

# ***European Commission***



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

**ETHOFUMESATE**

**List of Endpoints**

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

## Version History

When	What
2002/05	Endpoints and related information, Appendix II of Review report for the active substance ethofumesate (SANCO/6503/VI/99-final), May 2002
2015/01	List of endpoints for renewal of ethofumesate

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

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

Active substance (ISO Common Name)	Ethofumesate (ISO 1750, published), no synonyms
Function ( <i>e.g.</i> fungicide)	Herbicide
Rapporteur Member State	Austria
Co-rapporteur Member State	Denmark

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

Chemical name (IUPAC)	( <i>RS</i> )-2-ethoxy-2,3-dihydro-3,3-dimethylbenzofuran-5-yl methanesulfonate
Chemical name (CA)	2-ethoxy-2,3-dihydro-3,3-dimethyl-5-benzofuranyl methanesulfonate
CIPAC No	233
CAS No	26225-79-6
EC No (EINECS or ELINCS)	247-525-3
FAO Specification (including year of publication)	<p>FAO Specification 233/TC (January 2007) [new procedure: Bayer CropScience] min. 960 g/kg water: max. 5 g/kg</p> <p><b>Relevant impurities:</b></p> <p>There are no relevant impurities to be controlled in products of the manufacturer (i.e. Bayer CropScience) identified in evaluation report 233/2005. However, ethyl methane sulfonate and/or iso-butyl methane sulfonate can occur as a result of certain manufacturing processes. If these impurities could occur at <math>\geq 0.1</math> mg/kg (relative to ethofumesate) in the products of other manufacturers, they would be designated as relevant impurities and clauses would be required to limit their concentration.</p>
Minimum purity of the active substance as manufactured	<p>Racemic mixture (1:1)</p> <p><b>Task force</b></p> <p><u>Bayer CropScience</u> min. 960 g/kg (DAR 1998 reference source) min. 970 g/kg (Renewal)</p> <p><u>Adama:</u> min. 975 g/kg</p> <p><b>UPL</b> min. 970 g/kg</p>

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

No relevant impurities above 0.1 mg/kg were found in any specification submitted for this RAR. However, for monitoring purposes EMS and IBMS should be considered as they can occur in generic products.

**EMS**

max. content : 0.1 mg/kg

**IBMS**

max. content : 0.1 mg/kg

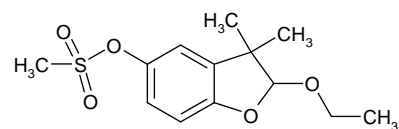
Molecular formula

$$\text{C}_{13}\text{H}_{18}\text{O}_5\text{S}$$

Molar mass

286.3 u

Structural formula



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### Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

#### Physical and chemical properties (Regulation (EU) N° 283/2013, Annex Part A, point 2)

Melting point (state purity)	70.7 °C (99.9 %) <b>Taskforce</b> 69.6 - 70.7 °C (99.9 %) <b>DAR 1998 (UPL)</b>																														
Boiling point (state purity)	305 – 320 °C (99.9 %) <b>Taskforce</b> 224 °C and 285 °C (TGAI no purity) <b>DAR 1998 (UPL)</b>																														
Temperature of decomposition (state purity)	290 – 405 °C (99.9 %) <b>Taskforce</b>																														
Appearance (state purity)	white powder (99.9 %) beige platelets (98.5 %) <b>Taskforce</b> white crystalline powder (TGAI 99.1%) <b>UPL</b>																														
Vapour pressure (state temperature, state purity)	6.5 x 10 <sup>-4</sup> Pa at 25 °C (99.9 %) <b>DAR 1998</b> 4.0 x 10 <sup>-3</sup> Pa at 40 °C (99.9 %) <b>DAR 1998</b>																														
Henry's law constant	3.72 x 10 <sup>-3</sup> Pa m <sup>3</sup> mol <sup>-1</sup> at 25 °C (99.9 %) <b>DAR 1998</b>																														
Solubility in water (state temperature, state purity and pH)	50 mg/L at 25 °C and pH 7.7 (99.9 %) <b>DAR 1998</b>  Milli RO Water 59.59 mg/L pH 7 buffer 57.83 mg/L pH 4 buffer 58.22 mg/L pH 9 buffer 61.92 mg/L all at 20 °C <b>UPL</b>																														
Solubility in organic solvents (state temperature, state purity)	<b>Taskforce (98.3 %):</b> <table><tr><th>solvent</th><th>solubility [g/L] at 20 °C</th></tr><tr><td>methanol</td><td>119</td></tr><tr><td>n-heptane</td><td>3.4</td></tr><tr><td>xylene</td><td>&gt; 260</td></tr><tr><td>1,2 dichloroethane</td><td>&gt; 260</td></tr><tr><td>acetone</td><td>&gt; 260</td></tr><tr><td>ethyl acetate</td><td>&gt; 260</td></tr><tr><td>dimethyl sulfoxide</td><td>&gt; 260</td></tr></table> <b>UPL (99 %):</b> <table><tr><th>solvent</th><th>solubility [g/L] at 20 °C</th></tr><tr><td>xylene</td><td>250 - 500</td></tr><tr><td>acetone</td><td>1250 - 1429</td></tr><tr><td>dichloroethane</td><td>1429 - 1667</td></tr><tr><td>ethyl acetate</td><td>714 - 1000</td></tr><tr><td>methanol</td><td>114 - 133</td></tr><tr><td>heptane</td><td>3.042</td></tr></table>	solvent	solubility [g/L] at 20 °C	methanol	119	n-heptane	3.4	xylene	> 260	1,2 dichloroethane	> 260	acetone	> 260	ethyl acetate	> 260	dimethyl sulfoxide	> 260	solvent	solubility [g/L] at 20 °C	xylene	250 - 500	acetone	1250 - 1429	dichloroethane	1429 - 1667	ethyl acetate	714 - 1000	methanol	114 - 133	heptane	3.042
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Surface tension (state concentration and temperature, state purity)	68.3 mN/m at 20 °C (saturated aqueous solution) 98.5 % <b>DAR 1998</b> 63.9 mN/m at 20 °C (saturated aqueous solution) 98.3 % <b>UPL</b>																														

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### Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

Partition coefficient  
(state temperature, pH and purity)

Dissociation constant (state purity)

UV/VIS absorption (max.) incl.  $\epsilon$   
(state purity, pH)

At 25 °C (99.9%)	
Pow	log Pow
pH 6.44	486 2.7
No pH effect because the active substance ethofumesate is not ionisable.	
<b>DAR 1998</b>	
not applicable in consideration of the molecular structure	
<b>Taskforce</b> (99.9 %) At 290 nm $\epsilon > 1000$ L/mol x cm	
UV/VIS (methanol)	
Wavelength [nm]	Molar extinction coefficient [L/mol x cm]
203	19441
228	7228
281	2797
291	1412
UV/VIS (methanol + HCl $c_{\text{HCl}} = 0.1$ mol/L)	
Wavelength [nm]	Molar extinction coefficient [L/mol x cm]
202	24122
227	7339
280	2797
291	1357
UV/VIS (methanol + NaOH $c_{\text{NaOH}} = 0.1$ mol/L)	
Wavelength [nm]	Molar extinction coefficient [L/mol x cm]
227	7339
280	2853
291	1357
<b>UPL</b> (99.6%) At 290 nm $\epsilon > 1000$ L/mol x cm	
Neutral in methanol	
Wavelength [nm]	Molar extinction coefficient [L/mol x cm]
202.5	17362.4
227	6716.4
280.5	2545.6
Acidic (methanol + HCl)	
Wavelength [nm]	Molar extinction coefficient [L/mol x cm]
202.0	18872.3
227	6663.4

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	280.5	2529.7
	Basic (methanol + NaOH)	
	<b>Wavelength [nm]</b>	<b>Molar extinction coefficient [L/mol x cm]</b>
	212	6434.0
	227	6549.6
	280.0	2557.0
Flammability (state purity)	Not a highly flammable (98.3%) <b>Taskforce</b> Not flammable (96.3%) <b>DAR 1998 (UPL)</b>	
	No self-ignition temperature up to 401 °C (98.3%) <b>Taskforce</b> Not autoflammable (96.3%) <b>DAR 1998 (UPL)</b>	
Explosive properties (state purity)	Not explosive (98.3%) <b>Taskforce</b> Not explosive (96.3%) <b>DAR 1998 (UPL)</b>	
Oxidising properties (state purity)	No oxidizing properties (98.3%) <b>Taskforce</b> Not oxidative based on chemical structure (statement) <b>DAR 1998 (UPL)</b>	

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## Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

### Summary of representative uses evaluated, for which all risk assessments needed to be completed (*Ethofumesate*) (Regulation (EU) N° 284/2013, Annex Part A, points 3, 4)

#### 1) Task Force Ethofumesate

Crop and/or situation (a)	Member State	Product Name	F G I (b)	Pests or group of pests controlled (c)	Formulation		Application				Application rate per treatment			PHI (days) (l)	Remarks (m)
					Type (d-f)	Conc of a.i. g/kg (i)	Method kind (f-h)	Growth stage and season (j)	Number min max (k)	Interval between applications (minimum days)	Kg a.s./hl min max (g/hl)	Water l/ha min max	kg a.s./ha min max (*) (g/ha)		
Sugar beet, fodder beet, red beet	North and South EU	Ethofumesate SC 500	F	Annual dicot weeds and annual grasses	SC	500 g/l	Overall spray	Post-emergence BBCH16 to BBCH18	1-3	5	0.05-1	100-400	0.2-1.0	*	The maximum amount of active substance must not exceed 1.0 kg/ha every 3 years.  * PHI is covered by the normal vegetation period between last application and harvest



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## Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

### 2) United Phosphorus Limited

Crop and/or situation (a)	Member State	Product Name	F G I (b)	Pests or group of pests controlled (c)	Formulation		Application				Application rate per treatment			PHI (days) (l)	Remarks (m)
					Type (d-f)	Conc of a.i. g/kg (i)	Method kind (f-h)	Growth stage and season (j)	Number min max (k)	Interval between applications (minimum days)	Kg a.s./hl min max (g/hl)	Water l/ha min max	kg a.s./ha min max (*) (g/ha)		
Sugar beet, fodder beet	Northern, central, southern EU	Ethofol 500 SC	F	Annual weeds	SC	500 g/l	Overall spray	Pre-emergence	1	-		300-400	1	-	PHI covered by the vegetation period, max. 1 kg a.s./ha every three years
Sugar beet, fodder beet	Northern, central, southern EU	Ethofol 500 SC	F	Annual weeds	SC	500 g/l	Overall spray	Post-emergence until BBCH 18	6*	5		200-300	0.16*	-	PHI covered by the vegetation period, max. 1 kg a.s./ha every three years

\*Splitting application with a maximum total rate of 1 kg a.s./ha per season. The maximum application rate per treatment is 0.33 kg a.s./ha. The critical GAP therefore is 3 applications of 0.33 kg a.s./ha. More applications (max.6) at a lower application rate are possible, but they do not represent the critical GAP.

<p>(a) For crops, the EU and Codex classifications (both) should be taken into account; where relevant, the use situation should be described (e.g. fumigation of a structure)</p> <p>(b) Outdoor or field use (F), greenhouse application (G) or indoor application (I)</p> <p>(c) e.g. biting and sucking insects, soil born insects, foliar fungi, weeds</p> <p>(d) e.g. wettable powder (WP), emulsifiable concentrate (EC), granule (GR)</p> <p>(e) CropLife International Technical Monograph no 2, 6th Edition. Revised May 2008. Catalogue of pesticide</p> <p>(f) All abbreviations used must be explained</p> <p>(g) Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench</p>	<p>(i) g/kg or g/L. Normally the rate should be given for the active substance (according to ISO) and not for the variant in order to compare the rate for same active substances used in different variants (e.g. fluoroxypyr). <b>In certain cases, where only one variant is synthesised, it is more appropriate to give the rate for the variant (e.g. benthialdicarb-isopropyl).</b></p> <p>(j) Growth stage range from first to last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application</p> <p>(k) Indicate the minimum and maximum number of applications possible under practical conditions of use</p> <p>(l) The values should be given in g or kg whatever gives the more manageable number (e.g. 200 kg/ha)</p>
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**Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis**

(h) Kind, <i>e.g.</i> overall, broadcast, aerial spraying, row, individual plant, between the plant- type of equipment used must be indicated	instead of 200 000 g/ha or 12.5 g/ha instead of 0.0125 kg/ha (m) PHI - minimum pre-harvest interval
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Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

**Summary of additional intended uses for which MRL applications have been made, that in addition to the uses above, have also been considered in the consumer risk assessment (*name of active substance or the respective variant*)**  
Regulation (EC) N° 1107/2009 Article 8.1(g))

In the framework of the renewal process, no additional uses were intended for MRL setting.

