremsmünster	0.000	0.064	0.010	0.065	**0.122**	**0.154**	0.039	0.095

PELMO 5.5.3/ Grass (spring application); absolute application date 1 March							
Crop	**Scenario**	**INR9805** **Aerobic conditions**				**M2**	
		<pH 7 ff=0.5	<pH 7 ff=1	>pH 7 ff=1	>pH 7 ff=0.5	<pH 7	>pH 7
Grass	Châteaudun	0.014	0.039	0.060	0.028	0.000	0.001
	Hamburg	0.022	0.063	0.075	0.035	0.000	0.003
	Kremsmünster	0.016	0.044	0.066	0.031	0.000	0.003

Table 8.8-24 PECgw (µg/l) values of tribenuron-methyl and its metabolites using PEARL and PELMO models after an application to grass (15 g a.s./ha; with 60% interception) - field data. **The calculations were made for minor use.**

Scheme no. 2;					
PEARL 4.4.4 / Grass (spring application); absolute application date 1 March					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
Grass	Châteaudun	0.000020	0.014645	**0.146007**	0.038200
	Hamburg	0.000080	0.037022	**0.210718**	0.092280
	Kremsmünster	0.000107	0.018497	**0.131569**	0.042967

PEARL 4.4.4 / Grass (spring application); absolute application date 1 March			
Crop	**Scenario**	**INR9805** Aerobic conditions >pH 7 ff=0.5	**M2** >pH 7
Grass	Châteaudun	0.021488	0.000009
	Hamburg	0.035182	0.000524
	Kremsmünster	0.019617	0.000064

PELMO 5.5.3/ Grass (spring application); absolute application date 1 March					
Crop	**Scenario**	**Parent (µg/L)**	**IN-L5296**	**IN-A4098**	**IN-00581**
		>pH 7	>pH 7	>pH 7	> pH 7
Grass	Châteaudun	0.000	0.009	**0.125**	0.021
	Hamburg	0.001	0.026	**0.166**	0.059
	Kremsmünster	0.000	0.017	**0.130**	0.042

PELMO 5.5.3/ Grass (spring application); absolute application date 1 March			
Crop	**Scenario**	**INR9805** **Aerobic conditions** >pH 7 ff=0.5	**M2** >pH 7
Grass	Châteaudun	0.016	0.000
	Hamburg	0.027	0.001
	Kremsmünster	0.018	0.000

Conclusion

Calculations of the predicted environmental concentrations (PEC_{gw}) for the active substance and metabolites were performed for Châteaudun, Hamburg and Kremsmünster scenarios in which this product will be used in Poland.

The proposed range of minor uses (i.e.: grass, winter & spring cereals and miscanthus) for proposed dosage compared to all major uses leads to a comparable environmental load. The risk assessment for GW has been conducted for major uses (winter & spring cereals) and it may be stated that also covers the risk for minor uses (winter & spring cereals) except the use in grass where this crop not covers by major uses. Therefore, the calculation was carried out for the grass.

The results of the simulations in FOCUS PEARL 4.4.4 and PELMO 5.5.3 indicate that PEC_{GW} for tribenuron methyl and metabolites (IN-L5296, IN-00581 and IN-R9805) were < 0.1 µg/L for all scenarios (Châteaudun, Hamburg and Kremsmünster). The groundwater concentration for IN-A4098 exceeded the trigger 0.1 µg/L but were < 0.75 µg/L. The information concerning the environmental metabolite IN-A4098 assessment of its potential relevance with respect to the current SANCO guidance (SANCO/221/2000 rev.10, 25/02/2003) is provided in this dRR, Section 10 (Assessment of the relevance of metabolites in groundwater).

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

Modelling Comments:

The submitted calculations were accepted.
All used endpoints were agreed at the EU level.

PEC_{SW} and PEC_{SED} were assessed in accordance with FOCUS Surface Water guidance; Step 1 & 2 and Step 3 (SWASH model) and Step 4 (SWAN and VFSmod) were used.
The application dates were accepted (and corrected in winter cereals, spring application).

Tribenuron-methyl. The mitigation measures for spring and winter cereals were proposed. At Step 4 the run-off mitigation via vegetated filter strip was calculated for 1 and 3 m buffer using the VFSmod. Additionally, the run-off reduction was considered with a vegetative buffer strip of 10 m and 20 m.

SWAN model. Max. PECsw, (µg/L)

Crop	Application rate g a.s./ha	Tribenuron-methyl pH < 7 10 m VBS* + 10 m NSS	Tribenuron-methyl pH > 7 10 m VBS* + 10 m NSS
Winter cereals autumn application	15.00	0.4170 R3 stream	0.5312 R3 stream
Winter cereals spring application	15.00	0.2133 R4 stream	0.3462 R4 stream
Spring cereals	15.00	0.2158 R4 stream	0.3474 R4 stream

*Vegetated buffer strip

Crop	Application rate g a.s./ha	Tribenuron-methyl pH < 7 20 m VBS* + 20 m NSS	Tribenuron-methyl pH > 7 20 m VBS* + 20 m NSS
Winter cereals autumn application	15.00	0.2178 R3 stream	0.2774 R3 stream
Winter cereals spring application	15.00	0.1114 R4 stream	0.1807 R4 stream
Spring cereals	15.00	0.1126 R4 stream	0.1814 R4 stream

*Vegetated buffer strip

VFSmod. Max. PECsw, (µg/L)

Crop	Application rate g a.s./ha	Tribenuron-methyl pH < 7 1 m VFS + 1 m NSS	Tribenuron-methyl pH > 7 1 m VFS + 1 m NSS
Winter cereals autumn application	15.00	0.3439 R3 stream	0.4886 R3 stream
Winter cereals spring application	15.00	0.08931 R4 stream	0.2221 R4 stream
Spring cereals	15.00	0.1165 R4 stream	0.2212 R4 stream

Crop	Application rate g a.s./ha	Tribenuron-methyl pH < 7 3 m VFS + 3 m NSS	Tribenuron-methyl pH > 7 3 m VFS + 3 m NSS

Winter cereals autumn application	15.00	0.2590 R3 stream	0.3831 R3 stream
Winter cereals spring application	15.00	0.03589 R4 stream	0.03589 R4 stream
Spring cereals	15.00	0.03589 R4 stream	0.03589 R4 stream

For grass no mitigation measure was proposed. The max PECsw = 0.09519 µg a.s./L at pH < 7 and max PECsw = 0.1077 µg a.s./L at pH > 7 (both in D3 scenario).

