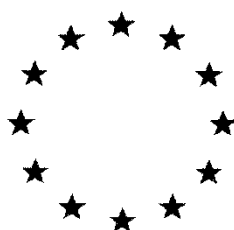


# ***European Commission***



**Draft Renewal Assessment Report prepared according to the Commission  
Regulation (EU) N° 1107/2009**

## **Ethofumesate**

### **Volume 3 – B.8 (PPP) – Ethofumesate SC 500**

Rapporteur Member State: Austria  
Co-Rapporteur Member State: Denmark

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## Version History

When	What
1998	Initial DAR
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2000/12	Addendum 8
2015/01	DRAR

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## **B.8. ENVIRONMENTAL FATE AND BEHAVIOUR**

### **B.8.1. FATE AND BEHAVIOUR IN SOIL**

#### **B.8.1.1. Route and rate of degradation in soil**

In the aerobic metabolism studies evaluated in the course of the first approval, ethofumesate was slowly degraded (lab DT50 up to 211 days). The main degradation products were carbon dioxide and non-extractable residues. Ethofumesate was degraded in soil through the action of soil micro flora via either dealkylation (NC 8493, ethofumesate- 2- hydroxy) followed by oxidation (NC 9607, ethofumesate-lactone) and ring opening (NC 20645, ethofumesate-carboxylic acid). These studies, however, were often characterized by inappropriate handling of the experimental soils (storage of the soils outdoors or under ambient conditions for up to three months, low microbial biomass levels, no pre-incubation prior application of the spiking solutions). The newly submitted aerobic soil degradation studies confirmed the previously established degradation route, but degradation was faster due to the use of freshly sampled soils. Considering the valid studies from the previous evaluation and the new studies, ethofumesate was generally moderately fast degraded (Dt50 lab: 9.4 – 137 d; geomean = 18.7 d; n =17). The main degradation products were carbon dioxide and unextractable residues. Ethofumesate is degraded to NC 8493 (ethofumesate- 2- hydroxy) followed by NC 9607 (ethofumesate-lactone) and NC 20645 (ethofumesate-carboxylic acid) or the loss of the methanesulfonate moiety to transient degradates which are converted to non-extractable residues (21 - 64% AR; n = 17) and mineralized to CO<sub>2</sub> (4 - 60% AR; n = 17 ) at 100 days. Metabolites were detected in minor amounts only (< 5% AR).

#### **B.8.1.2. Mobility in soil**

Ethofumesate was rapidly and strongly adsorbed to soil in laboratory tests with Koc ranging between 97 and 208 mL/g (geomean 118 mL/g; n = 12). An additional time-dependent sorption study was submitted by the notifier Taskforce. The increase of sorption over time was defined as the ratio of concentration of [Phenyl-UL-14C]Ethofumesate in soil to the concentration in aqueous 0.01 M CaCl<sub>2</sub> extracts (RTDS value). At study end (91 days), the mean RTDS value increased by a factor of 1.4-3.0 indicating effects of ageing on adsorption of ethofumesate. Adsorption to soil of the metabolites NC 8493, NC 9607 and NC 20645 was investigated. Due to the fast degradation of these metabolites, the sorption to soil could not be determined for NC 8493 with batch equilibrium tests and was instead estimated via EPI WIN to 20.82 mL/g. For NC 20645 (ethofumesate-carboxylic acid) the Koc could be determined in 4 of 5 investigated soils. The adsorption to soil was low (geomean KFOC: 5.6 mL/g).

Due to several experimental deficiencies, only one column study could be regarded as valid. In this study, aged ethofumesate residue (corresponding to field rate of 7.25 kg/ha) was leached with a solution simulating approximately 500mm of artificial rain. Over the study, 2.7% AR mainly consisting of ethofumesate and NC20645 were found in the leachate.

In the course of the first approval of ethofumesate, 5 lysimeter studies covering a period of two or three years with either one or two applications of ethofumesate were evaluated. Spring application rates of 1.25 and 1.5 kg/ha were studied in lysimeters planted with sugar or fodder beet followed by wheat. Mean annual precipitation ranged between 857 and 820 mm/year. Ethofumesate was not detected in the leachate of any of the lysimeter and at termination of the studies the majority of the radioactivity remained in the top 30 cm of the soil layers. Concentrations below 0.1 µg/L of NC9607 were observed in some leachates. The majority of the radioactivity in the leachate was attributed to ethofumesate derived fragments metabolized by soil micro-organisms and subsequently incorporated into soil organic matter. However, in one study an individual peak ("Peak A") was identified. The highest maximum concentration was 0.5 µg/L (annual mean, calculated as a.s. equivalent). It was not evaluated whether this peak consisted of one or more components. In a targeted study, the notifier Taskforce could identify the structure of both metabolites potentially representing Peak A as glycoside conjugates of the respective soil metabolites NC 8493 and NC 20645. Two new lysimeter studies were submitted by the notifier UPL. In the first study, Ethofumesate and its degradation products did not exceed 0.1 µg/L in the leachate. In this two year study, unidentified polar material – attributable neither to ethofumesate nor to NC9607 - ranged between 0.7 and 1.89 µg/L parent equivalents. Similar results were obtained in the second lysimeter study, where the concentration in the leachate was similar and the majority of Ethofumesate was incorporated into large organic structures. Furthermore, up to 14 unknown fractions were detected in this two year study and none exceeded 0.1 µg/L (annual average concentrations). Therefore, it can be assumed that also in the first the unidentified polar material belongs to a larger number of fractions.

#### **B.8.2. PREDICTED ENVIRONMENTAL CONCENTRATIONS IN SOIL (PEC<sub>s</sub>)**

<b>Reference:</b>	<b>Calculation of PEC values in soil for ethofumesate from use of the herbicide Nortron 50 SC Code: AE B049913 00 SC45 A2 (Nortron 50 SC)</b>
Notifier:	Taskforce
Author(s), year:	Schaefer, D.; 2002
Report/Doc. number:	C024806,
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Not valid

<b>Reference:</b>	<b>Ethofumesate (ETO) and metabolite: PECsoil EUR - Use in sugar beets in Europe - Ethofumesate (AE B049913) - Ethofumesate carboxylic acid (NC20645)</b>
Notifier:	Taskforce
Author(s), year:	Chapple, A.C.; 2013
Report/Doc. number:	EnSa-13-0285
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Valid

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<b>Reference:</b>	<b>Ethofumesate (ETO) and metabolite: PECsoil EUR - Use in sugar beets in Europe - Ethofumesate (AE B049913) - Ethofumesate-2-hydroxy (NC8493)</b>
Notifier:	Taskforce
Author(s), year:	Chapple, A.C.; 2013
Report/Doc. number:	EnSa-13-0288,
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Valid

### Executive summary

#### PECsoil modelling approach

Calculations were based on a simple first tier approach (Excel sheet) assuming even distribution of the compound in upper 0-5 cm soil layer. A standard soil density of 1.5 g/cm<sup>3</sup> was assumed.

Crop interception data which correspond to the intended growth stages were taken from the FOCUS groundwater guidance paper (FOCUS 2002).

Crop interception will reduce the amount of a compound reaching the soil and therefore this has been taken into account depending on the growth stage at application. The interception rates follow the recommendations of the FOCUS groundwater guidance paper (FOCUS 2002) for sugarbeets.

#### PECsoil for ethofumesate and its metabolites

For ethofumesate, the metabolites ethofumesate carboxylic acid (NC 20645) and ethofumesate-2-hydroxy (NC 8493) were considered.

#### Comments RMS:

The RMS has carried out the PECsoil calculations according to the endpoints derived from the re-evaluation.

The initial  $PEC_S$  [ $mg\ kg^{-1}$ ] of the active ingredient from a single application depends on the application rate  $A$  [ $g\ ha^{-1}$ ] of the compound, on the crop interception  $C$  [%], on the bulk density  $BD$  of the dry soil [ $g\ cm^{-3}$ ] (standard value  $1.5\ g\ cm^{-3}$ ) and on the assumed mixing depth  $d$  [cm] (standard value 5 cm), according to

$$PEC_{S,init} = A \times (1 - 0.01 \times C) / (100 \times BD \times d)$$

In single application scenarios, the initial  $PEC_S$  is equal to the overall maximum. Based on the maximum  $PEC_S$  and assuming simple first-order kinetics (SFO) with degradation rate  $k$  [ $d^{-1}$ ] ( $k = \ln(2)/DT_{50}$ ), the soil concentration over time  $[d]$  are given by

$$PEC_S(t) = PEC_{S,max} \times e^{-k \times t}$$

For a comparison with effect endpoints from long-term (chronic) ecotoxicological studies, it is sometimes more appropriate to use time-weighted average (TWA) exposure concentrations.