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### Section 1 Identity, Physical/ Chemical Properties, Details of Uses, Further Information, Methods of Analysis

#### Further information, Efficacy

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

GAPs for representative uses supported
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##### Adverse effects on field crops (Regulation (EU) N° 284/2013, Annex Part A, point 6.4)

No adverse effects on field crops
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##### Observations on other undesirable or unintended side-effects (Regulation (EU) N° 284/2013, Annex Part A, point 6.5)

No undesirable or unintended side-effects
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##### Groundwater metabolites: Screening for biological activity (SANCO/221/2000-rev.10-final Step 3 a Stage 1)

Activity against target organism

NC 20645	-	-	-	-	-
no					

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## Section 1 Identity, Physical/ Chemical Properties, Details of Uses, Further Information, Methods of Analysis

### Methods of Analysis

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

Technical a.s. (analytical technique)	<b>Bayer CropScience</b> HPLC <b>Amada</b> HPLC <b>UPL</b> HPLC
Impurities in technical a.s. (analytical technique)	<b>Bayer CropScience</b> HPLC, GC-FID, GC-MS, Karl Fischer titration <b>Amada</b> LC-MS/MS, GC-MS, Karl Fischer titration GC-MS, Karl Fischer titration
Plant protection product (analytical technique)	<b>Taskforce</b> HPLC, relevant impurities: GC-MS <b>UPL</b> HPLC, relevant impurities: GC-MS

#### Analytical methods for residues (Regulation (EU) N° 283/2013, Annex Part A, point 4.2 & point 7.4.2)

#### Residue definitions for monitoring purposes

Food of plant origin	Ethofumesate, 2-keto-ethofumesate (NC 9607), opening-2-keto-ethofumesate (NC 20645) and its conjugate
Food of animal origin	Ethofumesate, 2-keto-ethofumesate (NC 9607), opening-2-keto-ethofumesate (NC 20645)
Soil	Ethofumesate
Sediment	Ethofumesate
Water      surface	Ethofumesate
drinking/ground	Ethofumesate
Air	Ethofumesate
Body fluids and tissues	not relevant

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### Monitoring/Enforcement methods

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

**Taskforce + UPL:**  
**Schulte, G.; Diehl, P.; 2014 + Betson, S.; 2014 (ILV)**  
 LC-MS/MS two transitions LOQ: 0.01 mg/kg each  
 Analytes:  
 Ethofumesate, NC 9607, NC 20645  
 Matrices:  
 Sugar beet (leaf), wheat (grain), rape (seed), orange (fruit), hop (green cone)

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

**UPL+Taskforce:**  
**Jooß S., 2012 + Schlewitz, P. 2013b (ILV)**  
 LC-MS/MS two transitions LOQ: 0.01 mg/kg each  
 Analytes:  
 Ethofumesate, NC 9607, NC 20645  
 Matrices:  
 Milk, eggs, muscle, liver, and fat

Soil (analytical technique and LOQ)

**Taskforce:**  
**Brumhard, B; 2003 + Schneider, E.; 2000 (confirmatory)**  
 LC-MS/MS one transitions+GC-MS LOQ: 0.05 mg/kg  
 Analyte:  
 Ethofumesate  
**UPL:**  
**Hamberger, R. 2012b**  
 GC-MS (SIM 3 fragment ions)  
 LOQ: 0.005 mg/kg (ethofumesate) 0.02 mg/kg (NC8493)  
 Analytes:  
 Ethofumesate, NC 8493

Water (analytical technique and LOQ)

**Taskforce:**  
**Krebber, R.; Braune, M., 2013 + Stanislawski, T., 2013 (ILV)**  
 LC-MS/MS two transitions LOQ: 0.05 µg/L  
 Analyte:  
 Ethofumesate  
 Matrix:  
 Surface water  
**UPL:**  
**Hamberger, R. 2012c + Brown D. 2014 (ILV)**  
 GC-MS (SIM 3 fragment ions) LOQ: 0.1 µg/L each  
 Analyte:  
 Ethofumesate, NC 9607, NC 20645  
 Matrix:  
 Surface water

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Air (analytical technique and LOQ)

**DAR 1998:**  
**Schneider 1994b**  
 GC-MS (1 fragment ion) LOQ: 0.02 µg/m<sup>3</sup>  
 Analyte:  
 Ethofumesate  
 No confirmatory method required.

Body fluids and tissues (analytical technique and LOQ)

According to guidance document SANCO/825/00 rev. 8.1 no method is required since ethofumesate is not classified. However, to be in line with Regulation 1107/99 analytical methods are available for animal matrices including tissues (meat) and fluids (milk) in this DRAR and is as well addressed for dog plasma (McKenzie 1994) in the original DAR (1998).  
**UPL+Taskforce:**  
**Jooß S., 2012**  
 LC-MS/MS LOQ: 0.01 mg/kg (milk, meat)  
 Analyte:  
 Ethofumesate

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

Substance

Ethofumesate

Harmonised classification according to Regulation (EC) No 1272/2008 and its Adaptations to Technical Process [Table 3.1 of Annex VI of Regulation (EC) No 1272/2008 as amended]<sup>1</sup>:

No classification regarding physical and chemical data

Peer review proposal <sup>2</sup> for harmonised classification according to Regulation (EC) No 1272/2008:

No classification regarding physical and chemical data

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

<sup>2</sup> It should be noted that harmonised classification and labelling is formally proposed and decided in accordance with Regulation (EC) No 1272/2008. Proposals for classification made in the context of the evaluation procedure under Regulation (EC) No 1107/2009 are not formal proposals.

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## Section 2 Mammalian Toxicology

### Impact on Human and Animal Health

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

Rate and extent of oral absorption/systemic bioavailability	> 80 % (based on urinary excretion after repeated low dose administration) Correction of AOEL for oral absorption not considered necessary
Toxicokinetics	C <sub>max</sub> , T <sub>max</sub> , Plasma T <sub>1/2</sub> not reported for ethofumesate Plasma T <sub>1/2</sub> approximately 1.6 hours for metabolite ethofumesate-carboxylic acid
Distribution	Widely distributed (highest level in liver, kidney and fat)
Potential for bioaccumulation	No evidence for accumulation
Rate and extent of excretion	Rapid and extensive (app. 93-100 % within 24 h), mainly via urine (single oral dose: 66-90%, repeated oral dose: 81 – 92%); to less extent via faeces (single oral dose: 7- 13%, repeated oral dose: 6- 16%)
Metabolism in animals	Extensively metabolised (> 95 %); major metabolite ethofumesate-carboxylic acid, minor metabolites ethofumesate-lactone and ethofumesate-2-hydroxy; Dealkylation and ring opening
<i>In vitro</i> metabolism	No unique human metabolites expected (no OECD Guideline at present)
Toxicologically relevant compounds (animals and plants)	Ethofumesate; metabolites ethofumesate-carboxylic acid and ethofumesate-lactone, both identified in rat metabolism studies
Toxicologically relevant compounds (environment)	Ethofumesate

#### Acute toxicity (Regulation (EU) N° 283/2013, Annex Part A, point 5.2)

Rat LD <sub>50</sub> oral	> 2000 mg/kg bw	
Rat LD <sub>50</sub> dermal	> 2000 mg/kg bw	
Rat LC <sub>50</sub> inhalation	> 0.16 mg/L air /4h ( <i>whole body</i> )	
Skin irritation	Non-irritant	
Eye irritation	Non-irritant	
Skin sensitisation	Non-sensitising (M&K, Buehler)	
Phototoxicity	Not phototoxic in 3T3 NRU-PT test	



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## Section 2 Mammalian Toxicology

### Short-term toxicity (Regulation (EU) N° 283/2013, Annex Part A, point 5.3)

Target organ / critical effect	Rat: liver (↑weight), kidney (↑weight) Dog: liver (↑weight), ↑ alkaline phosphatase	-
Relevant oral NOAEL	90-day, dog: 250 mg/kg bw /d 90-day rat: 190 mg/kg bw/d	
Relevant dermal NOAEL	28-day, rabbit: 1000 mg/kg bw/d	
Relevant inhalation NOAEL	No data - not required	

### Genotoxicity (Regulation (EU) N° 283/2013, Annex Part A, point 5.4)

<i>In vitro</i> studies	Bacterial assays for gene mutation – negative Gene mutation in mammalian cells – negative Clastogenicity in mammalian cells – negative DNA damage and repair - negative	
<i>In vivo</i> studies	Mouse micronucleous assays – two negative, one positive Chromosome aberration in mice – negative Chromosome aberration in rats – negative Dominant lethal assay - negative	
Photomutagenicity	The waiving of the study is considered acceptable as long as no test methods or guidance documents are published in form of an update of the Commission Communications 2013/C 95/01 and 2013/C 95/02.	
Potential for genotoxicity	Ethofumesate is unlikely to be genotoxic	-

### Long-term toxicity and carcinogenicity (Regulation (EU) N°283/2013, Annex Part A, point 5.5)

Long-term effects (target organ/critical effect)	Rat: decreased body weight gain, increased liver weight, histopathological changes in liver Mouse: increased liver weight Hamster: increased liver weight Dog: increased liver weight, increased ALT	-
Relevant long-term NOAEL	2-year, rat: 101 mg/kg bw per day 20-months, mouse: 644 mg/kg bw per day 2-year, dog: 109 mg/kg bw/d	-
Carcinogenicity (target organ, tumour type)	Rat: no tumours Mouse: no tumours Ethofumesate is unlikely to pose a hazard to humans	-

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## Section 2 Mammalian Toxicology

Relevant NOAEL for carcinogenicity	No carcinogenicity	-
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## Reproductive toxicity (Regulation (EU) N° 283/2013, Annex Part A, point 5.6)

### Reproduction toxicity

Reproduction target / critical effect	<p>Parental toxicity: reduced body weight gain and inconsistent effects on organ weights not accompanied by any histopathological findings</p> <p>Reproductive toxicity: minimal and limited to effects on mean litter size and pre-implantation loss in animals of highest tested doses; however these effects were not confirmed in all generations within one study</p> <p>Offspring's toxicity: decreased body weight gain and incomplete ossification. Effects like reduced live birth index, reduced 21 day survival index and reduced number of male pups were not confirmed in following generation</p>	-
Relevant parental NOAEL	1000 ppm (60.9 mg/kg bw /d); based on huge dose spacing used this NOAEL is probably much higher	
Relevant reproductive NOAEL	1000 ppm (60.9 mg/kg bw /d); based on huge dose spacing used this NOAEL is probably much higher	
Relevant offspring NOAEL	1000 ppm (60.9 mg/kg bw /d); based on huge dose spacing used this NOAEL is probably much higher	

### Developmental toxicity

Developmental target / critical effect	<p>Rat:</p> <p>Maternal toxicity: no maternal toxicity observed at highest tested dose</p> <p>Developmental toxicity: no developmental toxicity observed at highest tested dose</p> <p>Rabbit:</p> <p>Maternal toxicity: mortalities and reduced body weight and food intake</p> <p>Developmental toxicity: post-implantation loss</p>	-
Relevant maternal NOAEL	<p>Rat: 1000 mg/kg bw/d</p> <p>Rabbit: 600 mg/kg bw/d</p>	
Relevant developmental NOAEL	Rat: 1000 mg/kg bw/d	

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 2 Mammalian Toxicology

Rabbit: 1500 mg/kg bw/d	
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### Neurotoxicity (Regulation (EU) N° 283/2013, Annex Part A, point 5.7)

Acute neurotoxicity	Study not required	-
Repeated neurotoxicity	Study not required	
Additional studies (e.g. delayed neurotoxicity, developmental neurotoxicity)	Not required	

### Other toxicological studies (Regulation (EU) N° 283/2013, Annex Part A, point 5.8)

Supplementary studies on the active substance	Acute intraperitoneal toxicity study in rats (LD <sub>50</sub> > 2000 mg/kg bw)
Endocrine disrupting properties	Not required
Studies performed on metabolites or impurities	<p>“BCS - CU88901” (the sodium salt of metabolite NC 20645 – carboxylic acid):</p> <p>AMES test: negative</p> <p>Chromosome aberration <i>in vitro</i>: negative</p> <p>Gene mutation <i>in vitro</i>: negative</p>

### Medical data (Regulation (EU) N° 283/2013, Annex Part A, point 5.9)

Limited. No plausible adverse effects in manufacturing personnel reported
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### Summary<sup>3</sup> (Regulation (EU) N°1107/2009, Annex II, point 3.1 and 3.6)

	Value (mg/kg bw (per day))	Study	Uncertainty factor
Acceptable Daily Intake (ADI)	1.0	rat, 2-year	100
Acute Reference Dose (ARfD)	No ARfD derived, not necessary		
Acceptable Operator Exposure Level (AOEL)	2.5	dog, 90-day	100
Acute Acceptable Operator Exposure Level (AAOEL)	No AAOEL derived, not necessary		

<sup>3</sup> If available include also reference values for metabolites

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 2 Mammalian Toxicology

### Dermal absorption (Regulation (EU) N° 284/2013, Annex Part A, point 7.3)

Ethofumesate SC 500 (500 g/l)

Concentrate: 0.4 %  
 Spray dilution (10 g/L): 2 %  
 Spray dilution (0.5 g/L): 8 %

Based on comparative in vitro dermal absorption study using human and rat skin with nearly identical formulation Nortron 500 SC (500 g/L)

Ethofol 500 SC (500 g/l)

Concentrate: 3 %  
 Spray dilution (0.17 g/L): 20 %

Based on in vitro dermal absorption study using human skin. The study conducted with the representative formulation Ethofol 500 SC

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

#### Ethofumesate SC 500

Operators

Use: herbicide in beets, tractor mounted equipment, application rate\_max. 1 kg a.s./ha  
Exposure estimates (model): % of AOEL  
UK POEM  
 Without PPE: 11.3  
 PPE (gloves and coverall): 2  
German model  
 Without PPE: 1.5  
 PPE (gloves and coverall): < 1

Workers

EUROPOEM II: 1% of AOEL (no gloves)

Bystanders and residents

Martin et al., 2008:  
 Bystander adult: 0.15 % of AOEL  
 Bystander child: 0.12 % of AOEL  
 Resident adult: 0.18 % of AOEL  
 Resident child: 0.36 % of AOEL

#### Ethofol 500 SC

Operators

Use: herbicide in beets, tractor mounted equipment, application rate\_max. 1 kg a.s./ha  
Exposure estimates (model): % of AOEL  
UK POEM  
 Without PPE: 58.6

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 2 Mammalian Toxicology

	PPE (gloves and coverall):	5
	<u>German model</u>	
	Without PPE:	5.5
	PPE (gloves and coverall):	< 1
Workers	EUROPOEM II: 2% of AOEL (no gloves)	
Bystanders and residents	Martin et al., 2008: Bystander adult: 0.37 % of AOEL Bystander child: 0.29 % of AOEL Resident adult: 0.21 % of AOEL Resident child: 0.40 % of AOEL	

## Classification with regard to toxicological data (Regulation (EU) N° 283/2013, Annex Part A, Section 10)

Substance :	Ethofumesate
Harmonised classification according to Regulation (EC) No 1272/2008 and its Adaptations to Technical Process [Table 3.1 of Annex VI of Regulation (EC) No 1272/2008 as amended] <sup>4</sup> :	None for human health (discussed at ECB Ispra, 19-21 May 1999)
Peer review proposal <sup>5</sup> for harmonised classification according to Regulation (EC) No 1272/2008:	None for human health

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

<sup>5</sup> It should be noted that harmonised classification and labelling is formally proposed and decided in accordance with Regulation (EC) No 1272/2008. Proposals for classification made in the context of the evaluation procedure under Regulation (EC) No 1107/2009 are not formal proposals.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 3 Residues

### Residues in or on treated products food and feed

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

<b>Primary crops</b> (Plant groups covered) <b>OECD Guideline 501</b>	<b>Crop groups</b>	<b>Crop(s)</b>	<b>Application(s)</b>	<b>DAT (days)</b>
	Fruit crops			
	Root crops	sugar beets onion	pre emergence and foliar (up to BBCH 14)	0 – maturity
	Leafy crops	tobacco	foliar (BBCH 14-16)	7 - 120
	Cereals/grass crops	ryegrass	foliar (up to BBCH 12-13)	0 - 112
	Pulses/Oilseeds			
	Miscellaneous			
	The metabolism studies on tobacco and onion are for supporting information only. The metabolism performed for cereal crops was conducted on ryegrass and therefore no information on cereal grains is available.			
<b>Rotational crops</b> (metabolic pattern) <b>OECD Guideline 502</b>	<b>Crop groups</b>	<b>Crop(s)</b>	<b>PBI (days)</b>	<b>Comments</b>
	Root/tuber crops	radish, carrots	3, 9, 12 1	4.5 x the applied use rate 1 x rate in the 1 month study.
	Leafy crops	cabbage spinach	3, 9, 12 1	
	Cereal (small grain)	wheat, ryegrass	5, 9, 12 1	
	Other	French beans	1	
	The metabolic routes detected are in line with those observed in primary crops. On the basis of these results it can be concluded that the metabolism of [ <sup>14</sup> C]-ethofumesate in confined rotational crops follows the same metabolic path as primary crops			
Rotational crop and primary crop metabolism similar?				
<b>Processed commodities</b> (standard hydrolysis study) <b>OECD Guideline 507</b>	<b>Conditions</b>	ethofumesate		
	20 min, 90°C, pH 4	98.6		
	60 min, 100°C, pH 5	99.3		
	20 min, 120°C, pH 6	100		
	30 min, 90°C, pH 11	97.6		purification process sugar beets
Residue pattern in processed commodities similar to residue pattern in raw commodities?	Hydrolysis products were detected in a range between 0.7 and 2.1%. They were not further investigated, due to their low amount in the test solutions.			