MCPA. The application rate in Tables 8.9-6 and 8.9-7 was corrected.
The mitigation measures were proposed. At Step 4 the run-off mitigation via vegetated filter strip was calculated for 1 m buffer using the VFS mod. Additionally, the run-off reduction was considered with a vegetative buffer strip zone of 10 m and 20 m.

SWAN model. Max. PECsw, (µg/L)

Crop	Application rate g a.s./ha	MCPA 10 m VBS* + 10 m NSS	MCPA 20 m VBS* + 20 m NSS
Winter cereals autumn application	550.0	15.70 R3 stream	8.194 R3 stream
Winter cereals spring application	550.0	11.84 R4 stream	6.180 R4 stream
Spring cereals	550.0	11.90 R4 stream	6.210 R4 stream

*Vegetated buffer strip

VFSmod. Max. PECsw, (µg/L)

Crop	Application rate g a.s./ha	MCPA 1 m VFS + 1 m NSS
Winter cereals autumn application	550.0	12.57 R3 stream
Winter cereals spring application	550.0	6.166 R4 stream
Spring cereals	550.0	6.131 R4 stream

For grass no mitigation measure was proposed. The max PECsw = 3.491 µg a.s./L in D3 scenario.

Formulation. The submitted PECsw assessment for formulation was accepted. The PEC_{sw} were calculated for single application and for the highest application rate recommended for use in winter/spring cereals and grass.
Drift calculator for formulation PECsw assessment was used. PECsw value including the buffer zone are presented in tables below.

Winter/Spring cereals 1 x 1000 g product/ha; Grass 1 x 1000 g product/ha

FOCUS buffer zone (m)	Max. PEC_{sw} (µg formulation/L)
1	6.4246
5	1.7415
10	0.9236

20	0.4799

National assessment, Poland.

Tribenuron-methyl. In accordance with PL national requirements the relevant scenarios were taken into consideration D3, D4 and R1. The Step 3 results were sufficient; no mitigation measures were proposed.

Max. PECsw, (µg/L)

Crop	Application rate g a.s./ha	Tribenuron-methyl pH < 7	Tribenuron-methyl pH > 7
Winter cereals spring application	15.00	0.1888 R1 stream	0.2928 R1 stream
Winter cereals autumn application	15.00	0.09475 D3 ditch	0.3806 D4 pond
Spring cereals	15.00	0.1888 R1 stream*	0.2928 R1 stream*
Grass	15.00	0.1888 R1 stream*	0.2928 R1 stream*

* a surrogate crop of winter cereals was used to cover R1 scenario

All relevant metabolites for all active substances were considered, PEC_{SW} and PEC_{SED} were assessed in Step 1 & 2.

MCPA. In accordance with PL national requirements the relevant scenarios were taken into consideration D3, D4 and R1. The Step 3 results were sufficient; no mitigation measures were proposed.

Max. PECsw, (µg/L)

Crop	Application rate g a.s./ha	MCPA.
Winter cereals autumn application	15.00	5.103 D4 stream
Winter cereals spring application	15.00	7.249 R1 stream*
Spring cereals	15.00	7.249 R1 stream*

* Scenario R1 from Winter cereals, spring application

For grass no mitigation measure was proposed. Considering the surrogate crop winter cereals at spring application (R1 scenario), the max PECsw = 7.249 µg a.s./L in R1 stream scenario.

The PEC_{SW} values for active substance and its metabolites and formulation will be used for further risk assessment.

8.9.1 Justification for new endpoints

There are no deviations from the EU agreed endpoints.

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

The calculation of the predicted environmental concentrations in surface waters and water sediments (PEC_{SW} and PEC_{SED}) of MCPA, tribenuron methyl, its relevant metabolites and the formulation have been assessed with FOCUS models indicated in the Table 8.9-1. Calculations for metabolites of tribenuron methyl were carried out at Step 1 and Step 2 since all trigger values were achieved for aquatic organisms. Moreover, the PEC_{SW} and PEC_{SED} were calculated for both active substances following the FOCUS SW scheme up to Step 4 using FOCUS models. Reference to study – KCP 9.2.5.

Table 8.9-1: Input parameters related to application for $PEC_{SW/SED}$ calculations for the application of MT-565SG-OR2-C

Plant protection product		MT-565SG-OR2-C			
Use no.		1-10			
Crop		Winter cereals	Spring cereals	Winter cereals	Grassland
Application time (relevant for STEP 1 and 2 only)		March-May, spring spraying		October-February, autumn spraying	March-May, spring spraying
Application rate (kg as/ha)	MCPA	0.550			
	Tribenuron-methyl	0.015			
Number of applications/interval (d)		1/n.a.			
Interception		Minimal crop cover (step 2)			Average crop cover (step 2)
CAM (Chemical application method)		2 - appln foliar linear (in case of R scenario)			
Models used for calculation		Step 1 and 2: STEPS 1-2 in FOCUS v.3.2 Step 3: FOCUS SWASH v.5.3, FOCUS PRZM v4.3.1, FOCUS MACRO v5.5.4, FOCUS TOXSWA v5.5.3 Step 4: SWAN v.5.0.1			

Table 8.9-2: FOCUS Step 3 Scenario related input parameters for $PEC_{sw/sed}$ calculations for the application of MT-565SG-OR2-C

Crop Application pattern	Scenario	Application window used in modelling	
		date	Julian day
Winter cereals Spring application 15 g a.s/ha	D3 ditch	4 April – 3 May	~~93 – 123~~ 94 – 124
	D4 pond, stream	30 May – 29 June	150 – 180
	D5 pond, stream	8 April – 8 May	98 – 128
	R1 pond, stream	26 April – 26 May	116 – 146
	R3 stream	4 April – 4 May	94 – 124
	R4 stream	29 April – 29 May	119 – 149
Spring cereals Spring application	D3 ditch	20 April – 20 May	110 – 140
	D4 pond, stream	30 May – 29 June	150 – 180

15 g a.s/ha	D5 pond, stream	11 May – 10 June	131 – 161
	R4 stream	4 May – 3 June	124 – 154
Winter cereals Autumn application 15 g a.s/ha	D3 ditch	10 December – 9 January	344 – 9
	D4 pond, stream	02 October – 02 November	275 – 306
	D5 pond, stream	27 November – 27 December	331 – 361
	R1 pond, stream	27 November – 27 December	331 – 361
	R3 stream	20 December – 20 Jan	354 - 20
	R4 stream	10 December – 10 Jan	344 - 10
Grassland Spring application 15 g a.s/ha	D3 ditch	4 April – 4 May	94 - 124
	D4 pond, stream	10 Mar – 9 April	69 - 99