For SFO kinetics, the TWA concentrations are given by

$$TWA_S(t) = PEC_{S,max} \times 1 / (k \times t) \times (1 - e^{-k \times t})$$

The relevant application data are shown in the table below.

The worst case non-normalized  $DT_{50, field}$  was the relevant degradation half-time to be considered.

**Table 8-1: Ethofumesate rate of degradation field soil dissipation studies**

Parent	Aerobic conditions								
Soil type (indicate if bare or cropped soil was used).	Location (country or USA state).		pH <sup>a)</sup>	Depth (cm)	DT <sub>50</sub> (d) actual	DT <sub>90</sub> (d) actual	St. ( $\chi^2$ )	DT <sub>50</sub> (d) Norm <sup>b)</sup> .	Method of calculation
MainzA Loamy silt	Germany	bare soil	7,5	0-30	116	384	13.3	69.5	SFO
MainzB Loamy silt	Germany	bare soil	7,5	0-30	114	379	11.3	47.4	SFO
SpeyerA Silty sand	Germany	bare soil	6.7	0-30	19.5 k1 = 0.10862 k2 = 0.00695 g = 0.4963	233	10.5	47.2*	DFOP

Parent	Aerobic conditions								
Soil type (indicate if bare or cropped soil was used).	Location (country or USA state).		pH <sup>a)</sup>	Depth (cm)	DT <sub>50</sub> (d) actual	DT <sub>90</sub> (d) actual	St. ( $\chi^2$ )	DT <sub>50</sub> (d) Norm <sup>b)</sup> .	Method of calculation
SpeyerB Silty sand	Germany	bare soil	6.7	0-30	13.6 k1 = 0.09528 k2 = 0.00772 g = 0.6392	166	3.9	46.5*	DFOP
Isleham Loamy sand bare	UK	bare soil	7.5	0-30	59	147	12.3	25.7	SFO
Willingham Sandy clay loam bare	UK	bare soil	7.5	0-30	44	196	22	18.0	SFO
Fresno Sandy loam	California	bare soil	6.5	0-90	89	295	20.7	112	SFO
Keeken loam	Germany	bare soil	6.1	0-30	40	134	21.1	22.1	SFO
Weeze sand	Germany	bare soil	5.8	0-30	157	522	15.0	75.7	SFO
NZ11007/1 Clay loam	UK	bare soil	7.13	0-30	21.6	72	16	15.2	SFO
NZ11007/2 Silty clay loam	Germany	bare soil	7.57	0-30	10.2	74	4.1	13.5	DFOP SFO
NZ11007/3 Silty clay loam	France	bare soil	7.72	0-30	35.9 k1 = 0.03878 k2 = 0.003795 g = 0.5968	367	6.1	110 c)	DFOP
NZ11007/4 Loam	Spain	bare soil	7.7	0-30	12.3 k1 = 0.1805 k2 = 0.00662 g = 0.0518	237	12.0	60 c)	DFOP
Geometric mean (if not pH dependent)								40.7	
pH dependence					No				

Soil photolysis metabolite NC8493 occurred at a maximum of 24.2 % in one study. The respective PEC<sub>soil</sub> for the metabolite was calculated assuming a maximum occurrence of 24.2% and a molecular correction factor of 0.902.



**Table 8-2: Rate of degradation in soil of metabolite NC8493**

NC8493	Dark aerobic conditions Metabolite dosed.							
Soil type	X <sup>7</sup>	pH <sup>a)</sup>	t. °C / % MWHC	DT <sub>50</sub> / DT <sub>90</sub> (d)	f. f. k <sub>f</sub> /k <sub>dp</sub>	DT <sub>50</sub> (d) 20 °C pF2/10kPa <sup>b)</sup>	St. (χ <sup>2</sup> )	Method of calculation
Silt loam	Fisli	6.82	20°C / pF 2.5	0.05/0.18	-	0.04	27.2	SFO
Loam	Horn	7.23	20°C / pF 2.5	0.07/0.24	-	0.06	10.5	SFO
Sandy loam	Sevelen	7.51	20°C / pF 2.5	0.05/0.17	-	0.04	21.1	SFO
Sandy loam	AX	5.5	20°C / 55%	0.02/0.07	-	0.02	5.1	SFO
Silt loam	HH	6.1	20°C / 55%	0.02/0.07	-	0.02	1.4	SFO
Clay loam	DD	7.2	20°C / 55%	0.01/0.03	-	0.01	1.4	SFO
Sandy loam	WW	5.0	20°C / 55%	0.02/0.06	-	0.06*	2.2	DFOP
Geometric mean (if not pH dependent)						0.03		
Arithmetic mean					-			
pH dependence,						No		

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

Parent

Method of calculation

Application data

DT<sub>50</sub> (d): 157 days

Kinetics: SFO

Field or Lab: representative worst case from field studies.

Crop: sugar beet

Depth of soil layer: 20cm

Soil bulk density: 1.5g/cm<sup>3</sup>

% plant interception: 20%

Number of applications: 1-3

Interval (d): 5

Application rate(s): 1 x 1000 g a.s./ha

2 x 500 g a.s./ha

3 x 333 g a.s./ha

Application every 3 years

<b>PEC<sub>(s)</sub></b> (mg/kg)	Single application Actual	Single application Time weighted average	Multiple application Actual	Multiple application Time weighted average	Multiple application Actual	Multiple application Time weighted average
Initial	1.067		0.533		0.355	
Short term 24h	1.062	1.065	0.531	1.053	0.354	1.041
2d	1.057	1.063	0.529	1.051	0.352	1.038
4d	1.048	1.058	0.524	1.046	0.349	1.034
Long term 7d	1.034	1.051	1.046	1.039	0.696	1.027
28d	0.943	1.004	0.953	0.992	0.963	0.981
50d	0.855	0.958	0.865	0.947	0.874	0.936
100d	0.686	0.863	0.694	0.853	0.701	0.844
Plateau concentration	0.002 mg/kg after 50 yr					

NC8493

Method of calculation

Molecular weight relative to the parent: 0.902

DT<sub>50</sub> (d): 0.07 days

Kinetics: SFO

Field or Lab: representative worst case from lab studies.

Application data

Application rate assumed:

1 x 218 g/ha

2 x 109 g/ha

3 x 73 g/ha

(assumed NC8493 is formed at a maximum of 24.2 % of the applied dose and a molecular weight ratio of 0.902)

<b>PEC<sub>(s)</sub></b> (mg/kg)	Single application Actual	Single application Time weighted average	Multiple application Actual	Multiple application Time weighted average	Multiple application Actual	Multiple application Time weighted average
Initial	0.233		0.116		0.078	
Short term 24h	<0.001	0.064	<0.001	0.032	<0.001	0.021
2d	<0.001	0.032	<0.001	0.016	<0.001	0.011
4d	<0.001	0.016	<0.001	0.008	<0.001	0.005
Long term 7d	<0.001	0.009	<0.001	0.009	<0.001	0.006
28d	<0.001	0.002	<0.001	0.002	<0.001	0.002
50d	<0.001	0.001	<0.001	0.001	<0.001	0.001
100d	<0.001	0.001	<0.001	0.001	<0.001	0.001
Plateau concentration	<0.001 mg/kg after 50 yr					

**B.8.3. PREDICTED ENVIRONMENTAL CONCENTRATIONS IN GROUND WATER (PEC<sub>GW</sub>)**

<b>Reference:</b>	<b>Groundwater PEC values for ethofumesate from use of the herbicide Nortron 50 SC Code: AE B049913 00 SC45 A2 (Nortron 50 SC)</b>
Notifier:	Taskforce
Author(s), year:	Schafer, D.
Report/Doc. number:	C024811
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Not valid

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<b>Reference:</b>	<b>Simulation of the leaching behaviour of ethofumesate with MACRO in a loamy macroporous soil of a typical sugar beet growing area in the Paris Basin using worst case half lives AE B049913</b>
Notifier:	Taskforce
Author(s), year:	Jene, B.
Report/Doc. number:	C006227
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Not valid

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<b>Reference:</b>	<b>Simulation of the leaching behaviour of Ethofumesate in a loamy macroporous soil of a typical sugar beet growing area in the Paris Basin using the MACRO model Code: AE B049913</b>
Notifier:	Taskforce
Author(s), year:	Jene, B.; 1999
Report/Doc. number:	C004998,
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Not valid

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<b>Reference:</b>	<b>VERHALTEN IM BODEN UND RISIKOBEWERTUNG EINER TRINKWASSERKONTAMINATION</b>
Notifier:	Taskforce
Author(s), year:	Pistel, F.; Bleif, J. ; 1993
Report/Doc. number:	A87556
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Not valid

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<b>Reference:</b>	<b>Ethofumesate (ETO) and metabolite: PECgw FOCUS PEARL, PELMO EUR - Use in sugar beets in Europe</b>
Notifier:	Taskforce
Author(s), year:	Chapple, A. C.; 2013
Report/Doc. number:	EnSa-13-0286
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Valid

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<b>Reference:</b>	<b>Ethofumesate (ETO) and metabolite: PECgw FOCUS PEARL, PELMO EUR - Use in sugar beets in Europe</b>
Notifier:	Taskforce
Author(s), year:	Chapple, A. C.; 2013
Report/Doc. number:	EnSa-13-0287
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Valid

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### Executive summary

#### PECgw modelling approach

The predicted environmental concentrations in groundwater (PECgw) for the active substance were calculated using the simulation models PEARL and PELMO following the recommendations of the FOCUS working group on groundwater scenarios.