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 3 Residues

Plant residue definition for monitoring (RD-Mo) <b>OECD Guidance, series on pesticides No 31</b>	Ethofumesate, 2-keto-ethofumesate (NC 9607), opening-2-keto-ethofumesate (NC 20645) and its conjugate
Plant residue definition for risk assessment (RD-RA)	Ethofumesate, 2-keto-ethofumesate (NC 9607), opening-2-keto-ethofumesate (NC 20645) and its conjugate
Conversion factor (monitoring to risk assessment)	1

### Metabolism in livestock (Regulation (EU) N° 283/2013, Annex Part A, points 6.2.2, 6.2.3, 6.2.4, 6.2.5 6.7.1)

<b>OECD Guideline 503 and SANCO/11187/2013 rev. 3 (fish)</b>	<b>Animal</b>	<b>Dose</b> (mg/kg bw/d)	<b>Duration</b> (days)	<b>N rate/comment</b>
<b>Animals covered</b>	Laying hen	0.8	10	appr. 150x
	Goat/Cow	5	4	appr. 270x
	metabolism in the rat and in the cow was very similar, no pig metabolism study was conducted  Fish: root and tuber crops are not considered as a significant part of the diet; ethofumesate is not considered to accumulate since the log <sub>POW</sub> of ethofumesate is 2.7, i.e. <3; no metabolism studies on fish is considered as necessary.			
Time needed to reach a plateau concentration in milk and eggs (days)	milk: 32 hours; eggs 9 days;			
Animal residue definition for monitoring (RD-Mo) <b>OECD Guidance, series on pesticides No 31</b>	Ethofumesate, 2-keto-ethofumesate (NC 9607), opening-2-keto-ethofumesate (NC 20645)			
Animal residue definition for risk assessment (RD-RA)	Ethofumesate, 2-keto-ethofumesate (NC 9607), opening-2-keto-ethofumesate (NC 20645)			
Conversion factor (monitoring to risk assessment)	1			
Metabolism in rat and ruminant similar (Yes/No)	yes			
Fat soluble residues (Yes/No) <b>(FAO, 2009)</b>	No			

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 3 Residues

### Residues in succeeding crops (Regulation (EU) N° 283/2013, Annex Part A, point 6.6.2)

<b>Confined rotational crop study</b> (Quantitative aspect) <b>OECD Guideline 502</b>	Additionally to the already evaluated confined rotational crop study on cabbage, radish and wheat and additional study on carrots, spinach, ryegrass and French bean was submitted (PBI: 30 days). It was concluded that metabolic patterns in primary and succeeding crops are similar, but residues in succeeding crops could not be excluded.
<b>Field rotational crop study</b> <b>OECD Guideline 504</b>	Additionally to the already submitted studies, two rotational crop field studies were submitted. The highest total residues of ethofumesate in rotational root crops; detectable residues were only found as ethofumesate; residues of the common moiety NC 9607 were always below the LOQ of 0.01



## List of end points

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## Section 3 Residues

### Stability of residues (Regulation (EU) N° 283/2013, Annex Part A, point 6.1)

#### OECD Guideline 506

Plant products (Category)	Commodity	T (°C)	Stability (Month/Year)			
			ethofumesate	NC 9607	NC 20645	
High water content	sugar beet (leaves)	< -18	1-2 years	1-2 years	2 years	
High oil content	rape seed	< -18			6 months	
High protein content	dry bean	< -18			6 months	
High starch content	sugar beet (tops)	< -18	1-2 years	1-2 years	2 years	
High acid content	orange fruits	< -18			6 months	
In the DAR, the storage stability of ethofumesate and its metabolite ethofumesate-lactone (NC 9607) was assessed for sugar beets. The results of the respective studies indicated that ethofumesate and its metabolite are stable in deep-frozen samples ( $\leq -18^{\circ}\text{C}$ ) of the tested plant commodities (roots and leaves) for at least 1 or 2 years, respectively.						
Animal	Animal commodity	T (°C)	Stability (Month)			
			ethofumesate	NC 9607	NC 20645	NC 8493
not specified in the study	Muscle	-21	6	6	3	6
not specified in the study	Liver	-21	6	6	6	6
not specified in the study	Kidney	-21	6	6	6	3
not specified in the study	Fat	-21	6	6	<1	6
bovine	Milk	-21	6	6	6	6
The storage stability study addressed the compounds included in the residue definition; The longest storage period in the feeding study was 153 days for kidney; the study is suitable to cover the storage periods in the animal feeding study, as the metabolite NC 8493 is not included in the residue definition						

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 3 Residues

Summary of residues data from the supervised residue trials (Regulation (EU) N° 283/2013, Annex Part A, point 6.3) [OECD Guideline 509](#), [OECD Guidance, series on pesticides No 66 and OECD MRL calculator](#)

Crop	Region/ Outdoor (a)	Residue levels (mg/kg) observed in the supervised residue trials relevant to the supported GAPs (b)	Recommendations/comments (OECD calculations)	MRL proposals (mg/kg)	HR (mg/kg) (c)	STMR (mg/kg) (d)
<b>Representative uses</b>						
sugar beet roots	NEU	8x<0.02, 14x<0.06, 0.09, 11x<0.1	OECD calc.: unrounded MRL: 0.19 mg/kg	0.2	0.1	0.06
	SEU	8x<0.02, 3x<0.06	OECD calc.: unrounded MRL: 0.06 mg/kg	0.06	0.06	0.02
sugar beet leaves	NEU	8x<0.02, 11x<0.06, 0.06, 0.07, 9x<0.1, <0.12, 0.18	OECD calc.: unrounded MRL: 0.22 mg/kg	0.3	0.18	0.06
	SEU	6x<0.02, 0.04, 0.06, 0.14	OECD calc.: unrounded MRL: 0.20 mg/kg	0.2	0.14	0.02
<b>Summary of the data on formulation equivalence <a href="#">OECD Guideline 509</a></b>						
Crop	Region	Residue data (mg/kg)	Recommendations/comments			
Sugar beets		Ethofumesate is applied as pre- or post-emergence use; therefore this information is normally not requested				
<b>Summary of data on residues in pollen and bee products (Regulation (EU) No 283/2013, Annex Part A, point 6.10.1)</b>						
Product(s)	Region	Residue data (mg/kg)	Recommendations/comments			
		no data available				

- (a): **NEU** or **SEU** for northern or southern **outdoor** trials in EU member states (**N+SEU** if both zones), **Indoor** for glasshouse/protected crops, **Country** if non-EU location.
- (b): Residue levels in trials conducted according to GAP reported in ascending order (e.g. 3x <0.01, 0.01, 6x 0.02, 0.04, 0.08, 3x 0.10, 2x 0.15, 0.17). When residue definition for monitoring and risk assessment differs, use **Mo/RA** to differentiate data expressed according to the residue definition for **Monitoring and Risk Assessment**.
- (c): **HR**: Highest residue. When residue definition for monitoring and risk assessment differs, HR according to residue definition for monitoring reported in brackets (HR<sub>Mo</sub>).
- (d): **STMR**: Supervised Trials Median Residue. When residue definition for monitoring and risk assessment differs, STMR according to definition for monitoring reported in brackets (STMR<sub>Mo</sub>).

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 3 Residues

### Inputs for animal burden calculations

Feed commodity	Median dietary burden		Maximum dietary burden	
	(mg/kg)	Comment	(mg/kg)	Comment
<b>Representative uses (row to be deleted if not relevant)</b>				
Sugar / fodder beet root	0.06		0.1	
Sugar / fodder beet tops	0.06		0.18	
Sugar beet, dried pulp	0.35	value estimated based on the residue in sugar beet root (dry matter (DM) = 15) and the DM of 88 for dried pulp		
Sugar beet, ensiled pulp	0.06	value estimated based on the residue in sugar beet root (dry matter (DM) = 15) and the DM 15 for ensiled pulp		
molasses	1.27	median processing factor of 12.7 for molasses was applied		
Cereal, forage	0.03	rotational crops		
Root crops, root	0.04	rotational crops		

## List of end points

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## Section 3 Residues

### Residues from livestock feeding studies (Regulation (EU) N° 283/2013, Annex Part A, points 6.4.1, 6.4.2, 6.4.3 and 6.4.4)

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

MRL calculations	Ruminant				Pig/Swine		Poultry		Fish	
Highest expected intake (mg/kg bw/d) (mg/kg DM for fish)	Beef cattle	0.013	Ram/Ewe	0.015	Breeding	0.008	Broiler	0.003	Carp	
	Dairy cattle	0.019	Lamb	0.019	Finishing	0.007	Layer	0.005	Trout	
							Turkey	0.003	Fish intake >0.1 mg/kg DM	
Intake >0.004 mg/kg bw	Yes/No		Yes/No		Yes/No		Yes/No		Yes/No	
Feeding study submitted	submitted feeding studies did not fulfil EU requirements; transfer factors were calculated from ruminant metabolism studies; no residues above 0.01 mg/kg are expected in animal tissues						submitted feeding studies did not fulfil EU requirements; transfer factors were calculated from poultry metabolism studies no residues above 0.01 mg/kg are expected in animal tissues		no agreed guidance available; no studies submitted	
Representative feeding level (mg/kg bw/d, mg/kg DM for fish) and N rates	Level	Beef: N Dairy: N	Level	Lamb: N Ewe: N	Level	N rate Breed/Finish	Level	B or T: N Layer: N	Level	N rate Carp/Trout
	Estimated HR <sup>(a)</sup> at 1N	MRL proposals	Estimated HR <sup>(a)</sup> at 1N	MRL proposals	Estimated HR <sup>(a)</sup> at 1N	MRL proposals	Estimated HR <sup>(a)</sup> at 1N	MRL proposals	Estimated HR <sup>(a)</sup> at 1N	MRL proposals
Muscle										
Fat										
Meat <sup>(b)</sup>										
Liver										
Kidney										
Milk <sup>(a)</sup>										
Eggs										
Method of calculation <sup>(c)</sup>										

(a): Estimated HR calculated at 1N level (**estimated mean level for milk**).

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

(c): The OECD guidance document on residues in livestock (series on pesticides 73) recommends three different approaches to derive MRLs for animal products; by applying a transfer factor (Tf), by intrapolation (It) or by linear regression (Ln). Fill in method(s) considered to derive the MRL proposals.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 3 Residues

STMR calculations	Ruminant				Pig/Swine		Poultry		Fish	
Median expected intake (mg/kg bw/d) (mg/kg DM for fish)	Beef cattle	0.012	Ram/Ewe	0.015	Breeding	0.007	Broiler	0.003	Carp	
	Dairy cattle	0.019	Lamb	0.019	Finishing	0.007	Layer	0.005	Trout	
							Turkey	0.003		
Representative feeding level (mg/kg bw/d, mg/kg DM for fish) and N rates	Level	Beef: N Dairy: N	Level	Lamb : N Ewe: N	Level	N rate Breed/Finish	Level	B or T: N Layer: N	Level	N rate Carp/Trout
	Mean level in feeding level	Estimated STMR <sup>(b)</sup> at 1N	Mean level in feeding level	Estimated STMR <sup>(b)</sup> at 1N	Mean level in feeding level	Estimated STMR <sup>(b)</sup> at 1N	Mean level in feeding level	Estimated STMR <sup>(b)</sup> at 1N	Mean level in feeding level	Estimated STMR <sup>(b)</sup> at 1N
Muscle										
Fat										
Meat <sup>(a)</sup>										
Liver										
Kidney										
Milk										
Eggs										
Method of calculation <sup>(c)</sup>										

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

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

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 3 Residues

### Processing factors (Regulation (EU) N° 283/2013, Annex Part A, points 6.5.2 and 6.5.3)

#### OECD Guideline 508 and OECD Guidance, series on testing and assessment No 96

Crop (RAC)/Edible part or Crop (RAC)/Processed product	Number of studies <sup>(a)</sup>	Processing Factor (PF)		Conversion Factor (CF <sub>p</sub> ) for RA <sup>(b)</sup>
		Individual values	Median PF	
Representative uses				
Sugarbeet/Sugar	4	0.1-0.3	0.20	
Sugarbeet/Molasses	4	6-24	12.7	
Sugarbeet/Wet pulp	3	0.2-0.4	0.2	
Sugarbeet/Thick juice	5	4-6.5	4.7	
Sugarbeet/Thin (raw) juice	5	0.5-1.9	1.1	

<sup>(a)</sup>: Studies with residues in the RAC at or close to the LOQ should be disregarded (unless concentration)

<sup>(b)</sup>: When the residue definition for risk assessment differs from the residue definition for monitoring

### Consumer risk assessment (Regulation (EU) N° 283/2013, Annex Part A, point 6.9)

Including the representative uses (representative uses and no MRL application).

ADI

1 mg/kg bw per day

TMDI according to EFSA PRIMo

Highest TMDI: 0.4 % ADI (UK Toddler)

ARfD

No ARfD derived, not necessary

### Proposed MRLs (Regulation (EU) No 283/2013, Annex Part A, points 6.7.2 and 6.7.3)

Code <sup>(a)</sup>	Commodity/Group	MRL/Import tolerance <sup>(b)</sup> ( mg/kg) and Comments	
Plant commodities			
Representative uses			
0213010	beetroots	0.2	
0900010	Sugar beet roots	0.2	
0252030	Chards/beet leaves	0.3	
Animal commodities			
			no residues above 0.01 mg/kg are expected in animal tissues

(a): Commodity code number, as listed in Annex I of Regulation (EC) No 396/2005

(b): MRLs proposed at the LOQ, should be annotated by an asterisk (\*) after the figure.