8.9.2.1 MCPA and its metabolites

Table 8.9-3: Input parameters related to MCPA for $PEC_{sw/sed}$ calculations STEP 1, 2, 3 and 4

Compound	MCPA	Value in accordance to EU endpoint y/n Reference
Molecular weight (g/mol)	200.6	Yes / SANCO/4062/2001 - final of 11.07.2008
Water solubility (mg/L)	293900 (25°C)	Yes / SANCO/4062/2001 - final of 11.07.2008
Saturated vapour pressure [Pa]	4×10^{-4} (30°C)	Yes / SANCO/4062/2001 - final of 11.07.2008
Diffusion coefficient in water (m²/d)	4.3×10^{-5}	FOCUS default value
Diffusion coefficient in air (m²/d)	0.43	FOCUS default value
K_{om} (mL/g)	33.06	Calculated from K_{foc} (K_{fom}= K_{foc}/1.724)
Freundlich Exponent 1/n	0.68	Yes / DAR
$DT_{50,soil}$ (d)	21.2	Yes / SANCO/4062/2001 - final of 11.07.2008 Based on studies on degradation route (i.e. DT50 = 24d, 25°C, 75% 33kPa) (n= 1, normalized at 20°C and pF2)
$DT_{50,water}$ (d)	13.5	FOCUS default value
$DT_{50,sed}$ (d)	16.9	FOCUS default value
$DT_{50,whole\ system}$ (d)	16.9	FOCUS default value
Crop uptake factor [-]	0	Worst-case assumption
Wash-Off factor from Crop (1/mm)	0.05 (MACRO) 0.50 (PRZM)	FOCUS default value

$PEC_{sw/sed}$

Table 8.9-4: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for MCPA following single/ multiple application(s) of HAKSAR TOP 565 SG to winter cereals (spring and autumn application), spring cereals (spring application) and grassland (spring application)

Scenario FOCUS	Waterbody	Max. PEC_{sw} (µg/L)	Main routes of entry	Max. PEC_{sed} (µg/kg sediment)
winter cereals, autumn application(550 g as/ha)				
Step 1	---	175.4423	spray drift, runoff, drainage	97.1190
Step 2	ditch	78.6745		44.1143
Northern Europe	Winter cereals – Octember-February, autumn spraying			
winter cereals, spring cereals (550 g as/ha)				
Step 1	---	175.4423	spray drift, runoff, drainage	97.1190
Step 2	ditch	33.8255		18.5504
Northern Europe	Spring cereals - March-May, spring spraying Winter cereals – March-May, spring sprying			
Grass, spring application(550 g as/ha)				
Step 1	---	175.4423	spray drift, runoff, drainage	97.1190
Step 2	ditch	15.8860		8.6416
Northern Europe	Grass – March-May, spring sprying			
Step 3				
spring cereals, spring application (550 g as/ha)				
D3	ditch	3.489	spray drift, runoff, drainage	1.184
D4	pond	0.2110		0.7837
D4	stream	2.874		0.5319
D5	pond	0.1685		0.5610
D5	stream	3.101		0.5743
R4	stream	26.36		6.363
winter cereals, autumn application (550 g as/ha)				
D3	ditch	3.480	spray drift, runoff, drainage	1.029
D4	pond	3.561		8.038
D4	stream	5.103		4.830
D5	pond	3.669		7.730
D5	stream	5.475		4.424
R1	pond	0.1202		0.3128
R1	stream	3.426		0.2734
R3	stream	34.92		2.30
R4	stream	11.64		0.77

Scenario FOCUS	Waterbody	Max. PEC_{sw} (µg/L)	Main routes of entry	Max. PEC_{sed} (µg/kg sediment)
winter cereals, spring application (550g as/ha)				
D3	ditch	3.485	spray drift, runoff, drainage	1.116
D4	pond	0.1844		0.6806
D4	stream	2.915		0.4381
D5	pond	0.1681		0.5295
D5	stream	2.823		0.3712
R1	pond	0.1411		0.3967
R1	stream	7.249		1.599
R3	stream	8.434		2.912
R4	stream	26.23		6.337
Grass, spring application (550g as/ha)				
D3	ditch	3.491	spray drift, runoff, drainage	1.265
D4	pond	0.1203		0.3132
D4	stream	2.666		0.09608

PEC_{sw} and PEC_{sed} of metabolites

During degradation studies in soil no significant metabolites were found. Thus, no predicted environmental concentrations in surface water and sediment for metabolites were calculated.

FOCUS Step 4

At Step 4 run-off mitigation via vegetated filter strip efficiency was calculated for 1m buffer using the VFSmod model. Additionaly the run-off reduction was considered with a vegetative buffer of 10-12 m (by reducing mass of pesticide in aqueous phase by 60% and mass of eroded sediment by 85%) and 18-20 m (by reducing mass of pesticide in aqueous phase by 70% and mass of eroded sediment by 95%).

Table 8.9-5: Global maximum PEC_{sw} and PEC_{sed} values for MCPA, following a single application of MT-565SG -OR2-C to winter and spring cerals (spring application) and winter cereals (autumn application) according to surface water Step 4

Nozzle reduction		**STEP 4**	
	(VFSmod) Vegetative strip (m)	**1 m**	
	Buffer width	**1 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
		spring cereals, spring application (550 g as/ha)	
None	R4 stream	6.131	1.861

Nozzle reduction	STEP 4		
	(VFSmod) Vegetative strip (m)	**1 m**	
	Buffer width	**1 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
		winter cereals, spring application (550g as/ha)	
None	R4 stream	6.166	1.870
		winter cereals, autumn application (550g as/ha)	
None	R3 stream	12.57	3.008

Table 8.9-6: Global maximum PEC_{sw} and PEC_{sed} values for MCPA following a single application of HAKSAR TOP 565 SG to cereals according to surface water Step 4 (vegetative buffer of 10-12)

Nozzle reduction	STEP 4		
	Width of planted buffer strip (m)	**10-12 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
spring cereals, spring application, ~~15 g a.s./ha~~ 550 g a.s./ha			
None	R4 stream	11.90	3.241
winter cereals, spring application, ~~15 g a.s./ha~~ 550 g a.s./ha			
None	R4 stream	11.84	3.228
winter cereals, autumn application (550g as/ha)			
None	R3 stream	15.70	3.476

Table 8.9-7: Global maximum PEC_{sw} and PEC_{sed} values for MCPA following a single application of HAKSAR TOP 565 SG to cereals according to surface water Step 4 (vegetative buffer of 18-20)

Nozzle reduction	STEP 4		
	Width of planted buffer strip (m)	**18-20 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
spring cereals, spring application, ~~15 g a.s./ha~~ 550 g a.s./ha			
None	R4 stream	6.210	1.816

Nozzle reduction	**STEP 4**		
	Width of planted buffer strip (m)	**18-20 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
winter cereals, spring application, ~~15 g a.s./ha~~ 550 g a.s./ha			
None	R4 stream	6.180	1.808
winter cereals, autumn application (550g as/ha)			
None	R3 stream	8.194	1.978

8.9.2.2 Tribenuron-methyl and its metabolites

Recommendations included in Generic guidance for FOCUS Surface Water Scenarios (Ver. 1.4, May 2015) were used to select the input data. The input parameters used for the modelling are summarized in Table 8.9-6.