The leaching calculations were run over 26 years, as proposed for pesticides which may be applied every year. The simulation length increases to 46 and 66 years for pesticides which are applied only every second and third year, respectively. The first six years are a 'warm up' period; only the last 20 years were considered for the assessment of the leaching potential. The 80th percentile of the average annual groundwater concentrations in the percolate at 1 m depth under a treated plantation were evaluated and were taken as the relevant PECGW values. In respect to the assessment of a potential groundwater contamination this shallow depth reflects a worst case. The effective long-term groundwater concentrations will be even lower due to dilution in the groundwater layer. Task Force Ethofumesate Page 21 of 37 2014-01-15 Document MCP: Section 9 Fate and behaviour in the environment Ethofumesate SC 500

According to FOCUS, the calculations were conducted based on mean soil half-lives, referenced to standard temperature and moisture conditions. Crop interception will reduce the amount of a compound reaching the soil and therefore this has been taken into account depending on the growth stage at application.

### Comments RMS

In the course of the first approval of ethofumesate, 5 lysimeter studies covering a period of two or three years with either one or two applications of ethofumesate were evaluated. The majority of the radioactivity in the leachate was attributed to ethofumesate derived fragments metabolized by soil micro-organisms and subsequently incorporated into soil organic matter. However, in one study an individual peak ("Peak A") was identified. The highest maximum concentration was 0.5 µg/L (annual mean, calculated as a.s. equivalent). It was not evaluated whether this peak consisted of one or more components. In a targeted study, the structure of both metabolites potentially representing Peak A could be identified as glycoside conjugates of the respective soil metabolites NC 8493 and NC 20645. In the first of two new lysimeter studies, Ethofumesate and its degradation

products did not exceed 0.1 µg/L in the leachate. In this two year study, unidentified polar material – attributable neither to ethofumesate nor to NC9607 - ranged between 0.7 and 1.89 µg/L parent equivalents. Similar results were obtained in the second lysimeter study, where the concentration in the leachate was similar and the majority of Ethofumesate was incorporated into large organic structures. Furthermore, up to 14 unknown fractions were detected in this two year study and none exceeded 0.1 µg/L (annual average concentrations). Therefore, it can be assumed that also in the first the unidentified polar material belongs to a larger number of fractions.

Groundwater exposure assessments were carried out using FOCUS (FOCUS, 2009) scenarios and the models PEARL 4.4.4 for the active substance ethofumesate and its metabolites NC8493 (soil photolysis, aglycon of lysimeter metabolite) and NC20645 (aglycon of lysimeter metabolite). Statistical evaluation according to the “EFSA Guidance Document for evaluating laboratory and field dissipation studies to obtain DegT50 values of active substances of plant protection products and transformation products of these active substances in soil” (EFSA, 2014) showed that lab and field DT50 of ethofumesate were not from two different populations; therefore, the combined DT50 of 26.2 was used. One ground water modelling run was conducted for ethofumesate alone, and another ground water modelling run was conducted for NC8493 and NC20645 (NC8493 applied as parent and degraded to NC20645). NC8493 was calculated as pseudo-application taking into account the maximum occurrence in soil photolysis at 24.2% and a molecular correction factor of 0.902. For NC20645 a formation fraction of 1 (from NC8493) was assumed as a worst case. The potential for groundwater exposure from the representative uses by these compounds above the parametric drinking water limit of 0.1 µg/L was concluded to be low in geoclimatic situations that are represented by all 9 FOCUS groundwater scenarios.

The relevant input parameters are.

**Table 8-3: Substance parameters for ethofumesate and metabolites relevant for Pearl 4.4.4 PECGW calculations for Ethofumesate 500 SC**

Parameter	Unit	Ethofumesate	NC8493	NC20645
Molar Mass	[g/mol]	286.3	258.3	274.3
Solubility	[mg/L]	50.0	2019	16170
Vapour Pressure	[Pa]	$5.5 \times 10^{-4}$	$3.73 \times 10^{-6**}$	$7.4 \times 10^{-7**}$
Freundlich Exponent		0.905	1	0.93
K <sub>foc</sub>	[L/kg]	118	20.82	5.1
Plant Uptake Factor		0.5	0	0
Walker Exponent		0.7	0.7	0.7
DT50	[d]	26.2	0.1*	0.12
Molar Activ. Energy	[kJ/mol]	65.4	65.4	65.4
Formation Fraction		-	-	1 (from NC8493)
Maximum Occurrence	[%]	-	24.2	-
Mol. Correction factor		-	0.902	-

\*values below 0.1 cannot be handed by FOCUS Pearl 4.4.4

\*\* calculated with EPI Suite (EPA, 2012)

**Table 8-4: Application parameters for ethofumesate and metabolites relevant for Pearl 4.4.4 PECGW calculations for Ethofumesate 500 SC**

	Application	Interval	Relative application date	BBCH stage	Interception
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	rate Every third year	[d]			[%]
Post-emergence	1 x 1000 g/ha	-	10 d after emergence	11	20
	2 x 500 g/ha	5	10 d after emergenc	11	20
	3 x 333 g/ha	5	10 d after emergenc	11	20

**PEC ground water (Regulation (EU) N° 284/2013, Annex Part A, point 9.2.4.1)**

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

For FOCUS gw modelling, values used –  
 Modelling using FOCUS model(s), with appropriate FOCUSgw scenarios, according to FOCUS guidance.  
 Model(s) used: Pearl 4.4.4.  
 Crop: Sugar beet  
 Crop uptake factor: 0.5  
 Water solubility (mg/L): 50 at pH 7 and 25°C  
 Vapour pressure:  $6.5 \times 10^{-4}$  Pa at 25°C  
 Geometric mean parent DT<sub>50 combined</sub> 26.2 d  
 (normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7).  
 K<sub>FOC</sub>: geometric mean 118 mL/g, arithmetic mean  $1/n = 0.905$

Metabolites:

NC 8493

Applied as parent taking into account:  
 Max. occurrence in soil: 24.2 %  
 Mol.correction factor: 0.902  
 Molecular mass: 258.3  
 Crop uptake factor: 0  
 Water solubility (mg/L): 2019 at pH 7 and 25°C  
 (Calculated with EPI Suite)  
 Vapour pressure:  $3.73 \times 10^{-6}$  Pa at 25°C  
 Geometric mean parent DT<sub>50 lab</sub> 0.03 d (0.1 d used for modelling)  
 K<sub>FOC</sub>: geometric mean 20.82 mL/g, arithmetic mean  $1/n = 1$  (calculated with EPIWIN)

NC 20645

Molecular mass: 274.3  
 Crop uptake factor: 0  
 Water solubility (mg/L): 16170 at pH 7 and 25°C  
 (Calculated with EPI Suite)  
 Vapour pressure:  $7.4 \times 10^{-7}$  Pa at 25°C  
 (Calculated with EPI Suite)  
 Geometric mean parent DT<sub>50 lab</sub> 0.12 d  
 K<sub>FOC</sub>: geometric mean 5.1 mL/g, arithmetic mean  $1/n = 0.93$   
 f.f.: 1 (from NC8493)

Post emergence 1000 g/ha, every third year  
 Gross application rate: 1000 g/ha.  
 Crop growth stage: 11  
 Canopy interception %: 20



Application rate net of interception: 800 g/ha. No. of applications: 1 Time of application (absolute or relative application dates): 10 d after emergence
Post emergence 500 g/ha Gross application rate: 1000 g/ha. Crop growth stage: 11 Canopy interception %: 20 Application rate net of interception: 400 g/ha. No. of applications: 2 Interval: 5 d Time of application (absolute or relative application dates): 10 d after emergence
Post emergence 333 g/ha Gross application rate: 1000 g/ha. Crop growth stage: 11 Canopy interception %: 20 Application rate net of interception: 266 g/ha. No. of applications: 3 Interval: 5 d Time of application (absolute or relative application dates): 10 d after emergence