## List of end points

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### Section 4 Environmental fate and behaviour

#### Environmental fate and behaviour

##### Route of degradation (aerobic) in soil (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.1.1)

Mineralisation after 100 days	4- 60% after 62 d, [ <sup>14</sup> C- <i>Phenyl-UL</i> ]-label (n <sup>6</sup> = 17)
Non-extractable residues after 100 days	21-64 % after 62 d, [ <sup>14</sup> C- <i>Phenyl-UL</i> ]-label (n= 17)
Metabolites requiring further consideration - name and/or code, % of applied (range and maximum)	<i>None</i>

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

Mineralisation after 100 days	4.7 % after 90 d, [ <sup>14</sup> C- <i>Phenyl-UL</i> ]-label (n= 1)
Non-extractable residues after 100 days	25 % after 90 d, [ <sup>14</sup> C- <i>Phenyl-UL</i> ]-label (n= 1)
Metabolites that may require further consideration for risk assessment - name and/or code, % of applied (range and maximum)	<i>None</i>

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

Metabolites that may require further consideration for risk assessment - name and/or code, % of applied (range and maximum)	NC8493 - 24.2 % at 23 d (n=1) [ <sup>14</sup> C- <i>Phenyl-UL</i> ] label
Mineralisation at study end	1 % after d, [ <sup>14</sup> C- <i>Phenyl-UL</i> ]-label (n= 1)
Non-extractable residues at study end	3.8 % after 36 d, [ <sup>14</sup> C- <i>Phenyl-UL</i> ]-label (n= 1)

<sup>6</sup> n corresponds to the number of soils.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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### Section 4 Environmental fate and behaviour

#### Rate of degradation in soil (aerobic) laboratory studies active substance (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.1.1 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.1)

Parent	Dark aerobic conditions						
Soil type	X <sup>7</sup>	pH (CaCl <sub>2</sub> )	t. °C / % MWHC	DT <sub>50</sub> / DT <sub>90</sub> (d)	DT <sub>50</sub> (d) 20 °C pF2/10kPa <sup>b)</sup>	St. (χ <sup>2</sup> )	Method of calculation
Sandy Loam Abington		7.0	25°C / 75 % of WHC at 33kPa	137 / 454	208	5.8	SFO
Sandy Loam AX		6.1	20.7 °C / 55 %	28.5 / 94.7	30.4	5.1	SFO
Silt Loam HF		6.5	20.7 °C / 55 %	19.4 / 64.4	20.5	3.3	SFO
Sandy Loam WW		5.4	20.7 °C / 55 %	19.7 / 65.6	21.1	5.3	SFO
Clay Loam DD		7.2	20.7 °C / 55 %	19.1 / 63.6	20.4	2.0	SFO
Silt Loam Fisilis		6.82	20°C / pF 2.5	16.0 / 53.0	14.1	2.2	SFO
Loam Horn		7.23	20°C / pF 2.5	9.4 / 31.2	8.5	6.2	SFO
Clay Montesquieu		7.37	20°C / pF 2.5	20.4 / 67.8	17.9	4.8	SFO
Sandy Loam Sevelen		7.51	20°C / pF 2.5	11.7 / 38.7	9.3	3.4	SFO
Loam Mussbach		7.21	20°C / 50 %	17.72 / 58.86	15.2	6.0	SFO
Sandy loam Lufa 5.2		7.3	20°C / 50 %	15.36 / 51.01	14.5	6.9	SFO
Loamy sand Lufa 2.2		5.5	20°C / 50 %	12.78 / 42.47	12.8	7.9	SFO
Clay loam UK1		6.80	20°C / 50 %	25.52 / 84.79	25.5	6.5	SFO
Sandy loam UK2		6.83	20°C / 50 %	23.29 / 77.37	23.3	3.5	SFO
Loam North France		7.41	20°C / 50 %	13.63 / 45.28	11.4	9.6	SFO

<sup>7</sup> X This column is reserved for any other property that is considered to have a particular impact on the degradation rate. Column and this footnote may be removed if not used.



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

Silt loam Austria		7.14	20°C / 50 %	12.53 / 41.61	12.5	4.5	SFO
Silt loam Spain		7.38	20°C / 50 %	17.27 / 57.36	15.5	4.1	SFO
Geometric mean (if not pH dependent)					18.7		
pH dependence					No		

<sup>a)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

<sup>b)</sup> Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

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

NC8493	Dark aerobic conditions Metabolite dosed.							
Soil type	$X^7$	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. ( $\chi^2$ )	Method of calculation
Silt loam	Fislis	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 <sup>c)</sup>	2.2	DFOP
Geometric mean (if not pH dependent)						0.03		
Arithmetic mean					-			
pH dependence,						No		

<sup>a)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

<sup>b)</sup> Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

<sup>c)</sup> Calculated from slow-phase degradation constant

NC20645	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
Sandy loam	AX	5.9	20°C / 55 %	0.11 / 0.40	-	0.11	7.1	SFO
Silt loam	HH	6.1	20°C / 55 %	0.08 / 0.25	-	0.08	3.0	SFO

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

NC20645	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
Clay loam	DD	7	20°C / 55 %	0.15 / 0.52	-	0.15	5.3	SFO
Sandy loam	WW	5.2	20°C / 55 %	0.05/0.30	-	0.17 <sup>c)</sup>	0.0001	DFOP
Geometric mean (if not pH dependent)						0.12		
Arithmetic mean					-			
pH dependence,						No		

<sup>d)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

<sup>e)</sup> Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

<sup>f)</sup> Calculated from slow-phase degradation constant

### Rate of degradation field soil dissipation studies (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.2.1 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.2.1)

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. (χ <sup>2</sup> )	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	31 α = 0.004 β = 0.05	333	12.5	47.2 <sup>c)</sup>	DFOP
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 <sup>c)</sup>	DFOP
Isleham Loamy sand bare	UK	bare soil	7,5	0-30	59	196	12.3	25.7	SFO
Willingham Sandy clay loam bare	UK	bare soil	7,5	0-30	44	147	22	18.0	SFO

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

#### Rate of degradation field soil dissipation studies (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.2.2.1 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.1.2.1)

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
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 <sup>c)</sup>	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 <sup>c)</sup>	DFOP
Geometric mean (if not pH dependent)								40.7	
pH dependence					No				

<sup>a)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

<sup>b)</sup> Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7, values are DegT50matrix

<sup>c)</sup> Modelling endpoint derived from slow-phase degradation constant

#### Combined laboratory and field kinetic endpoints for modelling (when not from different populations)

Rate of degradation in soil active substance, normalised geometric mean (if not pH dependent)

26.2 (d)

Rate of degradation in soil transformation products,

NC8493

NC20645

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

normalised geometric mean (if not pH dependent)	0.03 (d)	0.12 (d)
Kinetic formation fraction (f. f. $k_f / k_{dp}$ ) of transformation products, arithmetic mean	-	-

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

Soil accumulation and plateau concentration	Plateau concentration of 0.003 mg/kg reached after 50 years (based on calculation)
---------------------------------------------	------------------------------------------------------------------------------------

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

Parent	Dark anaerobic conditions						
Soil type	$X^8$	pH <sup>a)</sup>	t. °C / % MWHC	DT <sub>50</sub> / DT <sub>90</sub> (d)	DT <sub>50</sub> (d) 20 °C <sup>b)</sup>	St. ( $\chi^2$ )	Method of calculation
Sandy loam		7.6	25°C / 75 % of WHC at 33 kPa	1000	1000	-	SFO
Geometric mean (if not pH dependent)					1000		

<sup>a)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

<sup>b)</sup> Normalised using a Q10 of 2.58

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

Parent	Soil photolysis					
Soil type	$X^9$	pH <sup>a)</sup>	t. °C / % MWHC	DT <sub>50</sub> / DT <sub>90</sub> (d) calculated at 33°N	St. ( $\chi^2$ )	Method of calculation
Silt loam		6.5	20°C / 50%	94.2 / 313	9.9	SFO

<sup>a)</sup> Measured in CaCl<sub>2</sub>

<sup>8</sup> X This column is reserved for any other property that is considered to have a particular impact on the degradation rate. Column and this footnote may be removed if not used.

<sup>9</sup> X This column is reserved for any other property that is considered to have a particular impact on the degradation rate. Column and this footnote may be removed if not used.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

#### Soil adsorption active substance (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.3.1.1 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.2.1)

Parent							
Soil Type	OC %	Soil pH <sup>a)</sup>	K <sub>d</sub> (mL/g)	K <sub>doc</sub> (mL/g)	K <sub>F</sub> (mL/g)	K <sub>Foc</sub> (mL/g)	1/n
Mueller Podsol	1.5	6.1			3.7	247	0.96
Mueller Parabraunerde	1.1	7.6			1.1	100	0.91
Mueller light sand	1.5	6.7			3.0	200	0.94
Bruhl Sandy loam	1.16	6.0			1.13	97	0.84
Cameron Sand	1.12	4.6			0.7	63	0.92
Cameron Acidic sandy loam	1.45	5.7			0.7	48	0.92
Cameron Alkaline Sandy loam	1.66	7.3			0.8	48	0.93
Icklingham, Sand	0.35	6.8			0.73	209	0.87
Abington, sandy loam	1.9	7.4			2.3	121	0.93
Terling, silt clay loam	3.2	6.6			5.3	166	0.89
Shelford clay	4.9	6.6			6.2	127	0.82
UPL loamy sand	1.41	7.3			2.6	187	0.93
Geometric mean (if not pH dependent)					1.74	118	
Arithmetic mean (if not pH dependent)							0.905
pH dependence			No				

<sup>a)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

#### Soil adsorption transformation products (Regulation (EU) N° 283/2013, Annex Part A, point 7.1.3.1.2 and Regulation (EU) N° 284/2013, Annex Part A, point 9.1.2.1)

NC8493							
Soil Type	OC %	Soil pH	K <sub>d</sub> (mL/g)	K <sub>doc</sub> (mL/g)	K <sub>F</sub> (mL/g)	K <sub>Foc</sub> <sup>a)</sup> (mL/g)	1/n
-	-	-	-	-	-	20.82	1
Geometric mean (if not pH dependent)						20.82	
Arithmetic mean (if not pH dependent)							1
pH dependence,			No				

<sup>a)</sup> Compound is unstable, K<sub>Foc</sub> calculated with EPI WIN

NC20645							
Soil Type	OC %	Soil pH <sup>a)</sup>	K <sub>d</sub> (mL/g)	K <sub>doc</sub> (mL/g)	K <sub>F</sub> (mL/g)	K <sub>Foc</sub> (mL/g)	1/n

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

Silt loam HH	2.9	6.3			0.12	4.3	0.93
Loam DD	4.4	7.3			0.16	3.7	0.91
Sandy loam CA	0.7	6.7			0.03	4.3	0.87
Silt loam NE	1.7	6.6			0.17	10.0	0.99
Geometric mean (if not pH dependent)					0.10	5.1	
Arithmetic mean (if not pH dependent)							0.93
pH dependence,				No			

<sup>b)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

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

Column leaching

Elution (mm): 510 mm  
Time period (d): 19 d  
Leachate: 2.8 % total residues/radioactivity in leachate  
31 % total residues/radioactivity retained in top 10 cm

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

Lysimeter/ field leaching studies

Location: Bedfordshire, UK  
Study type (e.g. lysimeter, field): 3 lysimeters  
Soil properties: texture, pH = 6.1 – 6.5 , OC = 1.02-0.02% , MWHC = n.d.  
Dates of application : April 1992  
Crop : sugar beet /Interception estimated: 0%  
Number of applications: 1 year, 1 application per year  
Duration. 2 years  
Application rate: 1.25 k g/ha/year  
Average annual rainfall and irrigation (mm): 571 mm  
Average annual leachate volume (mm):  
Lysimeter 4: 356 mm  
Lysimeter 9: 323 mm  
Lysimeter 10: 347 mm  
% radioactivity in leachate (maximum/year): 1.65 % AR (Lysimeter 10, 2<sup>nd</sup> year)  
Individual annual maximum concentrations (e.g. 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> yr):  
Ethofumesate: < 0.1 µg/L in all leachate samples  
NC8493: < 0.1 µg/L in all leachate samples

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

<p>NC9607: &lt; 0.1 µg/L in all leachate samples</p> <p>NC20645: &lt; 0.1 µg/L in all leachate samples</p> <p>NC 17900: &lt; 0.1 µg/L in all leachate samples</p> <p>“Peak A”:</p> <p>Lysimeter 9:</p> <p>0.41 (1<sup>st</sup> yr), 0.5 (2<sup>nd</sup> yr) µg parent equivalents /L</p> <p>Lysimeter 4, 10: not measured</p> <p>“Peak A” identified as NC8493-glycoside and NC20645-glycoside; FOCUS groundwater exposure assessment carried out for the respective aglycon: NC8493-aglycon and NC20645-aglycon &lt; 0.1 µg/L in 9/9 FOCUS scenarios</p> <p>Unidentified radioactivity</p> <p>Annual max:</p> <p>Lysimeter 4: &lt;0.1 µg/L parent equivalents (1<sup>st</sup> and 2<sup>nd</sup> yr)</p> <p>Lysimeter 9: 0.13 µg/L parent equivalents (1<sup>st</sup> yr)</p> <p>Lysimeter 10: &lt;0.1 µg/L parent equivalents (1<sup>st</sup> and 2<sup>nd</sup> yr)</p> <p>Individual max:</p> <p>Lysimeter 4: 0.12µg/L parent equivalents (1<sup>st</sup> yr)</p> <p>Lysimeter 9: 0.16 µg/L parent equivalents (1<sup>st</sup> yr)</p> <p>Lysimeter 10: 0.11 µg/L parent equivalents (2<sup>nd</sup> yr)</p> <p>Amount of radioactivity in the soils at the end of the study = 50.3% AR; 6.49 % AR as parent, 43.81 % AR as NER</p>
<p>Location: Itingen, Switzerland</p> <p>Study type (e.g. lysimeter, field): 2 lysimeters</p> <p>Soil properties: texture, pH = 5.9 – 7.3 , OC = 1.05% - 0.01 % , MWHC = 27.5%</p> <p>Dates of application :</p> <p>Lysimeter 19: May 1993</p> <p>Lysimeter 20: May 1993, May 1994</p> <p>Crop : sugar beet/Interception estimated:20%</p> <p>Number of applications:</p> <p>Lysimeter 19: 1 application 1<sup>st</sup> yr</p> <p>Lysimeter 20: 2 years, 1 application per year</p> <p>Duration: 3 yr</p> <p>Application rate: 1500 g/ha/year</p> <p>Average annual rainfall (mm): <b>1093</b> mm</p>