Table 8.9-6: Input parameters related to tribenuron methyl and some metabolites for $PEC_{sw/sed}$ calculations STEP 1, 2 and 3

Compound	tribenuron methyl		IN-L5296	IN-A4098	IN-00581	IN-R9805	Value in accordance to EU endpoint y/n Reference
	pH < 7	pH > 7					
Molecular weight (g/mol)	395.4		154.2	140.1	183.2	140.2	Yes / EFSA Journal 2017;15(17):4912
Water solubility (mg/L) at 20°C	2483		2483	456	2483	2483	Yes / EFSA Journal 2017;15(17):4912
Saturated vapour pressure [Pa] at 20°C	5.99 x 10^{-9}		not required for Step 1+2				Yes / EFSA Journal 2017;15(17):4912
Henry's Law Constant [Pa×m³/mol] at 25°C	1.42 x 10^{-6}		not required for Step 1+2				Yes / EFSA Journal 2017;15(17):4912
Diffusion coefficient in water (m²/d)	4.3 x 10^{-5}		not required for Step 1+2				FOCUS default value
Diffusion coefficient in air (m²/d)	0.43						FOCUS default value
$K_{oc,foc}$ (mL/g)	38.9	8.6	82.6 Geometric mean	45.6 Geometric mean	5.6 Arithmetic mean	105 Arithmetic mean	Yes / EFSA Journal 2017;15(17):4912
	Geometric mean						
K_{om} (mL/g)	22.56	4.99	not required for Step 1+2				Calculated from K_{foc} (K_{fom}= K_{foc}/1.724)
Freundlich Exponent 1/n	0.98	1.0	not required for Step 1+2				Yes / EFSA Journal 2017;15(17):4912
$DT_{50,soil}$ (d) geometric mean	5.3	16.7	207.5	127.7	19.1	85.5	Yes / EFSA Journal 2017;15(17):4912
$DT_{50,water}$ (d)	18.2		227.8	1000	10.8	1000	Yes / EFSA Journal 2017;15(17):4912
$DT_{50,sed}$ (d)	1000		1000	1000	1000	1000	Yes / EFSA Journal

Compound	tribenuron methyl		IN-L5296	IN-A4098	IN-00581	IN-R9805	Value in accordance to EU endpoint y/n Reference
	pH < 7	pH > 7					
							2017;15(17):4912
$DT_{50,whole\ system}$ (d)	18.2		227.8	1000	10.8	1000	Yes / EFSA Journal 2017;15(17):4912
Crop uptake factor [-]	0		not required for Step 1+2				FOCUS default value
Maximum occurrence observed (%)	-		Soil: 85.7% Water/sed.: 88.9%	Soil: 12.6% Water/sed.: 0.0001%	Soil: 33.9% Water/sed.: 38.4%	Soil: 7.6% Water/sed.: 14.7%	Yes / EFSA Journal 2017;15(17):4912
Wash-Off factor from Crop (1/mm)	0.05 (MACRO) 0.50 (PRZM)		not required for Step 1+2				FOCUS default value

Table 8.9-7: Input parameters related to further metabolites for $PEC_{sw/sed}$ calculations STEP 1 and 2

Compound	M2	IN-D5803	IN-5119	IN-GN815	IN-GK521	Value in accordance to EU endpoint y/n Reference
Molecular weight (g/mol)	197.2	215.2	201.1	367.3	381.4	Yes / EFSA Journal 2017;15(17):4912
Water solubility (mg/L) at 20°C	2483	2483	2483	2483	2483	Yes / EFSA Journal 2017;15(17):4912
$K_{oc,foc}$ (mL/g)	72.2 Geometric mean	17.7 Geometric mean	3.5 Geometric mean	15.9 Geometric mean	16.8 Geometric mean	Yes / EFSA Journal 2017;15(17):4912
$DT_{50,soil}$ (d) geometric mean	21.5	3.2	14.4	7.2	12.1	Yes / EFSA Journal 2017;15(17):4912
$DT_{50,water}$ (d)	1000	1000	1000	47.6	1000	Yes / EFSA Journal 2017;15(17):4912
$DT_{50,sed}$ (d)	1000	1000	1000	1000	1000	Yes / EFSA Journal 2017;15(17):4912
$DT_{50,whole\ system}$ (d)	1000	1000	1000	47.6	1000	Yes / EFSA Journal 2017;15(17):4912
Maximum occurrence observed (%)	Soil: 16.2% Water/sed.: 0.0001%	Soil: 46.6% Water/sed.: 0.0001%	Soil: 6.1% Water/sed.: 26.5%	Soil: 6.8% Water/sed.: 13.0%	Soil: 32.1% Water/sed.: 0.0001%	Yes / EFSA Journal 2017;15(17):4912

Table 8.9-8: FOCUS Step 1, 2 and 3 PEC_{sw} and PEC_{sed} for tribenuron methyl (pH < 7) following single application of HAKSAR TOP 565 SGto winter cereals (spring and autumn application), spring cereals (spring application) and grass (spring application)

Scenario FOCUS	Waterbody	Max. PEC_{sw} (µg/L)	Main routes of entry	Max. PEC_{sed} (µg/kg sediment)
Winter cereals, Autumn application(15 g as/ha)				
Step 1	---	4.89	spray drift, runoff, drainage	1.85
Step 2	ditch	1.52		0.59
Northern Europe	Winter cereals – October-February, autumn spraying			
Winter cereals, Spring application (15 g as/ha)				
Step 1	---	4.89	spray drift, runoff, drainage	1.85
Step 2	ditch	0.68		0.26
Northern Europe	Spring cereals - March-May, spring spraying Winter cereals – March-May, spring sprying			
Grass, spring application(15g as/ha)				
Step 1	---	4.89	spray drift, runoff, drainage	1.85
Step 2	ditch	0.34		0.13
Northern Europe	Grass – March-May, spring sprying			
Step 3				
Spring cereals, Spring application (15 g as/ha)				
D3	ditch	0.0951	spray drift, runoff, drainage	0.01193
D4	pond	0.003287		0.001946
D4	stream	0.07778		0.002940
D5	pond	0.003297		0.002006
D5	stream	0.08299		0.003002
R4	stream	0.4781		0.06043
winter cereals, autumn application (15 g as/ha)				
D3	ditch	0.09475	spray drift, runoff, drainage	0.01025
D4	pond	0.02370		0.2513
D4	stream	0.08223		0.01224
D5	pond	0.03949		0.04281
D5	stream	0.08871		0.01835
R1	pond	0.003280		0.002419
R1	stream	0.09029		0.003773
R3	stream	0.9270		0.09907
R4	steram	0.2127		0.02438
winter cereals, spring application (15 g as/ha)				