**PEC(gw) - FOCUS modelling results (80<sup>th</sup> percentile annual average concentration at 1m) for post-emergence application 1x1000g/ha**

Model / Crop	Scenario	Parent (µg/L)	Metabolite (µg/L)	
			NC20645	NC8493
	Chateaudun	0.031	<0.001	<0.001
	Hamburg	0.013	<0.001	<0.001
	Jokioinen	0.001	<0.001	<0.001
	Kremsmunster	0.008	<0.001	<0.001
	Okehampton	0.015	<0.001	<0.001
	Piacenza	0.015	<0.001	<0.001
	Porto	0.002	<0.001	<0.001
	Sevilla	<0.001	<0.001	<0.001
	Thiva	<0.001	<0.001	<0.001

**PEC(gw) - FOCUS modelling results (80<sup>th</sup> percentile annual average concentration at 1m) for post-emergence application 2x500g/ha**

Model /Crop	Scenario	Parent (µg/L)	Metabolite (µg/L)	
			NC20645	NC8493
	Chateaudun	0.039	<0.001	<0.001
	Hamburg	0.016	<0.001	<0.001
	Jokioinen	0.001	<0.001	<0.001
	Kremsmunster	0.010	<0.001	<0.001
	Okehampton	0.018	<0.001	<0.001
	Piacenza	0.016	<0.001	<0.001
	Porto	0.002	<0.001	<0.001
	Sevilla	0.001	<0.001	<0.001
	Thiva	<0.001	<0.001	<0.001

**PEC(gw) - FOCUS modelling results (80<sup>th</sup> percentile annual average concentration at 1m) for post-emergence application 3x333g/ha**

Model /Crop	Scenario	Parent (µg/L)	Metabolite (µg/L)	
			NC20645	NC8493
	Chateaudun	0.041	<0.001	<0.001
	Hamburg	0.017	<0.001	<0.001
	Jokioinen	0.001	<0.001	<0.001
	Kremsmunster	0.010	<0.001	<0.001
	Okehampton	0.020	<0.001	<0.001
	Piacenza	0.017	<0.001	<0.001
	Porto	0.002	<0.001	<0.001
	Sevilla	0.001	<0.001	<0.001
	Thiva	0.001	<0.001	<0.001

#### **B.8.4. FATE AND BEHAVIOUR IN WATER AND SEDIMENT**

Ethofumesate is stable to hydrolysis at pH 4, pH 7 and pH 9. No major degradation products were observed.

In the first evaluation for approval, the photolytic degradation of ethofumesate was reported for a number of studies with variable results. Aqueous photolysis at pH 7 with filtered light from an Hg-arc lamp resulted in a DT<sub>50</sub> of 28-31 hours (3-5 fold intensity of natural sunlight) in irradiated solutions. However, due to 41% of

unidentified radioactivity in this study and experimental deficiencies in other aqueous photolysis studies, new studies were conducted by both notifiers. In both new aqueous photolysis studies, a multitude of transformation products was formed; none of them exceeding 10% AR. A similar degradation pattern is observed in a study investigating the photolysis of ethofumesate in natural water, which was performed for registration in Japan and is an optional data requirement. The results mirrored the findings of the study on aqueous photolysis in buffered solution. A large number of unidentified photodegradates were formed, two of them above 5% AR.

#### **B.8.4.1. Aerobic mineralisation in surface water**

Contrasting results were reported for the new aerobic mineralization studies in water. In the study by the notifier UPL, ethofumesate was found to be stable in natural surface water until day 62 of incubation and the mineralisation was marginal with a maximum of 1.1% (high-dose test) and 0.8% (low-dose test) at the end of the incubation period. The new study on aerobic mineralization in surface water submitted by the notifier Taskforce, however, showed that after a lag phase of 60 days a significant degradation of ethofumesate was observed: the remaining amounts of ethofumesate after 88 days were 58.3% AR and 79.3% AR in the low- (10 µg/L) and high-dose (100 µg/L) experiment, respectively. The main metabolite formed was NC 8493 (ethofumesate-2-hydroxy) with a maximum amount of 18.3% AR. The metabolite identified as BCS CW35117 (ethofumesate acetic acid) was formed at 13.4% AR and 2.4% AR in the low-dose and high-dose experiment, respectively.

#### **B.8.4.2. Water/sediment study**

Three dark water/sediment studies submitted for the previous evaluation were found to be not valid anymore, mainly due to experimental insufficiencies. For instance, in two of these studies only the pH of the water phase was reported whereas in one study only the sediment pH was determined. In addition, metabolites above 10% AR were not identified within these studies. Therefore, new water sediment studies were submitted by both notifiers. Mineralisation of the active substance ranged between 1.2 % AR and 15.3% AR after 103 and 125 days, respectively. Non-extractable residues in the sediment compartment ranged between 14.2 % AR and 43.2% AR at study end. Whole system half-lives ranged between 89 and 294 days (geomean 170 d; n = 8). In both new studies, NC20645 was identified as a major metabolite (max. occurrence in whole system 18.8% AR after 125 days). However, metabolite NC20645 did not reach the maximum occurrence at study end in two out of four water/sediment systems.

#### **B.8.4.3. Irradiated water/sediment study**

Not requested.

### **B.8.5. PREDICTED ENVIRONMENTAL CONCENTRATIONS IN SURFACE WATER AND SEDIMENT (PEC<sub>sw</sub>, PEC<sub>sd</sub>)**

<b>Reference:</b>	<b>Calculation of PEC values in surface water and sediment for ethofumesate from use of the herbicide Nortron 50 SC Code: AE B049913 00 SC45 A2 (Nortron 50 SC)</b>
Notifier:	Taskforce
Author(s), year:	Schafer, D.; 2013
Report/Doc. number:	C024809,
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Not valid

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<b>Reference:</b>	<b>Ethofumesate (ETO) and metabolites: PEC<sub>sw</sub>, sed FOCUS EUR - Use in sugar beets in Europe</b>
Notifier:	Taskforce
Author(s), year:	Chapple, A. C.; 2013
Report/Doc. number:	EnSa-13-0278
Guideline(s):	None
GLP:	No
Deviations:	None
Validity:	Valid

### Comments RMS

PEC<sub>sw</sub>/SED were calculated by the RMS based on the endpoints established in the re-evaluation. The "Generic guidance for FOCUS surface water scenarios" states that experience of following this FOCUS kinetics guidance has shown that in the vast majority of cases first order whole system DT50 are selected for calculating the geometric mean (in accordance with the procedures defined for P-I, as the statistical criteria for accepting a P-II approach are rarely satisfied). In this situation (only P-I assessment accepted) the usual evaluation practice has been to ascribe the whole system DT50 to the water phase for compounds with a  $K_{oc} < \text{ca. } 100 \text{ mL/g}$  or to the sediment phase for compounds with a  $K_{oc} > \text{ca. } 2000 \text{ mL/g}$  and use a default of 1000 days for the other compartment. This is considered by Member State regulators to be a reasonable „rule of thumb“. For compounds with  $K_{oc}$  between 100 and  $2000 \text{ mL/g}$ , the FOCUS kinetics advice regarding running simulations with both combinations for ascribing the whole system DT50 and default and selecting the results that give the highest concentrations for the risk assessment should be followed. In this case, both combinations were run and the worst case is shown.

### PEC surface water and PEC for post-emergence application of Ethofumesate SC (1 x 1000 g/ha)

Parent

Parameters used in FOCUS<sub>sw</sub> step 1 and 2

Version control no. of FOCUS calculator:  
Steps 1-2 Vs 2.1

Molecular weight (g/mol): 286.3

$K_{OC}/K_{OM}$  (mL/g): 118 / 68

	DT <sub>50</sub> soil (d): 26.2 days DT <sub>50</sub> water/sediment system (d): 170 d DT <sub>50</sub> water (d): 170 d DT <sub>50</sub> sediment (d): 170 d Crop interception: minimal crop cover
Parameters used in FOCUSsw step 3 (if performed)	Version control no.'s of FOCUS software: Swash 3.1 Macro 5.5.3 PRZM 3.5.2 TOXSWA 2.6  Water solubility (mg/L): 50 Vapour pressure: $6.5 \times 10^{-4}$ Pa at 25°C Kom/Koc (mL/g): 118 / 68 1/n: 0.905 Q10=2.58, Walker equation coefficient 0.7 Crop uptake factor: 0.5 DT <sub>50</sub> water (d): 170 d DT <sub>50</sub> sediment (d): 1000 d
Application rate	Crop and growth stage: sugar beets BBCH 10 Number of applications: 1 Interval (d): - Application rate(s): 1000 g a.s./ha Application window: Step 1-2: March-May (N + S EU) Step 3: Scenario D3: 101 - 131 Scenario D4: 110 - 140 Scenario R1: 92 - 122 Scenario R3: 65 - 95