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

<p>Average annual leachate volume (mm):  Lysimeter 19: 407 mm  <b>Lysimeter 20: 428 mm</b>  % radioactivity in leachate (maximum/year):  Lysimeter 19: 0.27 % AR  Lysimeter 20: 0.53 % AR  Ethofumesate: &lt; 0.1 µg/L in all leachate samples  <b>NC 20645: &lt;0.1 µg/L in all leachate samples</b></p> <p>Individual annual maximum concentrations (e.g. 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> yr):  Unidentified radioactivity, &gt;4 components, 4.23 µg/L parent equivalents (Lysimeter 20, 3<sup>rd</sup> yr)</p> <p>Amount of radioactivity in the soils at the end of the study = 30.6% AR; 4 % AR as parent,</p>
<p>Location: Essex, UK  Study type (e.g. lysimeter, field): <i>2lysimeters</i>  Soil properties: texture, pH = 6.1 – 6.5 , OC= 1.3 – 0.2 %, MWHC n.d.  Dates of application : May-June 2001  Crop : sugar beet /Interception estimated: 20%  Number of applications: <b>1</b> years, <b>3</b> applications per year  Duration: 2 yr  Application rate: <b>333</b> g/ha/year (1000 g/ha/yr total)  Average annual rainfall (mm): <b>x</b> mm  Average annual leachate volume (mm):  Lysimeter A:166 mm  Lysimeter B: <b>215</b> mm  % radioactivity in leachate (maximum/year):  Lysimeter A: 0.40 % AR  Lysimeter B: 0.53 % AR  Ethofumesate: &lt;0.1 µg/L in all samples  NC9607: &lt;0.1 µg/L in all samples  Individual annual maximum concentrations:  Unidentified radioactivity  Lysimeter A: 1.83 µg/L parent equivalents (2<sup>nd</sup> year).  Lysimeter B: 2.53 µg/L parent equivalents (2<sup>nd</sup> year).  Individual annual average):  Unidentified radioactivity  Lysimeter A:1.43 µg/L parent equivalents (2<sup>nd</sup> yr)  Lysimeter B: 1.77 µg/L parent equivalents.(2<sup>nd</sup> yr)  Amount of radioactivity in the soils at the end of the study = 37.5 % AR; 36 % AR as NER</p>



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

Location: Neustadt, Germany  
 Study type (e.g. lysimeter, field): lysimeter  
 Soil properties: texture, pH = , OC= , MWHC =  
 Dates of application :  
 Crop : sugar beet /Interception estimated: 20%  
 Number of applications: 1 1yr  
 Duration: 2 yr  
 Application rate: 1 x 200 and 2 x 400 g/ha/year  
 (100g/ha/yr total)  
 Average annual rainfall and irrigation (mm): 979 mm  
 Average annual leachate volume (mm):  
 Lysimeter 1: 515 mm  
 Lysimeter 2: 532 mm  
 % radioactivity in leachate (maximum/year): 0.79 % AR  
 Ethofumesate: <0.1 µg/L in all samples  
 NC9607: <0.1 µg/L in all samples

Lysimeter I  
 Individual annual average concentrations (e.g. 1st, 2nd, 3rd yr):  
 Unidentified radioactivity, >14 components, µg/L parent equivalents.

Lysimeter II  
 Individual annual average concentrations (e.g. 1st, 2nd, 3rd yr):  
 Unidentified radioactivity, >14 components, 0.427 µg/L parent equivalents.

Amount of radioactivity in the soils at the end of the study = 37 % AR; 5.5% AR as parent

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

#### Hydrolytic degradation (Regulation (EU) N° 283/2013, Annex Part A, point 7.2.1.1)

Hydrolytic degradation of the active substance and metabolites > 10 %

pH 5: stable at 20 °C

pH 7: stable at 20 °C

pH 9: stable at 20 °C

#### Aqueous photochemical degradation (Regulation (EU) N° 283/2013, Annex Part A, points 7.2.1.2 / 7.2.1.3)

Photolytic degradation of active substance and metabolites above 10 %

DT<sub>50</sub>: 15.6 d

Natural light, 33°N; DT<sub>50</sub> 53.2 days

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

$1.92 \cdot 10^{-4} \text{ mol} \cdot \text{Einstein}^{-1}$

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

Readily biodegradable  
(yes/no)

No

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

#### Aerobic mineralisation in surface water (Regulation (EU) N° 283/2013, Annex Part A, point 7.2.2.2 and Regulation (EU) N° 284/2013, Annex Part A, point 9.2.1)

Parent										
System identifier (indicate fresh, estuarine or marine)	pH water phase	pH sed <sup>a)</sup>	t. °C <sup>b)</sup>	DT <sub>50</sub> /DT <sub>90</sub> whole sys. (suspended sediment test)		St. ( $\chi^2$ )	DT <sub>50</sub> /DT <sub>90</sub> Water (pelagic test)		St. ( $\chi^2$ )	Method of calculation
				At study temp	Normalise d to x °C <sup>c)</sup>		At study temp	Norma lised to x °C <sup>c)</sup>		
Fresh (Fröschweiher)	7.68	-	22°	-	-	-	1000	-	-	SFO
Fresh (Möhlin)	6.95		13.8	.	-	-	331 /1100		1.4	SFO

<sup>a)</sup> Measured in [medium to be stated, usually calcium chloride solution or water]

<sup>b)</sup> Temperature of incubation=temperature that the environmental media was collected or std temperature of 20°C

<sup>c)</sup> Normalised using a Q10 of 2.58 to the temperature of the environmental media at the point of sampling. (note temp of x should be stated).

Mineralisation and non extractable residues (for parent dosed experiments)					
System identifier (indicate fresh, estuarine or marine)	pH water phase	pH sed	Mineralisation % after n d. (end of the study).	Non-extractable residues. max x % after n d (suspended sediment test)	Non-extractable residues. max x % after n d (end of the study) (suspended sediment test)
Fresh (Fröschweiher)	7.68	-	1.1 % (62 d)	-	-
Fresh (Möhlin)	6.95	-	0.8% (88 d)	-	-

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

Parent	Distribution Max. 72.2% AR in Sediment after 104 d									
Water / sediment system	pH water phase	pH sed <sup>a)</sup>	t. °C	DegT <sub>50</sub> /DT <sub>90</sub> whole sys.	St. ( $\chi^2$ )	DissT <sub>50</sub> /DT <sub>90</sub> water	St. ( $\chi^2$ )	DissT <sub>50</sub> /DT <sub>90</sub> sed	St. ( $\chi^2$ )	Method of calculation
Rückhaltebecken	8.1	7.2 <sup>1</sup>	20	250 / 830	1.4	52 / 457 <sup>c)</sup>	2.4	477 / 1584	0.5	SFO
Waldwinkel	7.7	7.1 <sup>1</sup>	20	294 / 976	2.3	7.8 / 101 <sup>c)</sup>	2.2	1000	-	SFO
Anglersee	8.6	6.8 <sup>2</sup>	20	89 / 296	4.2	54 / 180	8.0	96 / 320	3.2	SFO
Hönniger Weiher	7.2	6.3 <sup>2</sup>	20	141 / 469	3.4	9.9 / 130	4.4	1000	-	SFO
Rhine River	7.9	6.9 <sup>2</sup>	20	103 / 342	1.1	13/ 94 <sup>c)</sup>	4.7	174 / 578	1.9	SFO

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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### Section 4 Environmental fate and behaviour

Anwiler Teich	7.9	6.9 <sup>2</sup>	20	164 / 543	2.0	23 / 155 <sup>c)</sup>	2.5	279 / 928	1.5	SFO
Pond	7.9	7.8 <sup>2</sup>	20	217 / 722	5.0	67 / 223	5.7	258 / 857	6.6	SFO
Creek	8.2	7.5 <sup>2</sup>	20	209 / 693	3.6	150 / 499	2.4	273 / 907	1.7	SFO
Geometric mean at 20°C <sup>b)</sup>				170 / 564		-		334 / 823		

<sup>a)</sup> Measured in water (1) or CaCl<sub>2</sub> (2)

<sup>b)</sup> Normalised using a Q10 of 2.58

<sup>c)</sup> DFOP

Metabolite NC20645	Distribution Max in whole system: 18.8 % after 125 days Kinetic formation fraction ( $k_f/k_{dp}$ ): Anglersee.....0.385 (from parent; whole system) Pond.....0.443 (from parent; whole system)									
Water / sediment system	pH water phase	pH sed <sup>a)</sup>	t. °C	DT <sub>50</sub> /DT <sub>90</sub> whole sys.	St. ( $\chi^2$ )	DT <sub>50</sub> /DT <sub>90</sub> water	St. ( $\chi^2$ )	DT <sub>50</sub> /DT <sub>90</sub> sed	St. ( $\chi^2$ )	Method of calculation
Anglersee	8.6	6.8	20	19 / 62	18.1	1000 <sup>c)</sup>	-	36 / 118	3.2	SFO
Hönniger Weiher	7.2	6.3	20	1000 <sup>d)</sup>	-	1000 <sup>d)</sup>	-	1000 <sup>d)</sup>	-	SFO
Pond	7.9	7.8	20	99 / 329	32.4	1000 <sup>d)</sup>	-	1000 <sup>c)</sup>	-	SFO
Creek	8.2	7.5	20	1000 <sup>c)</sup>	-	81 / 269	11.7	- <sup>e)</sup>	-	SFO
Geometric mean at 20°C <sup>b)</sup>				208 / -		533 / -		330 / -		

<sup>a)</sup> Measured in CaCl<sub>2</sub>

<sup>b)</sup> Normalised using a Q10 of 2.58

<sup>c)</sup> No reliable DT50 could be calculated

<sup>d)</sup> Maximum not reached at study end, no reliable DT50 could be calculated

<sup>e)</sup> Not detected

Mineralisation and non extractable residues (from parent dosed experiments)					
Water / sediment system	pH water phase	pH sed	Mineralisation x % after n d. (end of the study).	Non-extractable residues in sed. max x % after n d	Non-extractable residues in sed. max x % after n d (end of the study)
Rückhaltebecken	8.1	7.2 <sup>1</sup>	5.7 % (225 d)	26.9 % (225 d)	26.9 % (225 d)
Waldwinkel	7.7	7.1 <sup>1</sup>	9.4 % (234)	26.9 % (234 d)	26.9 % (234 d)
Anglersee	8.6	6.8 <sup>2</sup>	15.3 % (125 d)	43.2 % (125 d)	43.2 % (125 d)
Hönniger Weiher	7.2	6.3 <sup>2</sup>	5.3 % (125 d)	25.7 % (125 d)	25.7 % (125 d)
Rhine River	7.9	6.9 <sup>2</sup>	1.5 % (103 d)	14.2 % (103 d)	14.2 % (103 d)
Anwiler Teich	7.9	6.9 <sup>2</sup>	1.2 % (103 d)	20.5 % (103 d)	20.5 % (103 d)
Pond	7.9	7.8 <sup>2</sup>	1.9 % (203 d)	41.9 % (203 d)	41.9 % (203 d)
Creek	8.2	7.5 <sup>2</sup>	4.6 % (203 d)	19.4 % (203 d)	19.4 % (203 d)

**List of end points**

Rapporteur Member State	Month and year	Active Substance (Name)
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**Section 4 Environmental fate and behaviour****Fate and behaviour in air (Regulation (EU) N° 283/2013, Annex Part A, point 7.3.1)**

Direct photolysis in air	Not studied - no data requested
Photochemical oxidative degradation in air	DT <sub>50</sub> of 4.1 hours derived by the Atkinson model (version not specified). OH (24 h) concentration assumed = $5 \times 10^5$
Volatilisation	No volatilisation expected
Metabolites	None

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

Environmental occurring residues requiring further assessment by other disciplines (toxicology and ecotoxicology) and or requiring consideration for groundwater exposure	Soil: ethofumesate, NC 8493, Surface water: ethofumesate, NC 8493, NC 20645, BCS-CW35117 Sediment: ethofumesate, NC 20645 Ground water: ethofumesate, NC 8493, NC 20645 Air: ethofumesate
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**Definition of the residue for monitoring (Regulation (EU) N° 283/2013, Annex Part A, point 7.4.2)**

See section 5, Ecotoxicology
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**Monitoring data, if available (Regulation (EU) N° 283/2013, Annex Part A, point 7.5)**

Soil (indicate location and type of study)	None
Surface water (indicate location and type of study)	Surface water samples from Rivers Elbe, Ems, Weser, Aller in N Germany. Sampling period 1994-2004; n = 1053; Ethofumesate < 0.025 µg/L in all samples.
Ground water (indicate location and type of study)	None
Air (indicate location and type of study)	None

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

Parent	DT <sub>50</sub> (d): 157 days
Method of calculation	Kinetics: SFO Field or Lab: representative worst case from field studies.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

Application data

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

PEC <sub>(s)</sub> (mg/kg)	1000 g /ha Single application Actual	1000 g/ha Single application Time weighted average	2 x 500 g/ha Multiple application Actual	2 x 500 g/ha Multiple application Time weighted average	3 x 333 g/ha Multiple application Actual	3 x 333 g/ha 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 rel. to parent of

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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## Section 4 Environmental fate and behaviour

0.902)

PEC <sub>(s)</sub> (mg/kg)	1000 g /ha Single application Actual	1000 g/ha Single application Time weighted average	2 x 500 g/ha Multiple application Actual	2 x 500 g/ha Multiple application Time weighted average	3 x 333 g/ha Multiple application Actual	3 x 333 g/ha 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					

## Pre emergence

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

Parent	DT <sub>50</sub> (d): 157 days
Method of calculation	Kinetics: SFO Field or Lab: representative worst case from field studies.
Application data	Crop: sugar beet Depth of soil layer: 20cm Soil bulk density: 1.5g/cm <sup>3</sup> % plant interception: 0% Number of applications: 1-3 Interval (d): 5 Application rate(s): 1 x 1000 g a.s./ha Application every 3 years

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

PEC <sub>(s)</sub> (mg/kg)	Single application Actual	Single application Time weighted average
Initial	1.333	
Short term 24h	1.327	1.331
2d	1.322	1.328
4d	1.310	1.322
Long term 7d	1.293	1.314
28d	1.178	1.255
50d	1.069	1.197
100d	0.857	1.079
Plateau concentration	0.003 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

(assumed NC8493 is formed at a maximum of 24.2 % of the applied dose and a molecular weight rel. to parent of 0.902)

PEC <sub>(s)</sub> (mg/kg)	Single application Actual	Single application Time weighted average
Initial	0.291	
Short term 24h	<0.001	0.079
2d	<0.001	0.040
4d	<0.001	0.020
Long term 7d	<0.001	0.011
28d	<0.001	0.003
50d	<0.001	0.002
100d	<0.001	0.001
Plateau concentration	<0.001 mg/kg after 50 yr	



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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### Section 4 Environmental fate and behaviour

#### 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:

NC8493

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)

Application rate

Pre emergence 1000 g/ha, every third year

Gross application rate: 1000 g/ha.