Scenario FOCUS	Waterbody	Max. PEC_{sw} (µg/L)	Main routes of entry	Max. PEC_{sed} (µg/kg sediment)
D3	ditch	0.09496	spray drift, runoff, drainage	0.01136
D4	pond	0.003286		0.001957
D4	stream	0.07930		0.003564
D5	pond	0.003281		0.002246
D5	stream	0.07587		0.001572
R1	pond	0.003280		0.002674
R1	stream	0.1513		0.01535
R3	stream	0.09678		0.01563
R4	stream	0.4726		0.05976
Grass, spring application (15 g as/ha)				
D3	ditch	0.09519	spray drift, runoff, drainage	0.01301
D4	pond	0.003280		0.002444
D4	stream	0.07272		0.001721

Table 8.9-9: FOCUS Step 1, 2 and 3 PEC_{sw} and PEC_{sed} for tribenuron methyl (pH > 7) following single application of HAKSAR TOP 565 SGto winter cereals (spring and autumn application) and spring cereals (spring application)

Scenario FOCUS	Waterbody	Max. PEC_{sw} (µg/L)	Main routes of entry	Max. PEC_{sed} (µg/kg sediment)
Winter cereals, Autumn application(15 g as/ha)				
Step 1	---	5.08	spray drift, runoff, drainage	0.43
Step 2	ditch	2.21		0.19
Northern Europe	Winter cereals – October-February, autumn spraying			
winter cereals, spring cereals				
Step 1	---	5.08	spray drift, runoff, drainage	0.43
Step 2	ditch	0.96		0.08
Northern Europe	Spring cereals - March-May, spring spraying Winter cereals – March-May, spring sprying			
Grass, spring application(15 g as/ha)				
Step 1	---	5.08	spray drift, runoff, drainage	0.43
Step 2	ditch	0.45		0.04
Northern Europe	Grass – March-May, spring sprying			
Step 3				

Scenario FOCUS	Waterbody	Max. PEC_{sw} (µg/L)	Main routes of entry	Max. PEC_{sed} (µg/kg sediment)
spring cereals, spring application (15 g as/ha)				
D3	ditch	0.1145	spray drift, runoff, drainage	0.02290
D4	pond	0.02886		0.02245
D4	stream	0.08899		0.01407
D5	pond	0.005828		0.003650
D5	stream	0.08454		0.003619
R4	stream	0.7697		0.05952
winter cereals, autumn application (15 g as/ha)				
D3	ditch	0.1621	spray drift, runoff, drainage	0.06596
D4	pond	0.3806		0.2524
D4	stream	0.3119		0.1433
D5	pond	0.3940		0.2097
D5	stream	0.2668		0.09712
R1	pond	0.003280		0.001328
R1	stream	0.09197		0.002388
R3	stream	1.181		0.07803
R4	pond	0.1606		0.01132
winter cereals, spring application (15 g as/ha)				
D3	ditch	0.1099	spray drift, runoff, drainage	0.01839
D4	pond	0.02840		0.02159
D4	stream	0.08939		0.01422
D5	pond	0.006148		0.003502
D5	stream	0.07754		0.002600
R1	pond	0.003280		0.001437
R1	stream	0.2349		0.01464
R3	stream	0.1129		0.01100
R4	stream	0.7669		0.05930
Grass, spring application (15 g as/ha)				
D3	ditch	0.1077	spray drift, runoff, drainage	0.01747
D4	pond	0.005117		0.003302
D4	stream	0.07572		0.004168

FOCUS Step 4

At Step 4 run-off mitigation via vegetated filter strip efficiency was calculated for 1 m and 3 m buffer using the VFSmod model. Additionaly the run-off reduction was considered with a vegetative buffer of 10-12 m (by reducing mass of pesticide in aqueous phase by 60% and mass of eroded sediment by 85%) and 18-20 m (by reducing mass of pesticide in aqueous phase by 70% and mass of eroded sediment by

95%).

Table 8.9-10: Global maximum PECsw and PECsed values for Tribenuron-methyl following a single application of HAKSAR TOP 565 SG to cereals according to surface water Step 4 (VFS model, filter strip buffer width of 1 and 3m)

Nozzle reduction	**STEP 4 tribenuron methyl**		
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
	Vegetative strip	**1 m**	
	Buffer width	**1m**	
spring cereals, spring application, 15 g a.s./ha, pH >7			
None	R4 stream	0.2212	0.01731
spring cereals, spring application, 15 g a.s./ha, pH <7			
None	R4 stream	0.1165	0.01533
winter cereals, spring application, 15 g a.s./ha, pH >7			
None	R4 stream	0.2221	0.01745
winter cereals, spring application, 15 g a.s./ha, pH <7			
None	R4 stream	~~0.1163~~ 0.08931	0.01530
winter cereals, autumn application, 15 g a.s./ha, pH >7			
None	R3 stream	0.4886	0.03302
winter cereals, autumn application, 15 g a.s./ha, pH <7			
None	R3 stream	0.3439	0.3813
Nozzle reduction	Vegetative strip	**3 m**	
	Buffer width	**3 m**	
spring cereals, spring application, 15 g a.s./ha, pH >7			
None	R4 stream	0.03589	0.001869
spring cereals, spring application, 15 g a.s./ha, pH <7			
None	R4 stream	0.03589	0.002675
winter cereals, spring application, 15 g a.s./ha, pH >7			
None	R4 stream	0.03589	0.001885
winter cereals, spring application, 15 g a.s./ha, pH <7			

None	R4 stream	~~0.1163~~ 0.03589	0.01530
winter cereals, autumn application, 15 g a.s./ha, pH >7			
None	R3 stream	0.3831	0.02565
winter cereals, autumn application, 15 g a.s./ha, pH <7			
None	R3 stream	0.2590	0.02842