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	297.2151		339.8618	
	24 h	294.7606	295.9878	347.8175	343.8396
	2 d	293.5612	295.0742	346.4022	345.4745
	4 d	291.1770	293.7208	343.5889	345.2341
	7 d	287.6370	291.8705	339.4117	343.6320
	14 d	279.5435	287.7208	329.8614	339.1229
	21 d	271.6778	283.6778	320.5798	334.4815
	28 d	264.0333	279.7177	311.5593	329.8731
	42 d	249.3837	272.0247	294.2727	320.8600

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	49.6107	---	57.8663	---
	24 h	49.0392	49.3249	57.6308	57.7486
	2 d	48.8397	49.1322	57.3963	57.6311
	4 d	48.4430	48.8867	56.9302	57.3970
	7 d	47.8541	48.5701	56.2380	57.0484
	14 d	46.5076	47.8739	54.6556	56.2458
	21 d	45.1989	47.1993	53.1177	55.4582
	28 d	43.9271	46.5395	51.6231	54.6854
	42 d	41.4899	45.2587	48.7589	53.1827
Southern EU	0 h	91.0324	---	106.5450	---
	24 h	90.2924	90.6624	106.1115	106.3282
	2 d	89.9250	90.3855	105.6797	106.1119
	4 d	89.1947	89.9725	104.8214	105.6810
	7 d	88.1103	89.4063	103.5471	105.0391
	14 d	85.6310	88.1356	100.6335	103.5613
	21 d	83.2216	86.8973	97.8018	102.1112
	28 d	80.8799	85.6843	95.0499	100.6883
	42 d	76.3923	83.3278	89.7762	97.9215

FOCUS STEP 3 Scenario	Water	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
	body		Actual	TWA	Actual	TWA
D3	ditch	0 h	5.239 (max)			
		24 h	2.374	4.038		
		2 d	0.277	2.543		
		4 d	0.010	1.306		
		7 d	0.003	0.749		
		14 d	0.001	0.375		
		21 d	<0.001	0.251		
		28 d	<0.001	0.188		
		42 d	<0.001	0.126		
D4	pond	0 h	0.448			
		24 h	0.447	0.448		
		2 d	0.447	0.448		
		4 d	0.443	0.447		
		7 d	0.437	0.446		
		14 d	0.421	0.443		
		21 d	0.406	0.439		
		28 d	0.398	0.434		
		42 d	0.376	0.423		
D4	stream	0 h	4.288			
		24 h	0.066	0.359		
		2 d	0.065	0.336		
		4 d	0.064	0.330		
		7 d	0.062	0.309		
		14 d	0.061	0.273		
		21 d	0.063	0.246		
		28 d	0.060	0.221		
		42 d	0.060	0.175		
R1	pond	0 h	0.376			
		24 h	0.370	0.373		
		2 d	0.366	0.370		
		4 d	0.358	0.366		
		7 d	0.355	0.362		
		14 d	0.336	0.354		
		21 d	0.313	0.344		

FOCUS STEP 3 Scenario	Water	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
	body		Actual	TWA	Actual	TWA
		28 d	0.292	0.334		
		42 d	0.251	0.313		
R1	stream	0 h	4.702			
		24 h	0.006	2.429		
		2 d	0.001	1.216		
		4 d	0.036	0.608		
		7 d	<0.001	0.389		
		14 d	0.004	0.260		
		21 d	<0.001	0.389		
		28 d	<0.001	0.260		
		42 d	<0.001	0.187		
R3	stream	0 h	60.551			
		24 h	39.635	23.831		
		2 d	0.101	19.132		
		4 d	0.0171	9.591		
		7 d	14.017	5.695		
		14 d	0.004	3.432		
		21 d	0.002	2.290		
		28 d	0.001	1.718		
		42 d	<0.001	1.152		

## Step 4

		VFS	
Scenario	application	10m	20m
	g/ha	µg/L	
R3 stream	1x1000	27.92	14.62



Metabolite NC8493

Parameters used in FOCUSsw step 1 and 2

Molecular weight: 258.3  
 Soil or water metabolite: soil photolysis  
 Koc/Kom (mL/g): 20.8  
 DT<sub>50</sub> soil (d): 0.03 days  
 DT<sub>50</sub> water/sediment system (d): 1000 d  
 DT<sub>50</sub> water (d): 1000  
 DT<sub>50</sub> sediment (d): 1000  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: -  
 Soil: 24.2

Main routes of entry

Runoff, Drainage

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	70.8136		14.7292	
	24 h	70.7645	70.7891	14.7190	14.7241
	2 d	70.7155	70.7646	14.7088	14.7190
	4 d	70.6176	70.7155	14.6885	14.7088
	7 d	70.4709	70.6421	14.6579	14.6936
	14 d	70.1298	70.4711	14.5870	14.6580
	21 d	69.7903	70.3007	14.5164	14.6226
	28 d	69.4525	70.1309	14.4461	14.5872
	42 d	68.7818	69.7928	14.3066	14.5169

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	<0.001		<0.001	
	24 h	<0.001	<0.001	<0.001	<0.001
	2 d	<0.001	<0.001	<0.001	<0.001
	4 d	<0.001	<0.001	<0.001	<0.001
	7 d	<0.001	<0.001	<0.001	<0.001
	14 d	<0.001	<0.001	<0.001	<0.001
	21 d	<0.001	<0.001	<0.001	<0.001
	28 d	<0.001	<0.001	<0.001	<0.001
	42 d	<0.001	<0.001	<0.001	<0.001
Southern EU	0 h	<0.001		<0.001	

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	24 h	<0.001	<0.001	<0.001	<0.001
	2 d	<0.001	<0.001	<0.001	<0.001
	4 d	<0.001	<0.001	<0.001	<0.001
	7 d	<0.001	<0.001	<0.001	<0.001
	14 d	<0.001	<0.001	<0.001	<0.001
	21 d	<0.001	<0.001	<0.001	<0.001
	28 d	<0.001	<0.001	<0.001	<0.001
	42 d	<0.001	<0.001	<0.001	<0.001

Metabolite NC 20645

Parameters used in FOCUS<sub>sw</sub> step 1 and 2

Molecular weight: 274.3  
 Soil or water metabolite: water  
 Koc/Kom (mL/g): 5.1  
 DT<sub>50</sub> soil (d): 0.12 days  
 DT<sub>50</sub> water/sediment system (d): 208 d  
 DT<sub>50</sub> water (d): 208  
 DT<sub>50</sub> sediment (d): 208  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: 18.8  
 Soil: 1.82

Main routes of entry

Runoff, Drainage, Drift

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	7.4296		0.2944	
	24 h	7.3938	7.4117	0.3771	0.3358
	2 d	7.3692	7.3966	0.3758	0.3561
	4 d	7.3202	7.3706	0.3733	0.3653
	7 d	7.2474	7.3334	0.3696	0.3680
	14 d	7.0803	7.2485	0.3611	0.3667
	21 d	6.9170	7.1651	0.3528	0.3634
	28 d	6.7576	7.0831	0.3446	0.3597
	42 d	6.4495	6.9228	0.3289	0.3521

FOCUS STEP 2	Day after	PEC <sub>SW</sub> (µg/L)	PEC <sub>SED</sub> (µg/kg)
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Scenario	overall maximum	Actual	TWA	Actual	TWA
Northern EU	0 h	1.6565	---	0.0825	---
	24 h	1.6436	1.6500	0.0823	0.0824
	2 d	1.6381	1.6454	0.0820	0.0823
	4 d	1.6272	1.6390	0.0814	0.0820
	7 d	1.6074	1.6292	0.0806	0.0816
	14 d	1.5703	1.6090	0.0788	0.0806
	21 d	1.5341	1.5900	0.0769	0.0797
	28 d	1.4987	1.5716	0.0752	0.0788
	42 d	1.4304	1.5359	0.0717	0.0770
Southern EU	0 h	1.6565	---	0.0825	---
	24 h	1.6436	1.6500	0.0823	0.0824
	2 d	1.6381	1.6454	0.0820	0.0823
	4 d	1.6272	1.6390	0.0814	0.0820
	7 d	1.6074	1.6292	0.0806	0.0816
	14 d	1.5703	1.6090	0.0788	0.0806
	21 d	1.5341	1.5900	0.0769	0.0797
	28 d	1.4987	1.5716	0.0752	0.0788
	42 d	1.4304	1.5359	0.0717	0.0770