Crop growth stage: 00

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

<p>Canopy interception %: 0</p> <p>Application rate net of interception: 1000 g/ha.</p> <p>No. of applications: 1</p> <p>Time of application (absolute or relative application dates): 7 d before emergence</p>
<p>Post emergence 1000 g/ha, every third year</p> <p>Gross application rate: 1000 g/ha.</p> <p>Crop growth stage: 11</p> <p>Canopy interception %: 20</p> <p>Application rate net of interception: 800 g/ha.</p> <p>No. of applications: 1</p> <p>Time of application (absolute or relative application dates): 10 d after emergence</p>
<p>Post emergence 500 g/ha, every third year</p> <p>Gross application rate: 1000 g/ha.</p> <p>Crop growth stage: 11</p> <p>Canopy interception %: 20</p> <p>Application rate net of interception: 400 g/ha.</p> <p>No. of applications: 2</p> <p>Interval: 5 d</p> <p>Time of application (absolute or relative application dates): 10 d after emergence</p>
<p>Post emergence 333 g/ha, every third year</p> <p>Gross application rate: 1000 g/ha.</p> <p>Crop growth stage: 11</p> <p>Canopy interception %: 20</p> <p>Application rate net of interception: 266 g/ha.</p> <p>No. of applications: 3</p> <p>Interval: 5 d</p> <p>Time of application (absolute or relative application dates): 10 d after emergence</p>

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

### PEC(gw) - FOCUS modelling results (80<sup>th</sup> percentile annual average concentration at 1m) for pre-emergence application 1x1000g/ha every third year

Model /Crop	Scenario	Parent (µg/L)	Metabolite (µg/L)	
			NC20645	NC8493
	Chateaudun	0.024	<0.001	<0.001
	Hamburg	0.011	<0.001	<0.001
	Jokioinen	0.001	<0.001	<0.001
	Kremsmunster	0.008	<0.001	<0.001
	Okehampton	0.014	<0.001	<0.001
	Piacenza	0.014	<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 1x1000g/ha every third year

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

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

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 every third year

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

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

#### Pre-emergence application of 1000 g a.s./ha on sugar beet:

Parent

Parameters used in FOCUSsw step 1 and 2

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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### Section 4 Environmental fate and behaviour

	<p>Molecular weight (g/mol): 286.3</p> <p>K<sub>OC</sub>/K<sub>OM</sub> (mL/g): 118 / 68</p> <p>DT<sub>50</sub> soil (d): 26.2 days</p> <p>DT<sub>50</sub> water/sediment system (d): 170 d</p> <p>DT<sub>50</sub> water (d): 170 d</p> <p>DT<sub>50</sub> sediment (d): 170 d</p> <p>Crop interception: no interception</p>
Parameters used in FOCUSsw step 3 (if performed)	<p>Version control no.'s of FOCUS software:</p> <p>Swash 3.1</p> <p>Macro 5.5.3</p> <p>PRZM 3.5.2</p> <p>TOXSWA 2.6</p> <p>Water solubility (mg/L): 50</p> <p>Vapour pressure: <math>6.5 \times 10^{-4}</math> Pa at 25°C</p> <p>K<sub>om</sub>/K<sub>oc</sub> (mL/g): 118 / 68</p> <p>1/n: 0.905</p> <p>Q10=2.58, Walker equation coefficient 0.7</p> <p>Crop uptake factor: 0.5</p> <p>DT<sub>50</sub> water (d): 170 d</p> <p>DT<sub>50</sub> sediment (d): 1000 d</p>
Application rate	<p>Crop and growth stage: sugar beets BBCH 00</p> <p>Number of applications: 1</p> <p>Interval (d): -</p> <p>Application rate(s): 1000 g a.s./ha</p> <p>Application window:</p> <p>Step 1-2:</p> <p>March-May (N + S EU)</p> <p>Step 3:</p> <p>Scenario D3: 94 - 124</p> <p>Scenario D4: 103 - 133</p> <p>Scenario R1: 85 - 115</p> <p>Scenario R3: 58 - 88</p>

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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### Section 4 Environmental fate and behaviour

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	59.9661	---	70.0360	---
	24 h	59.3525	59.6593	69.7510	69.8935
	2 d	59.1110	59.4455	69.4672	69.7513
	4 d	58.6309	59.1581	68.9030	69.4680
	7 d	57.9181	58.7792	68.0653	69.0460
	14 d	56.2884	57.9393	66.1501	68.0746
	21 d	54.7046	57.1238	64.2888	67.1215
	28 d	53.1653	56.3257	62.4798	66.1861
	42 d	50.2155	54.7760	59.0132	64.3674
Southern EU	0 h	111.7432	---	130.8844	---
	24 h	110.9190	111.3311	130.3518	130.6181
	2 d	110.4676	111.0122	129.8214	130.3523
	4 d	109.5705	110.5154	128.7670	129.8230
	7 d	108.2384	109.8245	127.2016	129.0344
	14 d	105.1928	108.2665	123.6224	127.2190
	21 d	102.2329	106.7463	120.1439	125.4377
	28 d	99.3562	105.2567	116.7633	123.6897
	42 d	93.8436	102.3624	110.2848	120.2909

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
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### Section 4 Environmental fate and behaviour

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	5.239			
		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	0.250		
		28 d	< 0.001	0.188		
		42 d	< 0.001	0.126		
D4	pond	0 h	0.431			
		24 h	0.431	0.431		
		2 d	0.430	0.431		
		4 d	0.427	0.431		
		7 d	0.421	0.430		
		14 d	0.405	0.427		
		21 d	0.389	0.423		
		28 d	0.381	0.417		
		42 d	0.359	0.406		
D4	stream	0 h	4.255			
		24 h	0.057	0.352		
		2 d	0.057	0.329		
		4 d	0.056	0.324		
		7 d	0.054	0.303		
		14 d	0.050	0.267		
		21 d	0.054	0.239		
		28 d	0.052	0.215		
		42 d	0.051	0.169		
R1	pond	0 h	4.455			
		24 h	4.408	4.432		
		2 d	4.364	4.410		
		4 d	4.279	4.367		
		7 d	4.159	4.305		
		14 d	3.900	4.232		

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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
		21 d	3.663	4.187		
		28 d	3.426	4.101		
		42 d	2.992	3.898		
R1	stream	0 h	47.568			
		24 h	0.068	23.151		
		2 d	0.017	11.594		
		4 d	0.006	5.985		
		7 d	0.003	3.426		
		14 d	0.002	2.148		
		21 d	<0.001	1.433		
		28 d	<0.001	1.075		
		42 d	<0.001	0.719		
R3	stream	0 h	11.509			
		24 h	2.126	9.306		
		2 d	0.027	4.933		
		4 d	0.006	2.473		
		7 d	0.002	1.415		
		14 d	0.001	0.708		
		21 d	<0.001	0.473		
		28 d	<0.001	0.360		
		42 d	<0.001	0.279		

### Step 4

Scenario	application	VFS	
		10m	20m
	g/ha	µg/L	
R1 stream	1x1000	21.692	11.377



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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

Run-off  
 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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	42 d	<0.001	<0.001	<0.001	<0.001
Southern 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

Metabolite NC 20645

Parameters used in FOCUSsw 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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	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	1.6565	---	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	1.6565	---	0.0825	---
	1	1.6436	1.6500	0.0823	0.0824
	2	1.6381	1.6454	0.0820	0.0823
	4	1.6272	1.6390	0.0814	0.0820
	7	1.6074	1.6292	0.0806	0.0816
	14	1.5703	1.6090	0.0788	0.0806
	21	1.5341	1.5900	0.0769	0.0797
	28	1.4987	1.5716	0.0752	0.0788
	42	1.4304	1.5359	0.0717	0.0770

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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): 13.4  
DT<sub>50</sub> soil (d): 0.01 days  
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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

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	1.3618		0.0000	
	24 h	1.3370	1.3494	0.1792	0.0896
	2 d	1.3361	1.3430	0.1790	0.1344
	4 d	1.3342	1.3391	0.1788	0.1566
	7 d	1.3315	1.3364	0.1784	0.1660
	14 d	1.3250	1.3323	0.1776	0.1720
	21 d	1.3186	1.3288	0.1767	0.1737
	28 d	1.3122	1.3255	0.1758	0.1744
	42 d	1.2996	1.3189	0.1741	0.1746

## Post-emergence use of 1000g a.s./ha on sugar beet

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

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	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 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	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	--	--

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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
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	--	--
		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	--	--



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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
		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 FOCUS<sub>sw</sub> 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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

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	
	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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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	1.6565	---	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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

Metabolite CW35117

Parameters used in FOCUSsw step 1 and 2

Molecular weight: 316.3  
 Soil or water metabolite: water  
 Koc/Kom (mL/g): 13.4  
 DT<sub>50</sub> soil (d): 0.01 days  
 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	1.3618		0.0000	
	24 h	1.3370	1.3494	0.1792	0.0896
	2 d	1.3361	1.3430	0.1790	0.1344
	4 d	1.3342	1.3391	0.1788	0.1566
	7 d	1.3315	1.3364	0.1784	0.1660
	14 d	1.3250	1.3323	0.1776	0.1720
	21 d	1.3186	1.3288	0.1767	0.1737
	28 d	1.3122	1.3255	0.1758	0.1744
	42 d	1.2996	1.3189	0.1741	0.1746

### Post-emergence use of 2 x 500 g a.s./ha on sugar beet

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

Application rate

<p>TOXSWA 2.6</p> <p>Water solubility (mg/L): 50</p> <p>Vapour pressure: <math>6.5 \times 10^{-4}</math> Pa at 25°C</p> <p>Kom/Koc (mL/g): 118 / 68</p> <p>1/n: 0.905</p> <p>Q10=2.58, Walker equation coefficient 0.7</p> <p>Crop uptake factor: 0.5</p> <p>DT<sub>50</sub> water (d): 170 d</p> <p>DT<sub>50</sub> sediment (d): 1000 d</p>
<p>Crop and growth stage: sugar beets BBCH 10</p> <p>Number of applications: 2</p> <p>Interval (d): 5</p> <p>Application rate(s): 500 g a.s./ha</p> <p>Application window:</p> <p>Step 1-2:</p> <p>March-May (N + S EU)</p> <p>Step 3:</p> <p>Scenario D3: 101 - 136</p> <p>Scenario D4: 110 - 145</p> <p>Scenario R1: 92 - 127</p> <p>Scenario R3: 65 - 100</p>

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	---

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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	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 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	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	--	--

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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
		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	--	--
		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	--	--

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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
		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



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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	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	
	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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

Metabolite NC 20645

Parameters used in FOCUSsw 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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
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): 13.4  
 DT<sub>50</sub> soil (d): 0.01 days  
 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	1.3618		0.0000	
	24 h	1.3370	1.3494	0.1792	0.0896
	2 d	1.3361	1.3430	0.1790	0.1344
	4 d	1.3342	1.3391	0.1788	0.1566
	7 d	1.3315	1.3364	0.1784	0.1660
	14 d	1.3250	1.3323	0.1776	0.1720
	21 d	1.3186	1.3288	0.1767	0.1737
	28 d	1.3122	1.3255	0.1758	0.1744

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	42 d	1.2996	1.3189	0.1741	0.1746

## Post-emergence use of 3 x 333 g a.s./ha on sugar beet

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  
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: 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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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
	28 d	70.0099	74.1676	82.2755	87.1561
	42 d	66.1254	72.1281	77.7105	84.7612

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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	--	--
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	--	--

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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	stream	21 d	0.400	0.436	--	--
		28 d	0.373	0.424	--	--
		42 d	0.322	0.398	--	--
		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	--	--
R3	stream	21 d	<0.001	0.264	--	--
		28 d	<0.001	0.207	--	--
		42 d	<0.001	0.144	--	--
		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



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

FOCUS STEP 2 Scenario	Day after overall maximum	PEC <sub>sw</sub> (µg/L)		PEC <sub>sed</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
Southern 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

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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

FOCUS STEP 1 Scenario	Day after overall maximum	PEC <sub>SW</sub> (µg/L)		PEC <sub>SED</sub> (µg/kg)	
		Actual	TWA	Actual	TWA
	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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 4 Environmental fate and behaviour

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): 13.4  
 DT<sub>50</sub> soil (d): 0.01 days  
 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

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 4 Environmental fate and behaviour

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	1.3618		0.0000	
	24 h	1.3370	1.3494	0.1792	0.0896
	2 d	1.3361	1.3430	0.1790	0.1344
	4 d	1.3342	1.3391	0.1788	0.1566
	7 d	1.3315	1.3364	0.1784	0.1660
	14 d	1.3250	1.3323	0.1776	0.1720
	21 d	1.3186	1.3288	0.1767	0.1737
	28 d	1.3122	1.3255	0.1758	0.1744
	42 d	1.2996	1.3189	0.1741	0.1746

**List of end points**

<b>Rapporteur Member State</b>	<b>Month and year</b>	<b>Active Substance (Name)</b>
Austria	January 2015	Ethofumesate

**Section 4 Environmental fate and behaviour****Estimation of concentrations from other routes of exposure (Regulation (EU) N° 284/2013, Annex Part A, point 9.4)**

Method of calculation

None

**PEC**

Maximum concentration

None

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### Ecotoxicology

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

Species	Test substance	Time scale	End point	Toxicity (mg/kg bw per day)
Birds				
<i>Anas platyrhynchos</i>	a.s.	Acute	LD <sub>50</sub>	> 2000
<i>Anas platyrhynchos</i>	a.s.	Acute	LD <sub>50</sub>	> 3552
<i>Colinus virginianus</i>	a.s.	Acute	LD <sub>50</sub>	> 2000
<i>Colinus virginianus</i>	a.s.	Acute	LD <sub>50</sub>	> 8743
	a.s.	Acute	LD <sub>50</sub> extrapolated	<b>3776<sup>1</sup></b>
<i>Anas platyrhynchos</i>	a.s.	Short-term	LDD <sub>50</sub>	> 1453
<i>Anas platyrhynchos</i>	a.s.	Short-term	LDD <sub>50</sub>	> 1345
<i>Colinus virginianus</i>	a.s.	Short-term	LDD <sub>50</sub>	> 1003
<i>Colinus virginianus</i>	a.s.	Short-term	LDD <sub>50</sub>	> 1050
	a.s.	Long-term	LD <sub>50</sub> /10	377.6
<i>Anas platyrhynchos</i>	a.s.	Long-term	NOEC	406.0
<i>Colinus virginianus</i>	a.s.	Long-term	NOAEL	<b>265.0</b>
Mammals				
Rat	a.s.	Acute	LD <sub>50</sub>	> <b>5000</b>
Rat	a.s.	Acute	LD <sub>50</sub>	> 2000
Rat	a.s.	Acute	LD <sub>50</sub>	> 7500
Rat	a.s.	Acute	LD <sub>50</sub>	> 8000
Mouse	a.s.	Acute	LD <sub>50</sub>	> 5000
Mouse	a.s.	Acute	LD <sub>50</sub>	> 7500
Mouse	a.s.	Acute	LD <sub>50</sub>	> 8000
Rat	Ethofol 500 SC	Acute	LD <sub>50</sub>	> 2000 prod.
Rat	Ethofumesate 500 SC	Acute	LD <sub>50</sub>	> 2100 prod.
Rat	a.s.	Long-term	NOAEL	<b>60.9</b>
Rat	a.s.	Long-term	NOAEL	256
Rat	a.s.	Long-term	NOAEL	78
Rabbit	a.s.	Long-term	NOAEL	300
Endocrine disrupting properties (Annex Part A, points 8.1.5)				
No evidence of any reproducible endocrine effect				

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Additional higher tier studies (Annex Part A, points 10.1.1.2): None required
Terrestrial vertebrate wildlife (birds, mammals, reptile and amphibians) (Annex Part A, points 8.1.4, 10.1.3): No additional data submitted.