Table 8.9-11: Global maximum PEC_{sw} and PEC_{sed} values for tribenuron methyl following a single application of HAKSAR TOP 565 SG to cereals according to surface water Step 4 (vegetative buffer of 10-12)

Nozzle reduction	**STEP 4 tribenuron methyl**		
	Width of planted buffer strip (m)	**10-12 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
spring cereals, spring application, 15 g a.s./ha, pH >7			
None	R4 stream	0.3474	0.2684
spring cereals, spring application, 15 g a.s./ha, pH <7			
None	R4 stream	0.2158	0.02733
winter cereals, spring application, 15 g a.s./ha, pH>7			
None	R4 stream	0.3462	0.02675
winter cereals, spring application, 15 g a.s./ha, pH<7			
None	R4 stream	0.2133	0.02702
winter cereals, autumn application, 15 g a.s./ha, pH>7			
None	R3 stream	0.5312	0.03521
winter cereals, autumn application, 15 g a.s./ha, pH <7			
None	R3 stream	0.4170	0.04485

Table 8.9-12: Global maximum PEC_{sw} and PEC_{sed} values for tribenuron methyl following a single application of HAKSAR TOP 565 SG to cereals according to surface water Step 4 (vegetative buffer of 18-20)

Nozzle reduction	**STEP 4 tribenuron methyl**		
	Width of planted buffer strip (m)	**18-20 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
spring cereals, spring application, 15 g a.s./ha, pH >7			
None	R4 stream	0.1814	0.01403

Nozzle reduction	STEP 4 tribenuron methyl		
	Width of planted buffer strip (m)	**18-20 m**	
	Scenario	PEC_{sw} (Global max.)	PEC_{sed}
		(µg/L)	(µg/kg)
spring cereals, spring application, 15 g a.s./ha, pH <7			
None	R4 stream	0.1126	0.01435
winter cereals, spring application, 15 g a.s./ha, pH>7			
None	R4 stream	0.1807	0.01398
winter cereals, spring application, 15 g a.s./ha, pH<7			
None	R4 stream	0.1114	0.01419
winter cereals, autumn application, 15 g a.s./ha, pH>7			
None	R3 stream	0.2774	0.01842
winter cereals, autumn application, 15 g a.s./ha, pH <7			
None	R3 stream	0.2178	0.02355

PEC_{sw} and PEC_{sed} of metabolites

During degradation studies of tribenuron methyl in soil a few major metabolites were found. The PEC_{SW} and PEC_{SED} values are presented in the table below.

Table 8.9-13: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-L5296 following single application of HAKSAR TOP 565 SGto winter and spring cereals

Metabolite IN-L5296	Scenario FOCUS	Waterbody	Max. PECsw (µg/L)	Main routes of entry	Max. PECsed (µg/kg sediment)
winter cereals					
IN-L5296 tribenuron methyl, pH < 7	Step 1	---	3.11	spray drift, runoff, drainage	2.53
	Step 2	ditch	1.25		1.03
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-L5296 tribenuron methyl, pH < 7	Step 1	---	3.11	spray drift, runoff, drainage	2.53
	Step 2	ditch	0.53		0.43
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-L5296 tribenuron methyl, pH < 7	Step 1	---	3.11	spray drift, runoff, drainage	2.53
	Step 2	ditch	0.2376		0.1949
	Northern Europe	March-May, spring spraying			
winter cereals					
IN-L5296 tribenuron methyl, pH > 7	Step 1	---	3.11	spray drift, runoff, drainage	2.53
	Step 2	ditch	1.45		1.19
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-L5296 tribenuron methyl, pH > 7	Step 1	---	3.11	spray drift, runoff, drainage	2.53
	Step 2	ditch	0.55		0.45
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-L5296 tribenuron methyl, pH > 7	Step 1	---	3.11	spray drift, runoff, drainage	2.53
	Step 2	ditch	0.27		0.22
	Northern Europe	March-May, spring spraying			

Table 8.9-14: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-A4098 following single application of HAKSAR TOP 565 SGto winter and spring cereals

Metabolite IN-A4098	Scenario FOCUS	Waterbody	Max. PECsw (µg/L)	Main routes of entry	Max. PECsed (µg/kg sediment)
winter cereals					
IN-A4098 tribenuron methyl, pH < 7	Step 1	---	0.21	spray drift, runoff, drainage	0.10
	Step 2	ditch	0.1		0.05
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-A4098 tribenuron methyl, pH < 7	Step 1	---	0.21	spray drift, runoff, drainage	0.10
	Step 2	ditch	0.04		0.02
	Northern Europe	March-May, spring spraying			
grass 15 g a.s./ha					
IN-A4098 tribenuron methyl, pH < 7	Step 1	---	0.21	spray drift, runoff, drainage	0.10
	Step 2	ditch	0.0165		0.0075
	Northern Europe	March-May, spring spraying			
winter cereals					
IN-A4098 tribenuron methyl, pH > 7	Step 1	---	0.21	spray drift, runoff, drainage	0.10
	Step 2	ditch	0.1		0.05
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-A4098 tribenuron methyl, pH > 7	Step 1	---	0.21	spray drift, runoff, drainage	0.10
	Step 2	ditch	0.04		0.02
	Northern Europe	March-May, spring spraying			
Grass 15 g a.s./ha					
IN-A4098 tribenuron methyl, pH > 7	Step 1	---	0.21	spray drift, runoff, drainage	0.10
	Step 2	ditch	0.0165		0.0075
	Northern Europe	March-May, spring spraying			

Table 8.9-15: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-00581 following single application of HAKSAR TOP 565 SGto winter and spring cereals

Metabolite IN-00581	Scenario FOCUS	Waterbody	Max. PECsw (µg/L)	Main routes of entry	Max. PECsed (µg/kg sediment)
winter cereals					
IN-00581 tribenuron methyl, pH < 7	Step 1	---	1.69	spray drift, runoff, drainage	0.09
	Step 2	ditch	0.62		0.03
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					

IN-00581 tribenuron methyl, pH < 7	Step 1	---	1.69	spray drift, runoff, drainage	0.09
	Step 2	ditch	0.26		0.01
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
Step 1	---	1.69	spray drift, runoff, drainage	0.09	
Step 2	ditch	0.1151		0.0064	
Northern Europe	March-May, spring spraying				
winter cereals					
IN-00581 tribenuron methyl, pH > 7	Step 1	---	1.69	spray drift, runoff, drainage	0.09
	Step 2	ditch	0.73		0.04
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-00581 tribenuron methyl, pH > 7	Step 1	---	1.69	spray drift, runoff, drainage	0.09
	Step 2	ditch	0.30		0.02
	Northern Europe	March-May, spring spraying			
grass 15 g a.s./ha					
IN-00581 tribenuron methyl, pH > 7	Step 1	---	2.1	spray drift, runoff, drainage	0.12
	Step 2	ditch	0.13		0.01
	Northern Europe	March-May, spring spraying			