Metabolite CW35117

Parameters used in FOCUSsw step 1

Molecular weight: 316.3  
 Soil or water metabolite: water  
 Koc (mL/g): 10 (default)  
 DT<sub>50</sub> soil (d): -  
 DT<sub>50</sub> water/sediment system (d): 1000  
 DT<sub>50</sub> water (d): 1000  
 DT<sub>50</sub> sediment (d): 1000  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: 13.4  
 Soil: -

Main routes of entry

Drift

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	1.36		<0.01	
	24 h	1.35	1.35	0.13	0.0896

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	2 d	1.35	1.35	0.13	0.07
	4 d	1.35	1.35	0.13	0.10
	7 d	1.34	1.35	0.13	0.12
	14 d	1.33	1.34	0.13	0.13
	21 d	1.33	1.34	0.13	0.13
	28 d	1.32	1.33	0.13	0.13
	42 d	1.31	1.33	0.13	0.13

### PEC surface water and PEC for post-emergence application of Ethofumesate SC (2 x 500 g/ha)

Parent

Parameters used in FOCUSsw step 1 and 2

Version control no. of FOCUS calculator:  
Steps 1-2 Vs 2.1  
Molecular weight (g/mol): 286.3  
K<sub>OC</sub>/K<sub>OM</sub> (mL/g): 118 / 68  
DT<sub>50</sub> soil (d): 26.2 days  
DT<sub>50</sub> water/sediment system (d): 170 d  
DT<sub>50</sub> water (d): 170 d  
DT<sub>50</sub> sediment (d): 170 d  
Crop interception: minimal crop cover

Parameters used in FOCUSsw step 3 (if performed)

Version control no.'s of FOCUS software:  
Swash 3.1  
Macro 5.5.3  
PRZM 3.5.2  
TOXSWA 2.6  
Water solubility (mg/L): 50  
Vapour pressure:  $6.5 \times 10^{-4}$  Pa at 25°C  
K<sub>om</sub>/K<sub>oc</sub> (mL/g): 118 / 68  
1/n: 0.905  
Q10=2.58, Walker equation coefficient 0.7  
Crop uptake factor: 0.5

Application rate

Crop and growth stage: sugar beets BBCH 10  
Number of applications: 2  
Interval (d): 5  
Application rate(s): 500 g a.s./ha  
  
Application window:  
Step 1-2:  
March-May (N + S EU)  
Step 3:  
Scenario D3: 101 - 136  
Scenario D4: 110 - 145

Scenario R1: 92 - 127

Scenario R3: 65 - 100

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	297.2151		339.8618	
	24 h	294.7606	295.9878	347.8175	343.8396
	2 d	293.5612	295.0742	346.4022	345.4745
	4 d	291.1770	293.7208	343.5889	345.2341
	7 d	287.6370	291.8705	339.4117	343.6320
	14 d	279.5435	287.7208	329.8614	339.1229
	21 d	271.6778	283.6778	320.5798	334.4815
	28 d	264.0333	279.7177	311.5593	329.8731
	42 d	249.3837	272.0247	294.2727	320.8600

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	46.0003	---	53.6780	---
	24 h	45.4898	45.7450	53.4596	53.5688
	2 d	45.3047	45.5712	53.2420	53.4598
	4 d	44.9368	45.3459	52.8096	53.2427
	7 d	44.3905	45.0533	52.1676	52.9193
	14 d	43.1414	44.4081	50.6997	52.1748
	21 d	41.9275	43.7826	49.2731	51.4442
	28 d	40.7477	43.1707	47.8867	50.7273
	42 d	38.4869	41.9827	45.2297	49.3334
Southern EU	0 h	84.8374	---	99.3193	---
	24 h	84.1689	84.5031	98.9151	99.1172
	2 d	83.8264	84.2504	98.5127	98.9156
	4 d	83.1456	83.8680	97.7126	98.5139
	7 d	82.1348	83.3414	96.5246	97.9154
	14 d	79.8237	82.1576	93.8086	96.5379
	21 d	77.5776	81.0035	91.1691	95.1862
	28 d	75.3947	79.8729	88.6038	93.8597
	42 d	71.2115	77.6764	83.6877	91.2806

FOCUS STEP 3 Scenario	Water	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
	body		Actual	TWA	Actual	TWA
D3	ditch	0 h	2.275			
		24 h	1.109	1.758		
		2 d	0.151	1.149		
		4 d	0.006	0.594		
		7 d	0.002	0.341		
		14 d	<0.001	0.333		
		21 d	<0.001	0.222		
		28 d	<0.001	0.167		
		42 d	<0.001	0.112		
D4	pond	0 h	0.487			
		24 h	0.486	0.487		
		2 d	0.485	0.487		
		4 d	0.482	0.486		
		7 d	0.476	0.485		
		14 d	0.458	0.482		
		21 d	0.441	0.477		
		28 d	0.433	0.471		
		42 d	0.409	0.460		
D4	stream	0 h	1.911			
		24 h	0.068	0.392		
		2 d	0.067	0.368		
		4 d	0.066	0.362		
		7 d	0.067	0.339		
		14 d	0.069	0.299		
		21 d	0.069	0.269		
		28 d	0.069	0.241		
		42 d	0.069	0.192		
R1	pond	0 h	0.357			
		24 h	0.352	0.354		
		2 d	0.347	0.352		
		4 d	0.340	0.348		
		7 d	0.337	0.343		
		14 d	0.320	0.336		
		21 d	0.298	0.327		

FOCUS STEP 3 Scenario	Water	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
	body		Actual	TWA	Actual	TWA
		28 d	0.278	0.318		
		42 d	0.239	0.298		
R1	stream	0 h	4.848			
		24 h	0.006	2.505		
		2 d	0.001	1.254		
		4 d	0.037	0.627		
		7 d	<0.001	0.401		
		14 d	0.004	0.268		
		21 d	<0.001	0.193		
		28 d	<0.001	0.155		
		42 d	<0.001	0.112		
R3	stream	0 h	29.346			
		24 h	19.598	11.556		
		2 d	0.051	9.344		
		4 d	0.009	4.685		
		7 d	7.253	2.769		
		14 d	0.013	1.687		
		21 d	0.001	1.157		
		28 d	<0.001	0.868		
		42 d	0.002	0.692		

## Step 4

Scenario	application	VFS	
		10m	20m
	g/ha	µg/L	
R3 stream	2x500	13.342	6.986

Metabolite NC8493

Parameters used in FOCUSsw step 1 and 2

Molecular weight: 258.3  
 Soil or water metabolite: soil photolysis  
 Koc/Kom (mL/g): 20.8  
 DT<sub>50</sub> soil (d): 0.03 days  
 DT<sub>50</sub> water/sediment system (d): 1000 d  
 DT<sub>50</sub> water (d): 1000  
 DT<sub>50</sub> sediment (d): 1000  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: -  
 Soil: 24.2

Main routes of entry

Runoff, Drainage

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	70.8136		14.7292	
	24 h	70.7645	70.7891	14.7190	14.7241
	2 d	70.7155	70.7646	14.7088	14.7190
	4 d	70.6176	70.7155	14.6885	14.7088
	7 d	70.4709	70.6421	14.6579	14.6936
	14 d	70.1298	70.4711	14.5870	14.6580
	21 d	69.7903	70.3007	14.5164	14.6226
	28 d	69.4525	70.1309	14.4461	14.5872
	42 d	68.7818	69.7928	14.3066	14.5169

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	<0.001		<0.001	
	24 h	<0.001	<0.001	<0.001	<0.001
	2 d	<0.001	<0.001	<0.001	<0.001
	4 d	<0.001	<0.001	<0.001	<0.001
	7 d	<0.001	<0.001	<0.001	<0.001
	14 d	<0.001	<0.001	<0.001	<0.001
	21 d	<0.001	<0.001	<0.001	<0.001
	28 d	<0.001	<0.001	<0.001	<0.001
	42 d	<0.001	<0.001	<0.001	<0.001
Southern EU	0 h	<0.001		<0.001	



FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	24 h	<0.001	<0.001	<0.001	<0.001
	2 d	<0.001	<0.001	<0.001	<0.001
	4 d	<0.001	<0.001	<0.001	<0.001
	7 d	<0.001	<0.001	<0.001	<0.001
	14 d	<0.001	<0.001	<0.001	<0.001
	21 d	<0.001	<0.001	<0.001	<0.001
	28 d	<0.001	<0.001	<0.001	<0.001
	42 d	<0.001	<0.001	<0.001	<0.001

Metabolite NC 20645

Parameters used in FOCUS<sub>sw</sub> step 1 and 2

Molecular weight: 274.3  
 Soil or water metabolite: water  
 Koc/Kom (mL/g): 5.1  
 DT<sub>50</sub> soil (d): 0.12 days  
 DT<sub>50</sub> water/sediment system (d): 208 d  
 DT<sub>50</sub> water (d): 208  
 DT<sub>50</sub> sediment (d): 208  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: 18.8  
 Soil: 1.82