<sup>1</sup> LD<sub>50</sub> extrapolated according to the EFSA Guidance Document on Birds and Mammals (2009), based on the lowest endpoint for mallard duck and bobwhite quail

**Bold** written values are used for the risk assessment.

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

### Ethofumesate 500 SC, Sugar fodder and red beet (post-emergence) at 1 x 1000 g a.s./ha (splitting applications are covered by the risk assessment for the single application)

Growth stage	Indicator or focal species	Time scale	DDD (mg/kg bw per day)	TER	Trigger
Screening Step (Birds)					
All		Acute			10
All		Long-term			5
Tier 1 (Birds)					
Sugar beet, root and stem vegetables (BBCH 10-39)	Small omnivorous bird "lark"	Acute	24.0	157	10
Sugar beet, root and stem vegetables (BBCH 10-19)	Small insectivorous bird "wagtail"	Acute	26.8	141	10
Sugar beet, root and stem vegetables (BBCH 10-39)	Small granivorous bird "finch"	Acute	24.7	153	10
Sugar beet, root and stem vegetables (BBCH 10-39)	Small omnivorous bird "lark"	Long-term	5.8	45.7	5
Sugar beet, root and stem vegetables (BBCH 10-19)	Small insectivorous bird "wagtail"	Long-term	6.0	44.2	5
Sugar beet, root and stem vegetables (BBCH 10-39)	Small granivorous bird "finch"	Long-term	6.0	44.2	5
Higher tier (birds): Not applicable					
Screening Step (Mammals)					
All		Acute			10
All		Long-term			5
Tier 1 (Mammals)					
Sugar beet, root and stem vegetables (BBCH 10-19)	Small insectivorous mammal "shrew"	Acute	7.6	> 263	10
Sugar beet, root and stem vegetables (BBCH 10-39)	Large herbivorous mammal "lagomorph"	Acute	35.1	> 57	10



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

Growth stage	Indicator or focal species	Time scale	DDD (mg/kg bw per day)	TER	Trigger
Sugar beet, root and stem vegetables (BBCH 10-39)	Small omnivorous mammal “mouse”	Acute	17.2	> 116	10
Sugar beet, root and stem vegetables (BBCH 10-39)	Small insectivorous mammal “shrew”	Long-term	2.23	27.3	5
Sugar beet, root and stem vegetables (BBCH 10-19)	Large herbivorous mammal “lagomorph”	Long-term	7.58	8.0	5
Sugar beet, root and stem vegetables (BBCH 10-39)	Small omnivorous mammal “mouse”	Long-term	4.13	14.7	5
Higher tier (Mammals): Not applicable					
<b>Risk from bioaccumulation and food chain behaviour</b> BCF > 100 for not readily biodegradable substance. Hence, risk assessment of bioaccumulation and food chain behaviour is required.					
Indicator or focal species		Time scale	DDD (mg/kg bw per day)	TER	Trigger
Earthworm-eating birds		Long-term	2.45	108	5
Earthworm-eating mammals		Long-term	2.98	20	5
Fish-eating birds		Long-term	6.81	39	5
Fish-eating mammals		Long-term	6.1	10	5
Higher tier: Not applicable					
<b>Risk from consumption of contaminated water</b>					
Scenarios	Indicator or focal species	Time scale	PEC <sub>dw</sub> xDWR	TER	Trigger
Leaf scenario	Birds	acute			5
<b>Puddle scenario, Screening step</b> Application rate (g a.s./ha)/relevant endpoint < 50 (Koc < 500 L/kg), TER calculation not needed					
Puddle scenario	Birds	acute			10
Puddle scenario	Mammals	acute			10
Puddle scenario	Birds	Long-term			5
Puddle scenario	Mammals	Long-term			5

### Ethofol 500 SC, Sugar and fodder beet at 1 x 1000 g a.s./ha (pre-emergence) or 3 x 333 g a.s./ha (post-emergence)

Growth stage	Indicator or focal species	Time scale	DDD (mg/kg bw per day)	TER	Trigger
Screening Step (Birds)					
Bare soils (< BBCH 10)	Small granivorous bird	Acute	24.7	153	10

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

Growth stage	Indicator or focal species	Time scale	DDD (mg/kg bw per day)	TER	Trigger
Sugar beet, root and stem vegetables	Small omnivorous bird	Acute	94.3	40	10
Bare soils (< BBCH 10)	Small granivorous bird	Long-term	6.0	44.2	5
Sugar beet, root and stem vegetables	Small omnivorous bird	Long-term	24.9	10.6	5
Tier 1 (Birds): Not applicable					
Higher tier (birds): Not applicable					
Screening Step (Mammals)					
Bare soils (< BBCH 10)	Small granivorous mammal	Acute	14.4	> 347	10
Sugar beet, root and stem vegetables	Small herbivorous mammal	Acute	70.3	> 71.1	10
Bare soils (< BBCH 10)	Small granivorous mammal	Long-term	3.5	17.4	5
Sugar beet, root and stem vegetables	Small herbivorous mammal	Long-term	18.6	<b>3.3</b>	5
Tier 1 (Mammals):					
Sugar beet (BBCH 10-19)	Small insectivorous mammal “shrew”	Long-term	1.6	38.1	5
Sugar beet (BBCH 10-39)	Large herbivorous mammal “lagomorph”	Long-term	5.5	11.1	5
Sugar beet (BBCH 10-39)	Small omnivorous mammal “mouse”	Long-term	3.0	20.3	5
Higher tier (Mammals): Not applicable					
<b>Risk from bioaccumulation and food chain behaviour</b> BCF > 100 for not readily biodegradable substance. Hence, risk assessment of bioaccumulation and food chain behaviour is required.					
Indicator or focal species		Time scale	DDD (mg/kg bw per day)	TER	Trigger
Earthworm-eating birds		Long-term	3.06	87	5
Earthworm-eating mammals		Long-term	3.72	16	5
Fish-eating birds		Long-term	6.81	39	5
Fish-eating mammals		Long-term	6.10	10	5
Higher tier : Not applicable					
<b>Risk from consumption of contaminated water</b> Leaf scenario is not required considering the intended uses (bare soil, beets at BBCH < 18).					
Scenarios	Indicator or focal species	Time scale	PEC <sub>dw</sub> xDWR	TER	Trigger
Leaf scenario	Birds	acute			5
<b>Puddle scenario, Screening step</b> Application rate / relevant endpoint < 50 (Koc < 500 L/kg), TER calculation not needed					
Puddle scenario	Birds	acute			10

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Growth stage	Indicator or focal species	Time scale	DDD (mg/kg bw per day)	TER	Trigger
Puddle scenario	Mammals	acute			10
Puddle scenario	Birds	Long-term			5
Puddle scenario	Mammals	Long-term			5

## Toxicity data for all aquatic tested species (Regulation (EU) N° 283/2013, Annex Part A, points 8.2 and Regulation (EU) N° 284/2013 Annex Part A, point 10.2)

Group	Test substance	Time-scale (Test type)	End point	Toxicity <sup>1</sup>
Laboratory tests				
Fish				
<i>Cyprinus carpio</i>	a.s.	Acute 96 hr (semi-static)	Mortality, LC <sub>50</sub>	<b>10.92</b> mg ai/L (mm)
<i>Oncorhynchus mykiss</i>	a.s.	Acute 96 hr (semi-static)	Mortality, LC <sub>50</sub>	26.5 mg ai/L (nom)
<i>Oncorhynchus mykiss</i>	a.s.	Acute 96 hr (semi-static)	Mortality, LC <sub>50</sub>	11.91 mg ai/L (mm)
<i>Lepomis macrochirus</i>	a.s.	Acute 96 hr (semi-static)	Mortality, LC <sub>50</sub>	21.2 mg ai/L (nom)
<i>Lepomis macrochirus</i>	a.s.	Acute 96 hr (semi-static)	Mortality, LC <sub>50</sub>	12.37 mg ai/L (mm)
<i>Cyprinodon variegatus</i>	a.s.	Acute 96 hr (static)	Mortality, LC <sub>50</sub>	25.0 mg ai/L (nom)
<i>Leuciscus idus</i>	a.s.	Acute 96 hr (static)	Mortality, LC <sub>50</sub>	22.0 mg ai/L (mm)
<i>Cyprinus carpio</i>	Ethofumesate 500 SC	96 h (semi- static)	Mortality, LC <sub>50</sub>	14.4 mg ai/L (mm)
<i>Danio rerio</i>	Ethofumesate 500 SC	96 h (semi- static)	Mortality, LC <sub>50</sub>	34.0 mg ai/L (nom)
<i>Danio rerio</i>	a.s.	Chronic (flow- through), FFLC	Growth	<b>0.156</b> mg ai/L (mm)
<i>Pimephales promelas</i>	a.s.	Chronic (flow- through), ELS	Growth	4.17 mg ai/L (mm)

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Group	Test substance	Time-scale (Test type)	End point	Toxicity <sup>1</sup>
Aquatic invertebrates				
<i>Daphnia magna</i>	a.s.	48 h (static)	Mortality, EC <sub>50</sub>	<b>28.1</b> mg ai/L (nom)
<i>Americamysis bahia</i>	a.s.	96 h (static)	Mortality, EC <sub>50</sub>	<b>5.4</b> mg ai/L (mm)
<i>Crassostrea virginica</i>	a.s.	96 h (flow-through)	Shell growth, EC <sub>50</sub>	<b>1.7</b> mg ai/L (mm)
<i>Daphnia magna</i>	Ethofol 500 SC	48 h (static)	Mortality, EC <sub>50</sub>	24 mg ai/L (nom)
<i>Daphnia magna</i>	Ethofumesate 500 SC	48 h (static)	Mortality, EC <sub>50</sub>	26.8 mg ai/L (nom)
<i>Daphnia magna</i>	Metabolite NC 8493	48 h (semi-static)	Mortality, EC <sub>50</sub>	<b>&gt; 10</b> mg/L (nom)
<i>Daphnia magna</i>	Metabolite NC 8493	48 h (static)	Mortality, EC <sub>50</sub>	> 100 mg/L (nom)
<i>Daphnia magna</i>	Metabolite NC 20645	48 h (semi-static)	Mortality, EC <sub>50</sub>	<b>&gt; 10</b> mg/L (nom)
<i>Daphnia magna</i>	Metabolite NC 20645	48 h (static)	Mortality, EC <sub>50</sub>	> 100 mg/L (nom)
<i>Daphnia magna</i>	Metabolite Ethofumesate acetic acid	48 h (static)	Mortality, EC <sub>50</sub>	<b>&gt; 10</b> mg/L (nom)
<i>Daphnia magna</i>	a.s.	21 d (semi-static)	Reproduction, NOEC	<b>0.32</b> mg ai/L (nom)
<i>Daphnia magna</i>	Ethofumesate 500 SC	21 d (semi-static)	Reproduction, NOEC	0.32 mg ai/L (nom)
Sediment-dwelling organisms				
<i>Chironomus riparius</i>	a.s.	28 d (static)	Emergence, NOEC	<b>2.42</b> mg ai/L (mm)
<i>Chironomus riparius</i>	a.s.	28 d (static)	Emergence, NOEC	3.2 mg ai/L (mm)
<i>Chironomus riparius</i>	a.s.	28 d (static)	Emergence, NOEC	12.9 mg ai/L (mm)

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Group	Test substance	Time-scale (Test type)	End point	Toxicity <sup>1</sup>
Algae				
<i>Pseudokirchneriella subcapitata</i>	a.s.	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Yield: E <sub>y</sub> C <sub>50</sub> (NOEC)	16.3 mg ai/L (5.91 mg ai/L) (mm) 9.68 mg ai/L (5.91 mg ai/L) (mm)
<i>Anabaena flos-aquae</i>	a.s.	96 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Biomass: E <sub>b</sub> C <sub>50</sub> (NOEC)	> 20 mg ai/L (20 mg ai/L) (nom) > 20 mg ai/L (20 mg ai/L) (nom)
<i>Skeletonema costatum</i>	a.s.	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Biomass: E <sub>b</sub> C <sub>50</sub> (NOEC)	> 20 mg ai/L (5 mg ai/L) (nom) 14.5 mg ai/L (2.5 mg ai/L) (nom)
<i>Desmodesmus subspicatus</i>	Ethofumesate 500 SC	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Biomass: E <sub>b</sub> C <sub>50</sub> (NOEC)	13.6 mg ai/L (1.9 mg ai/L) (mm) <b>6.7</b> mg ai/L (2.2 mg ai/L) (mm)
<i>Raphidocelis subcapitata</i>	Ethofumesate 500 SC	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Biomass: E <sub>b</sub> C <sub>50</sub> (NOEC)	13.6 mg ai/L (0.92 mg ai/L) (nom) <b>5.2</b> mg ai/L (< 1.9 mg ai/L) (nom)
<i>P. subcapitata</i>	Metabolite NC 8493	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Yield: E <sub>y</sub> C <sub>50</sub> (NOEC)	20.7 mg/L (0.367 mg/L) (nom) <b>0.865</b> mg/L (0.367 mg/L) (nom)