Table 8.9-16: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-R9805 following single application of HAKSAR TOP 565 SGto winter and spring cereals

Metabolite IN-R9805	**Scenario FOCUS**	**Waterbody**	**Max. PECsw (µg/L)**	**Main routes of entry**	**Max. PECsed (µg/kg sediment)**
winter cereals					
IN-R9805 tribenuron methyl, pH < 7	Step 1	---	0.35	spray drift, runoff, drainage	0.36
	Step 2	ditch	0.13		0.14
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-R9805 tribenuron methyl, pH < 7	Step 1	---	0.35	spray drift, runoff, drainage	0.36
	Step 2	ditch	0.06		0.06
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-R9805 tribenuron methyl, pH < 7	Step 1	---	0.35	spray drift, runoff, drainage	0.36
	Step 2	ditch	0.0267		0.0277
	Northern Europe	March-May, spring spraying			
winter cereals					
IN-R9805 tribenuron	Step 1	---	0.35	spray drift, runoff, drainage	0.36
	Step 2	ditch	0.16		0.17

methyl, pH > 7	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-R9805 tribenuron methyl, pH > 7	Step 1	---	0.35	spray drift, runoff, drainage	0.36
	Step 2	ditch	0.07		0.07
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-R9805 tribenuron methyl, pH > 7	Step 1	---	0.35	spray drift, runoff, drainage	0.36
	Step 2	ditch	0.03		0.03
	Northern Europe	March-May, spring spraying			

Table 8.9-17: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite M2 following single application of HAKSAR TOP 565 SGwinter and spring cereals

Metabolite M2	**Scenario FOCUS**	**Waterbody**	**Max. PECsw (µg/L)**	**Main routes of entry**	**Max. PECsed (µg/kg sediment)**
winter cereals					
M2 tribenuron methyl, pH < 7	Step 1	---	0.37	spray drift, runoff, drainage	0.27
	Step 2	ditch	0.16		0.12
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
M2 tribenuron methyl, pH < 7	Step 1	---	0.37	spray drift, runoff, drainage	0.27
	Step 2	ditch	0.06		0.05
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
M2 tribenuron methyl, pH < 7	Step 1	---	0.37	spray drift, runoff, drainage	0.27
	Step 2	ditch	0.0259		0.0187
	Northern Europe	March-May, spring spraying			
winter cereals					
M2 tribenuron methyl, pH > 7	Step 1	---	0.37	spray drift, runoff, drainage	0.27
	Step 2	ditch	0.16		0.12
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
M2 tribenuron methyl, pH > 7	Step 1	---	0.37	spray drift, runoff, drainage	0.27
	Step 2	ditch	0.06		0.05
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
M2 tribenuron methyl, pH > 7	Step 1	---	0.46	spray drift, runoff, drainage	0.33
	Step 2	ditch	0.03		0.02
	Northern Europe	March-May, spring spraying			

Table 8.9-18: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-D5803 following single application of HAKSAR TOP 565 SGto winter and spring cereals

Metabolite IN-D5803	Scenario FOCUS	Waterbody	Max. PECsw (µg/L)	Main routes of entry	Max. PECsed (µg/kg sediment)
winter cereals					
IN-D5803 tribenuron methyl, pH < 7	Step 1	---	1.24	spray drift, runoff, drainage	0.22
	Step 2	ditch	0.26		0.05
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-D5803 tribenuron methyl, pH < 7	Step 1	---	1.24	spray drift, runoff, drainage	0.22
	Step 2	ditch	0.10		0.02
	Northern Europe	March-May, spring spraying			
Grass, 15g a.s./ha					
IN-D5803 tribenuron methyl, pH < 7	Step 1	---	1.24	spray drift, runoff, drainage	0.22
	Step 2	ditch	0.0417		0.0074
	Northern Europe	March-May, spring spraying			
winter cereals					
IN-D5803 tribenuron methyl, pH > 7	Step 1	---	1.24	spray drift, runoff, drainage	0.22
	Step 2	ditch	0.26		0.05
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-D5803 tribenuron methyl, pH > 7	Step 1	---	1.24	spray drift, runoff, drainage	0.22
	Step 2	ditch	0.10		0.02
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-D5803 tribenuron methyl, pH > 7	Step 1	---	1.53	spray drift, runoff, drainage	0.27
	Step 2	ditch	0.05		0.01
	Northern Europe	March-May, spring spraying			

Table 8.9-19: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-D5119 following single application of HAKSAR TOP 565 SG to winter and spring cereals

Metabolite IN-D5119	Scenario FOCUS	Waterbody	Max. PECsw (µg/L)	Main routes of entry	Max. PECsed (µg/kg sediment)
winter cereals					
IN-D5119 tribenuron methyl, pH < 7	Step 1	---	0.84	spray drift, runoff, drainage	0.03
	Step 2	ditch	0.28		0.01
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					

IN-D5119 tribenuron methyl, pH < 7	Step 1	---	0.84	spray drift, runoff, drainage	0.03
	Step 2	ditch	0.12		0.00
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-D5119 tribenuron methyl, pH < 7	Step 1	---	0.84	spray drift, runoff, drainage	0.03
	Step 2	ditch	0.0608		0.0021
	Northern Europe	March-May, spring spraying			
winter cereals					
IN-D5119 tribenuron methyl, pH > 7	Step 1	---	0.84	spray drift, runoff, drainage	0.03
	Step 2	ditch	0.37		0.01
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-D5119 tribenuron methyl, pH > 7	Step 1	---	0.84	spray drift, runoff, drainage	0.03
	Step 2	ditch	0.16		0.01
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-D5119 tribenuron methyl, pH > 7	Step 1	---	0.84	spray drift, runoff, drainage	0.03
	Step 2	ditch	0.07		0.00
	Northern Europe	March-May, spring spraying			

Table 8.9-20: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-GN815 following single application of HAKSAR TOP 565 SG to winter and spring cereals