Main routes of entry

Runoff, Drainage, Drift

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	7.4296		0.2944	
	24 h	7.3938	7.4117	0.3771	0.3358
	2 d	7.3692	7.3966	0.3758	0.3561
	4 d	7.3202	7.3706	0.3733	0.3653
	7 d	7.2474	7.3334	0.3696	0.3680
	14 d	7.0803	7.2485	0.3611	0.3667
	21 d	6.9170	7.1651	0.3528	0.3634
	28 d	6.7576	7.0831	0.3446	0.3597
	42 d	6.4495	6.9228	0.3289	0.3521

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	1.4484	---	0.0723	---
	24 h	1.4403	1.4444	0.0721	0.0722
	2 d	1.4355	1.4412	0.0718	0.0721
	4 d	1.4260	1.4360	0.0714	0.0718
	7 d	1.4086	1.4275	0.0707	0.0715
	14 d	1.3762	1.4099	0.0690	0.0707
	21 d	1.3444	1.3934	0.0674	0.0698
	28 d	1.3134	1.3772	0.0659	0.0690
	42 d	1.2536	1.3459	0.0629	0.0675
Southern EU	0 h	1.4484	---	0.0723	---
	24 h	1.4403	1.4444	0.0721	0.0722
	2 d	1.4355	1.4412	0.0718	0.0721
	4 d	1.4260	1.4360	0.0714	0.0718
	7 d	1.4086	1.4275	0.0707	0.0715
	14 d	1.3762	1.4099	0.0690	0.0707
	21 d	1.3444	1.3934	0.0674	0.0698
	28 d	1.3134	1.3772	0.0659	0.0690
	42 d	1.2536	1.3459	0.0629	0.0675

Metabolite CW35117

Parameters used in FOCUS<sub>sw</sub> step 1 and 2

Molecular weight: 316.3

Soil or water metabolite: water

Koc/Kom (mL/g): 10 (default)

DT<sub>50</sub> soil (d): -DT<sub>50</sub> water/sediment system (d): 1000DT<sub>50</sub> water (d): 1000DT<sub>50</sub> sediment (d): 1000

Crop interception (%): no interception

Maximum occurrence observed (% molar basis with respect to the parent):

Total Water and Sediment: 13.4

Soil: -

Main routes of entry

Drift

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	1.36		<0.01	
	24 h	1.35	1.35	0.13	0.0896
	2 d	1.35	1.35	0.13	0.07
	4 d	1.35	1.35	0.13	0.10
	7 d	1.34	1.35	0.13	0.12
	14 d	1.33	1.34	0.13	0.13
	21 d	1.33	1.34	0.13	0.13
	28 d	1.32	1.33	0.13	0.13
	42 d	1.31	1.33	0.13	0.13

### PEC surface water and PEC for post-emergence application of Ethofumesate SC (3 x 333 g/ha)

Parent

Parameters used in FOCUSsw step 1 and 2

Version control no. of FOCUS calculator:

Steps 1-2 Vs 2.1

Molecular weight (g/mol): 286.3

K<sub>OC</sub>/K<sub>OM</sub> (mL/g): 118 / 68

DT<sub>50</sub> soil (d): 26.2 days

DT<sub>50</sub> water/sediment system (d): 170 d

DT<sub>50</sub> water (d): 170 d

DT<sub>50</sub> sediment (d): 170 d

Crop interception: minimal crop cover

Parameters used in FOCUSsw step 3 (if performed)

Version control no.'s of FOCUS software:

Swash 3.1

Macro 5.5.3

PRZM 3.5.2

TOXSWA 2.6

Water solubility (mg/L): 50

Vapour pressure:  $6.5 \times 10^{-4}$  Pa at 25°C

K<sub>om</sub>/K<sub>oc</sub> (mL/g): 118 / 68

1/n: 0.905

Q10=2.58, Walker equation coefficient 0.7

Crop uptake factor: 0.5

Application rate

Crop and growth stage: sugar beets BBCH 10

Number of applications: 3

Interval (d): 5

Application rate(s): 333 g a.s./ha

Application window:

Step 1-2:

March-May (N + S EU)

Step 3:

Scenario D3: 101 - 141

Scenario D4: 110 - 150

Scenario R1: 92 - 132

Scenario R3: 65 - 105

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	296.9179		339.5219	
	24 h	294.4658	295.6918	347.4697	343.4958
	2 d	293.2676	294.7791	346.0558	345.1290
	4 d	290.8858	293.4271	343.2453	344.8888
	7 d	287.3494	291.5786	339.0723	343.2884
	14 d	279.2640	287.4330	329.5315	338.7838
	21 d	271.4061	283.3941	320.2592	334.1470
	28 d	263.7693	279.4380	311.2478	329.5432
	42 d	249.1343	271.7527	293.9785	320.5391

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	42.3121	---	49.4120	---
	24 h	41.8746	42.0934	49.2109	49.3114
	2 d	41.7042	41.9414	49.0107	49.2111
	4 d	41.3655	41.7380	48.6126	49.0113
	7 d	40.8626	41.4704	48.0216	48.7136
	14 d	39.7128	40.8777	46.6704	48.0282
	21 d	38.5953	40.3023	45.3572	47.3557
	28 d	37.5094	39.7392	44.0809	46.6958
	42 d	35.4282	38.6457	41.6351	45.4127
Southern EU	0 h	78.7432	---	92.2257	---
	24 h	78.1574	78.4503	91.8504	92.0380
	2 d	77.8393	78.2243	91.4767	91.8508
	4 d	77.2072	77.8736	90.7337	91.4778
	7 d	76.2685	77.3865	89.6306	90.9221
	14 d	74.1225	76.2885	87.1086	89.6429
	21 d	72.0368	75.2173	84.6576	88.3877

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	28 d	70.0099	74.1676	82.2755	87.1561
	42 d	66.1254	72.1281	77.7105	84.7612

FOCUS STEP 3 Scenario	Water body	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
			Actual	TWA	Actual	TWA
D3	ditch	0 h	1.269			
		24 h	0.694	1.023		
		2 d	0.124	0.688		
		4 d	0.005	0.361		
		7 d	0.001	0.207		
		14 d	<0.001	0.185		
		21 d	<0.001	0.133		
		28 d	<0.001	0.145		
		42 d	<0.001	0.097		
D4	pond	0 h	0.509			
		24 h	0.509	0.509		
		2 d	0.507	0.509		
		4 d	0.504	0.508		
		7 d	0.497	0.507		
		14 d	0.480	0.504		
		21 d	0.462	0.499		
		28 d	0.454	0.493		
		42 d	0.429	0.481		
D4	stream	0 h	1.124			
		24 h	0.072	0.408		
		2 d	0.072	0.384		
		4 d	0.071	0.377		
		7 d	0.069	0.353		
		14 d	0.074	0.312		
		21 d	0.075	0.281		
		28 d	0.075	0.253		
		42 d	0.075	0.202		

FOCUS STEP 3 Scenario	Water	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
	body		Actual	TWA	Actual	TWA
R1	pond	0 h	0.470			
		24 h	0.463	0.466		
		2 d	0.457	0.463		
		4 d	0.447	0.457		
		7 d	0.448	0.453		
		14 d	0.431	0.447		
		21 d	0.400	0.436		
		28 d	0.373	0.424		
		42 d	0.322	0.398		
R1	stream	0 h	7.787			
		24 h	0.009	4.023		
		2 d	0.002	2.014		
		4 d	0.065	1.008		
		7 d	0.001	0.652		
		14 d	0.007	0.358		
		21 d	<0.001	0.264		
		28 d	<0.001	0.207		
		42 d	<0.001	0.144		
R3	stream	0 h	19.176			
		24 h	12.947	7.665		
		2 d	0.034	6.132		
		4 d	0.006	3.074		
		7 d	4.919	1.808		
		14 d	0.007	1.109		
		21 d	0.015	0.760		
		28 d	<0.001	0.584		
		42 d	0.003	0.585		

## Step 4

Scenario	application	VFS	
		10m	20m
	g/ha	µg/L	
R3 stream	3x333	8.718	4.565

Metabolite NC8493

Parameters used in FOCUSsw step 1 and 2

Molecular weight: 258.3  
 Soil or water metabolite: soil photolysis  
 Koc/Kom (mL/g): 20.8  
 DT<sub>50</sub> soil (d): 0.03 days  
 DT<sub>50</sub> water/sediment system (d): 1000 d  
 DT<sub>50</sub> water (d): 1000  
 DT<sub>50</sub> sediment (d): 1000  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: -  
 Soil: 24.2