Metabolite IN-GN815	Scenario FOCUS	Waterbody	Max. PECsw (µg/L)	Main routes of entry	Max. PECsed (µg/kg sediment)
winter cereals					
IN-GN815 tribenuron methyl, pH < 7	Step 1	---	0.92	spray drift, runoff, drainage	0.14
	Step 2	ditch	0.30		0.05
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-GN815 tribenuron methyl, pH < 7	Step 1	---	0.92	spray drift, runoff, drainage	0.14
	Step 2	ditch	0.12		0.02
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-GN815 tribenuron methyl, pH < 7	Step 1	---	0.92	spray drift, runoff, drainage	0.14
	Step 2	ditch	0.0606		0.0096
	Northern Europe	March-May, spring spraying			
winter cereals					
IN-GN815 tribenuron	Step 1	---	0.92	spray drift, runoff, drainage	0.14
	Step 2	ditch	0.37		0.06

methyl, pH > 7	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-GN815 tribenuron methyl, pH > 7	Step 1	---	0.92	spray drift, runoff, drainage	0.14
	Step 2	ditch	0.16		0.03
	Northern Europe	March-May, spring spraying			
Grass 15 g a.s./ha					
IN-GN815 tribenuron methyl, pH > 7	Step 1	---	0.92	spray drift, runoff, drainage	0.14
	Step 2	ditch	0.07		0.01
	Northern Europe	March-May, spring spraying			

Table 8.9-21: FOCUS Step 1 and 2 PEC_{sw} and PEC_{sed} for metabolite IN-GK521 following single application of HAKSAR TOP 565 SG to winter and spring cereals

Metabolite IN-GK521	**Scenario FOCUS**	**Waterbody**	**Max. PECsw (µg/L)**	**Main routes of entry**	**Max. PECsed (µg/kg sediment)**
winter cereals					
IN-GK521 tribenuron methyl, pH < 7	Step 1	---	1.51	spray drift, runoff, drainage	0.25
	Step 2	ditch	0.60		0.10
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-GK521 tribenuron methyl, pH < 7	Step 1	---	1.51	spray drift, runoff, drainage	0.25
	Step 2	ditch	0.24		0.04
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-GK521 tribenuron methyl, pH < 7	Step 1	---	1.51	spray drift, runoff, drainage	0.25
	Step 2	ditch	0.0963		0.0162
	Northern Europe	March-May, spring spraying			
winter cereals					
IN-GK521 tribenuron methyl, pH > 7	Step 1	---	1.51	spray drift, runoff, drainage	0.25
	Step 2	ditch	0.60		0.10
	Northern Europe	October-February, autumn spraying			
spring cereals, winter cereals					
IN-GK521 tribenuron methyl, pH > 7	Step 1	---	1.51	spray drift, runoff, drainage	0.25
	Step 2	ditch	0.24		0.04
	Northern Europe	March-May, spring spraying			
Grass, 15 g a.s./ha					
IN-GK521 tribenuron methyl, pH > 7	Step 1	---	1.89	spray drift, runoff, drainage	0.32
	Step 2	ditch	0.10		0.01
	Northern Europe	March-May, spring spraying			

8.9.2.3 PEC$_{sw/sed}$ of HAKSAR TOP 565 SG

The PEC values of the formulation **HAKSAR TOP 565 SG** in surface water have been assessed with the FOCUS SWASH model. The PEC$_{SW}$ were calculated for single application and for the highest application rate recommended for use in winter cereals and spring cereals.

Table 8.9-22: The PEC$_{SW}$ values for HAKSAR TOP 565 SG on cereals

FOCUS buffer zone (m)	Waterbody	Drift values (%)	Max. PEC$_{sw}$ (µg formulation/L)
winter cereals 1 x 1000 g product/ha, spring spraying **spring cereals** 1 x 1000 g product/ha, spring spraying **winter cereals** 1 x 1000 g product/ha, autumn spraying			
1	ditch – worst case	2.76	6.4246
5		0.57	1.7415
10		0.29	0.9236
20		0.15	0.4799

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

The fate and behaviour in air of MCPA and Tribenuron methyl were evaluated in the approval process of these substances at EU level.. No additional studies have been performed.

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

Vapour pressure	4.0 x 10^{-4} Pa at 32°C
Henry's Law constant	5.5 x 10^{-5} Pa·m^3/mol at 25°C

Based on the results shown in the above table it can be concluded that MCPA has low volatility and low stability in the atmosphere. The risk of atmosphere pollution by above active substance following the application with HAKSAR TOP 565 SG is low. Therefore, there was no need to calculate PEC in air.

Table 8.10-2 Summary of atmospheric degradation and behaviour of Tribenuron-methyl

Compound	Tribenuron-methyl
Direct photolysis in air	No data, not required due to low voltality
Quantum yield of direct phototransformation	No data, no direct phototransformation occurs
Photochemical oxidative degradation in air	DT50 (h): 43.4 derived by the Atkinson model
Volatilisation	Insignificant voltalisation expected, due to low vapour pressure.

The vapour pressure at 20 °C of the active substance Tribenuron-methyl is < 10^{-5} Pa (EFSA Journal

2017;15(7):4912) . Hence the active substance Tribenuron-methyl is regarded as non-volatile. Therefore exposure of adjacent surface waters and terrestrial ecosystems by the active substance Tribenuron-methyl due to volatilization with subsequent deposition should not be considered.

Based on data regarding atmospheric degradation and behaviour of MCPA and Tribenuron-methyl, the risk of atmospheric pollution of both active substances following the use of HAKSAR TOP 565 SG is low.

Appendix 1 Lists of data considered in support of the evaluation

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	Łożuk I.	2021	Calculation of the predicted environmental concentrations of MCPA, tribenuron methyl and its metabolites in groundwater after application of HAKSAR TOP 565 SG(FOCUS PEARL, FOCUS PELMO, MACRO in FOCUS) CIECH Sarzyna S.A., Poland RS/01/21 non GLP Unpublished	N	CIECH Sarzyna S.A
KCP 9.2.5/1	Siwiec I.	2021	Calculation of the predicted environmental concentrations of MCPA, tribenuron methyl and its relevant metabolites in surface waters and water sediments after application of HAKSAR TOP 565 SG(STEPS 1-2 in FOCUS, SWASH, SWAN) CIECH Sarzyna S.A., Poland RS/02/21 non GLP Unpublished	N	CIECH Sarzyna S.A
KCP 9.2.5/2	Siwiec I.	2021	Calculation of the predicted environmental concentrations of MCPA, tribenuron methyl and its relevant metabolites in surface waters and water sediments after application of HAKSAR TOP 565 SG(STEPS 1-2 in FOCUS, SWASH) – minor uses CIECH Sarzyna S.A., Poland RS/03/21 non GLP Unpublished	N	CIECH Sarzyna S.A

Appendix 2 Detailed evaluation of the new Annex II studies

No fate studies re provided.