Main routes of entry

Runoff, Drainage

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	70.8136		14.7292	
	24 h	70.7645	70.7891	14.7190	14.7241
	2 d	70.7155	70.7646	14.7088	14.7190
	4 d	70.6176	70.7155	14.6885	14.7088
	7 d	70.4709	70.6421	14.6579	14.6936
	14 d	70.1298	70.4711	14.5870	14.6580
	21 d	69.7903	70.3007	14.5164	14.6226
	28 d	69.4525	70.1309	14.4461	14.5872
	42 d	68.7818	69.7928	14.3066	14.5169

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	<0.001		<0.001	
	24 h	<0.001	<0.001	<0.001	<0.001
	2 d	<0.001	<0.001	<0.001	<0.001
	4 d	<0.001	<0.001	<0.001	<0.001
	7 d	<0.001	<0.001	<0.001	<0.001
	14 d	<0.001	<0.001	<0.001	<0.001
	21 d	<0.001	<0.001	<0.001	<0.001
	28 d	<0.001	<0.001	<0.001	<0.001
	42 d	<0.001	<0.001	<0.001	<0.001
Southern EU	0 h	<0.001		<0.001	

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	24 h	<0.001	<0.001	<0.001	<0.001
	2 d	<0.001	<0.001	<0.001	<0.001
	4 d	<0.001	<0.001	<0.001	<0.001
	7 d	<0.001	<0.001	<0.001	<0.001
	14 d	<0.001	<0.001	<0.001	<0.001
	21 d	<0.001	<0.001	<0.001	<0.001
	28 d	<0.001	<0.001	<0.001	<0.001
	42 d	<0.001	<0.001	<0.001	<0.001

Metabolite NC 20645

Parameters used in FOCUS<sub>sw</sub> step 1 and 2

Molecular weight: 274.3  
 Soil or water metabolite: water  
 Koc/Kom (mL/g): 5.1  
 DT<sub>50</sub> soil (d): 0.12 days  
 DT<sub>50</sub> water/sediment system (d): 208 d  
 DT<sub>50</sub> water (d): 208  
 DT<sub>50</sub> sediment (d): 208  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: 18.8  
 Soil: 1.82

Main routes of entry

Runoff, Drainage, Drift

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	7.4296		0.2944	
	24 h	7.3938	7.4117	0.3771	0.3358
	2 d	7.3692	7.3966	0.3758	0.3561
	4 d	7.3202	7.3706	0.3733	0.3653
	7 d	7.2474	7.3334	0.3696	0.3680
	14 d	7.0803	7.2485	0.3611	0.3667
	21 d	6.9170	7.1651	0.3528	0.3634
	28 d	6.7576	7.0831	0.3446	0.3597
	42 d	6.4495	6.9228	0.3289	0.3521



FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0 h	1.1905	---	0.0595	---
	24 h	1.1847	1.1876	0.0593	0.0594
	2 d	1.1808	1.1852	0.0591	0.0593
	4 d	1.1729	1.1810	0.0587	0.0591
	7 d	1.1586	1.1741	0.0581	0.0588
	14 d	1.1319	1.1597	0.0568	0.0581
	21 d	1.1058	1.1460	0.0555	0.0575
	28 d	1.0803	1.1328	0.0542	0.0568
	42 d	1.0311	1.1070	0.0517	0.0555
Southern EU	0 h	1.1905	---	0.0595	---
	24 h	1.1847	1.1876	0.0593	0.0594
	2 d	1.1808	1.1852	0.0591	0.0593
	4 d	1.1729	1.1810	0.0587	0.0591
	7 d	1.1586	1.1741	0.0581	0.0588
	14 d	1.1319	1.1597	0.0568	0.0581
	21 d	1.1058	1.1460	0.0555	0.0575
	28 d	1.0803	1.1328	0.0542	0.0568
	42 d	1.0311	1.1070	0.0517	0.0555

Metabolite CW35117

Parameters used in FOCUSsw step 1

Molecular weight: 316.3  
 Soil or water metabolite: water  
 Koc/Kom (mL/g): 10 (default)  
 DT<sub>50</sub> soil (d): -  
 DT<sub>50</sub> water/sediment system (d): 1000  
 DT<sub>50</sub> water (d): 1000  
 DT<sub>50</sub> sediment (d): 1000  
 Crop interception (%): no interception  
 Maximum occurrence observed (% molar basis with respect to the parent):  
 Total Water and Sediment: 13.4  
 Soil: -

Main routes of entry

Drift

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	0 h	1.36	---	<0.01	---
	24 h	1.35	1.35	0.13	0.0896

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	2 d	1.35	1.35	0.13	0.07
	4 d	1.35	1.35	0.13	0.10
	7 d	1.34	1.35	0.13	0.12
	14 d	1.33	1.34	0.13	0.13
	21 d	1.33	1.34	0.13	0.13
	28 d	1.32	1.33	0.13	0.13
	42 d	1.31	1.33	0.13	0.13

### B.8.6. FATE AND BEHAVIOUR IN AIR

#### B.8.6.1. Route and rate of degradation in air and transport via air

The vapour pressure of ethofumesate is 0.00065 Pa at 25°C indicating a moderate potential for volatilization from plant and soil. Since the compound is rapidly degraded in air ( $DT_{50} = 4.1$  hours), no further investigation of its transport in air is required. It is unlikely that the compound is transported in air over long distances or accumulates in air.

#### B.8.6.2. Predicted environmental concentrations from airborne transport

Negligible.

### B.8.7. PREDICTED ENVIRONMENTAL CONCENTRATIONS FROM OTHER ROUTES OF EXPOSURE

Not relevant.

**B.8.8. REFERENCES 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	Data protection claimed Y/N	Justification if data protection is claimed	Owner	Previous evaluation
KCP 9.1.3 /02	Chapple, A. C.	2013	Ethofumesate (ETO) and metabolite: PECsoil EUR - Use in sugar beets in Europe - Ethofumesate (AE B049913) - Ethofumesate carboxylic acid (NC20645) Bayer CropScience, Report No.: EnSa-13-0285, Edition Number: M-464088-02-1 Date: 2013-08-31 ...Amended: 2013-09-18 GLP/GEP: no, unpublished	N	Y	Required for risk assessment	Task Force Ethofumesate	Submitted for the purpose of renewal (2014)
KCP 9.1.3 /03	Chapple, A.C.	2013	Ethofumesate (ETO) and metabolite: PECsoil EUR - Use in sugar beets in Europe - Ethofumesate (AE B049913) - Ethofumesate-2-hydroxy (NC8493) Bayer CropScience, Report No.: EnSa-13-0288, Edition Number: M-464102-02-1 Date: 2013-08-31 ...Amended: 2013-09-18 GLP/GEP: no, unpublished	N	Y	Required for risk assessment	Task Force Ethofumesate	Submitted for the purpose of renewal (2014)
KCP 9.2.4.1 /01	Chapple, A. C.	2013	Ethofumesate (ETO) and metabolite: PECgw FOCUS PEARL, PELMO EUR - Use in sugar beets in Europe Bayer CropScience, Report No.: EnSa-13-0286, Edition Number: M-464093-01-1 Date: 2013-08-31 GLP/GEP: no, unpublished	N	Y	Required for risk assessment	Task Force Ethofumesate	Submitted for the purpose of renewal (2014)
KCP 9.2.4.1 /02	Chapple, A. C.	2013	Ethofumesate (ETO) and metabolite: PECgw FOCUS PEARL, PELMO EUR - Use in sugar beets in Europe Bayer CropScience, Report No.: EnSa-13-0287, Edition Number: M-464099-01-1 Date: 2013-08-31 GLP/GEP: no, unpublished	N	Y	Required for risk assessment	Task Force Ethofumesate	Submitted for the purpose of renewal (2014)
KCP 9.2.5 /02	Chapple, A. C.	2013	Ethofumesate (ETO) and metabolites: PECsw, sed FOCUS EUR - Use in sugar beets in Europe Bayer CropScience, Report No.: EnSa-13-0278, Edition Number: M-464077-01-1 Date: 2013-08-31 GLP/GEP: no, unpublished	N	Y	Required for risk assessment	Task Force Ethofumesate	Submitted for the purpose of renewal (2014)
KCP 9.2.5 /03	Chapple, A. C.	2013	Ethofumesate (ETO) and metabolite: PECsw, sed FOCUS EUR - Use in sugar beets in Europe Bayer CropScience, Report No.: EnSa-13-0291, Edition Number: M-464113-01-1 Date: 2013-08-31 GLP/GEP: no, unpublished	N	Y	Required for risk assessment	Task Force Ethofumesate	Submitted for the purpose of renewal (2014)