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

Group	Test substance	Time-scale (Test type)	End point	Toxicity <sup>1</sup>
<i>Desmodemus subspicatus</i>	Metabolite NC 8493	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Yield: E <sub>y</sub> C <sub>50</sub> (NOEC)	4.83 mg/L (1.33 mg/L) (mm) 1.87 mg/L (1.33 mg/L) (mm)
<i>Desmodemus subspicatus</i>	Metabolite NC 20645	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Yield: E <sub>y</sub> C <sub>50</sub> (NOEC)	52.4 mg/L (1.25 mg/L) (mm) <b>8.83</b> mg/L (1.25 mg/L) (mm)
<i>P. subcapitata</i>	Metabolite NC 20645	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Yield: E <sub>y</sub> C <sub>50</sub> (NOEC)	> 10 mg/L (10 mg/L) (nom) > 10 mg/L (10 mg/L) (nom)
<i>P. subcapitata</i>	Metabolite Ethofumesate acetic acid	72 h (static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Yield: E <sub>y</sub> C <sub>50</sub> (NOEC)	> 100 mg/L (25 mg/L) (nom) > <b>98.98</b> mg/L (25 mg/L) (nom)
Higher plant				
<i>Lemna minor</i>	a.s.	14 d (semi-static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Biomass: E <sub>b</sub> C <sub>50</sub> (NOEC)	> 52.8 mg ai/L (4.3 mg/L) (mm) 50.4 mg ai/L (4.3 mg ai/L) (mm)
<i>Lemna minor</i>	a.s.	7 d (semi-static)	Growth rate: E <sub>r</sub> C <sub>50</sub> (NOEC)  Biomass: E <sub>b</sub> C <sub>50</sub> (NOEC)	> 42 mg ai/L (26 mg ai/L) (mm) 35.0 mg ai/L (17 mg ai/L) (mm)

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

Group	Test substance	Time-scale (Test type)	End point	Toxicity <sup>1</sup>
<i>Myriophyllum spicatum</i>	a.s.	14 d (static)	Shoot length, E <sub>r</sub> C <sub>50</sub> (NOEC)	0.479 mg ai/L (0.036 mg ai/L) (mm)
			Shoot length, E <sub>y</sub> C <sub>50</sub> (NOEC)	0.25 mg ai/L (0.036 mg ai/L) (mm)
<i>Myriophyllum spicatum</i>	Ethofol 500 SC	7 d (static)	Fresh weight, E <sub>r</sub> C <sub>50</sub> (NOEC)	16.1 mg ai/L (0.908 mg ai/L) (mm)
			Fresh weight, E <sub>y</sub> C <sub>50</sub> (NOEC)	2.87 mg ai/L (0.908 mg ai/L) (mm)
<i>Myriophyllum spicatum</i>	Ethofumesate 500 SC	14 d (static)	Shoot length, E <sub>r</sub> C <sub>50</sub> (NOEC)	0.38 mg ai/L (0.005 mg ai/L) (nom)
			Shoot length, E <sub>y</sub> C <sub>50</sub> (NOEC)	<b>0.05</b> mg ai/L (0.005 mg ai/L) (nom)

Further testing on aquatic organisms  
Not required.

#### Potential endocrine disrupting properties (Annex Part A, point 8.2.3)

Population relevant effects of ethofumesate on fish were studied in an early life-stage test (ELS) in Fathead minnow (*Pimephales promelas*) and in a fish full life-cycle test (FFLC) in Zebra fish (*Danio rerio*). Growth of the fish larvae was affected in the ELS test at concentrations > 4.17 mg/L. All other endpoints were affected only at higher concentrations. In the FFLC with Zebra fish growth of parental adult fish was the most sensitive parameter with slight effects at concentrations above 0.156 mg/L. However, no clear dose response relationship could be observed with exception of the highest treatment level (2.5 mg/L), in which the effect on growth reduction was slightly higher than in the other groups. Furthermore, there was no effect on growth of the filial generation at ≥ 2.5 mg/L. Significant mortality was observed in larvae of parental and filial generation at > 1.25 mg/L. Neither sex ratio nor reproduction of parental fish was affected at concentrations up to 2.5 mg/L. Hatch of larvae of parental and filial generation was not affected up to concentration levels of 2.5 and 1.25 mg/L, respectively.

While some slight growth effects were seen, a fish population is not likely to be adversely affected by these effects. Furthermore, since there is no indication from toxicology of a potential effect on the thyroid or other endocrine organs, it can be ruled out that these effects on growth are endocrine mediated. No further testing is indicated to evaluate the endocrine disrupter potential of ethofumesate to fish.

<sup>1</sup> (nom) nominal concentration; (mm) mean measured concentration; prep.: preparation; a.s.: active substance

**Bold** written values were used for the risk assessment.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### Bioconcentration in fish (Annex Part A, point 8.2.2.3)

	Active substance	Metabolite NC 8493	Metabolite NC 9607	Metabolite NC 20645	Metabolite BCS-CW35117
Log P <sub>OW</sub>	2.7 (pH 6.4, 20°C/25°C)	1.5 (pH = 5 – 9, 25°C)	2.2 (pH = 5 – 9, 25°C)	0.4 (pH 5) -1.4 (pH = 7) -2.4 (pH = 9), 22°C mean	0.2 (pH 5) -1.3 (pH = 7) -1.6 (pH = 9), 23°C mean
Steady-state bioconcentration factor (BCF) (total wet weight/normalised to 5% lipid content)	67 - 144	Not required	Not required	Not required	Not required
Uptake/depuration kinetics BCF (total wet weight/normalised to 5% lipid content)	-				
Annex VI Trigger for the bioconcentration factor	100				
Clearance time (days) (CT <sub>50</sub> )	< 1 day				
(CT <sub>90</sub> )	< 3 days				
Level and nature of residues (%) in organisms after the 14 day depuration phase	-				
Higher tier study					
Not applicable					

\* based on total <sup>14</sup>C or on specific compounds



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Toxicity/exposure ratios for the most sensitive aquatic organisms (Regulation (EU) N° 284/2013, Annex Part A, point 10.2)

### Ethofumesate 500 SC:

FOCUS<sub>sw</sub> step 1-3 - TERs for ethofumesate – Sugar, fodder and red beet (post-emergence), 1 x 1000 g ai/ha

Scenario	PEC global max (mg/L)	fish acute	fish chronic	Aquatic invertebrates	Aquatic invertebrates prolonged	Algae	Higher plant	Sed. dweller prolonged	Microcosm / Mesocosm
		<i>Cyprinus carpio</i>	<i>Danio rerio</i>	<i>Crassostrea virginica</i>	<i>Daphnia magna</i>	<i>R. subcapitata</i>	<i>Myriophyllum spicatum</i>	<i>Chironomus riparius</i>	-
		LC <sub>50</sub>	NOEC	EC <sub>50</sub>	NOEC	E <sub>b</sub> C <sub>50</sub>	E <sub>v</sub> C <sub>50</sub>	NOEC	-
		10.92 mg/L	0.156 mg/L	1.7 mg/L	0.32 mg/L	5.2 mg/L	0.05 mg/L	2.42 mg/L	-
<b>FOCUS Step 1</b>	0.2972	<b>37</b>	<b>0.52</b>	<b>5.7</b>	<b>1.1</b>	17	<b>0.17</b>	<b>8.1</b>	
<b>FOCUS Step 2</b>									
North Europe	0.0496	220	<b>3.1</b>	<b>34</b>	<b>6.5</b>	-	<b>1.0</b>	49	
South Europe	0.0910	120	<b>1.7</b>	<b>19</b>	<b>3.5</b>	-	<b>0.5</b>	27	
<b>FOCUS Step 3*</b>									
D3 / ditch	0.0052	-	30	327	62	-	10	-	
D4 / pond	0.0004	-	390	4250	800	-	125	-	
D4 / stream	0.0043	-	36	395	74	-	12	-	
D5 / pond	-	-	-	-	-	-	-	-	
D5 / stream	-	-	-	-	-	-	-	-	
R1 / pond	0.0004	-	390	4250	800	-	125	-	
R1 / stream	0.0047	-	33	362	68	-	11	-	
R2 / stream	-	-	-	-	-	-	-	-	
R3 / stream	0.0606	-	<b>2.6</b>	<b>28</b>	<b>5.3</b>	-	<b>0.83</b>	-	
R4 / stream	-	-	-	-	-	-	-	-	
Trigger**		100	10	100	10	10	10	10	

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 1-2 should be included in step 3.]

\*\*[If the Trigger value has been adjusted during the risk assessment, it should always be clear on what basis the risk assessment has been performed, i.e. what the AF value is and for which organism and endpoint it refers.]

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

#### FOCUS<sub>sw</sub> step 4 - TERs for ethofumesate – Sugar, fodder and red beet (post-emergence), 1 x 1000 g ai/ha

##### Organisms *Danio rerio*

Toxicity endpoint: NOEC = 0.156 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R3 / stream	-	10	0.02792	<b>5.6</b>	10
	-	20	0.01462	11	

##### Organisms *Crassostrea virginica*

Toxicity endpoint: EC<sub>50</sub> = 1.7 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R3 / stream	-	10	0.02792	<b>61</b>	100
	-	20	0.01462	116	

##### Organisms *Daphnia magna*

Toxicity endpoint: NOEC = 0.32 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R3 / stream	-	10	0.02792	12	10

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

**Organisms** *Myriophyllum spicatum*

**Toxicity endpoint:**  $E_yC_{50} = 0.05$  mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to $\leq 95$ % drift reduction)	xx m vegetated buffer strip (corresponding to $\leq 90$ % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R3 / stream	-	10	0.02792	1.8	10
	-	20	0.01462	3.4	

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 3 should be included in step 4].

### FOCUS<sub>sw</sub> step 4 - TERs for ethofumesate – Sugar, fodder and red beet (post-emergence), 2 x 500 g ai/ha

**Organisms** *Myriophyllum spicatum*

**Toxicity endpoint:**  $E_yC_{50} = 0.05$  mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to $\leq 95$ % drift reduction)	xx m vegetated buffer strip (corresponding to $\leq 90$ % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R3 / stream	-	10	0.013342	<b>3.7</b>	10
	-	20	0.006986	<b>7.2</b>	

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 3 should be included in step 4].

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### FOCUS<sub>sw</sub> step 4 - TERs for ethofumesate – Sugar, fodder and red beet (post-emergence), 3 x 333 g ai/ha

**Organisms** *Myriophyllum spicatum*

**Toxicity endpoint:** E<sub>y</sub>C<sub>50</sub> = 0.05 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R3 / stream	-	10	0.008718	<b>5.7</b>	10
	-	20	0.004565	11	

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 3 should be included in step 4].

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### Ethofol 500 SC:

#### FOCUS<sub>sw</sub> step 1-3 - TERs for ethofumesate – Sugar- and fodder beets (pre-emergence), 1 x 1000 g ai/ha

Scenario	PEC global max (mg/L)	fish acute	fish chronic	Aquatic invertebrates	Aquatic invertebrates prolonged	Algae	Higher plant	Sed. dweller prolonged	Microcosm / Mesocosm
		<i>Cyprinus carpio</i>	<i>Danio rerio</i>	<i>Crassostrea virginica</i>	<i>Daphnia magna</i>	<i>P. subcapitata</i>	<i>Myriophyllum spicatum</i>	<i>Chironomus riparius</i>	-
		LC <sub>50</sub>	NOEC	EC <sub>50</sub>	NOEC	E <sub>b</sub> C <sub>50</sub>	E <sub>v</sub> C <sub>50</sub>	NOEC	-
		10.92 mg/L	0.156 mg/L	1.7 mg/L	0.32 mg/L	6.7 mg/L	0.25 mg/L	2.42 mg/L	-
<b>FOCUS Step 1</b>	0.2972	<b>37</b>	<b>0.52</b>	<b>5.7</b>	<b>1.1</b>	23	<b>0.84</b>	<b>8.1</b>	
<b>FOCUS Step 2</b>									
North Europe	0.0600	182	<b>2.6</b>	<b>28</b>	<b>5.3</b>	-	<b>4.2</b>	40	
South Europe	0.1117	<b>98</b>	<b>1.4</b>	<b>15</b>	<b>2.9</b>	-	<b>2.2</b>	22	
<b>FOCUS Step 3*</b>									
D3 / ditch	0.0052	2100	30	327	62	-	48	-	
D4 / pond	0.0004	27300	363	3953	744	-	581	-	
D4 / stream	0.0043	2540	36	395	74	-	58	-	
D5 / pond	-	-	-	-	-	-	-	-	
D5 / stream	-	-	-	-	-	-	-	-	
R1 / pond	0.0045	2427	35	378	71	-	56	-	
R1 / stream	0.0476	229	<b>3.3</b>	<b>36</b>	<b>6.7</b>	-	<b>5.3</b>	-	
R2 / stream	-	-	-	-	-	-	-	-	
R3 / stream	0.0115	950	14	148	28	-	22	-	
R4 / stream	-	-	-	-	-	-	-	-	
Trigger**		100	10	100	10	10	10	10	

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 1-2 should be included in step 3.]

\*\*[If the Trigger value has been adjusted during the risk assessment, it should always be clear on what basis the risk assessment has been performed, i.e. what the AF value is and for which organism and endpoint it refers.]

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### FOCUS<sub>sw</sub> step 4 - TERs for ethofumesate – Sugar- and fodder beets (pre-emergence), 1 x 1000 g ai/ha

#### Organisms *Danio rerio*

Toxicity endpoint: NOEC = 0.156 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R1 / stream	-	10	0.021692	<b>7.2</b>	10
	-	20	0.011377	14	

#### Organisms *Crassostrea virginica*

Toxicity endpoint: EC<sub>50</sub> = 1.7 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R1 / stream	-	10	0.021692	<b>78</b>	100
	-	20	0.011377	149	

#### Organisms *Daphnia magna*

Toxicity endpoint: NOEC = 0.32 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R1 / stream	-	10	0.021692	15	10

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

**Organisms** *Myriophyllum spicatum*

**Toxicity endpoint:**  $E_yC_{50} = 0.25 \text{ mg ai/L}$

Mitigation options	x m non-spray buffer zone (corresponding to $\leq 95$ % drift reduction)	xx m vegetated buffer strip (corresponding to $\leq 90$ % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R1 / stream	-	10	0.021692	12	10

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 3 should be included in step 4].

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### FOCUS<sub>sw</sub> step 1-3 - TERs for ethofumesate – Sugar- and fodder beets (post-emergence), 3 x 333 g ai/ha

Scenario	PEC global max (mg/L)	fish acute	fish chronic	Aquatic invertebrates	Aquatic invertebrates prolonged	Algae	Higher plant	Sed. dweller prolonged	Microcosm / Mesocosm
		<i>Cyprinus carpio</i>	<i>Danio rerio</i>	<i>Crassostrea virginica</i>	<i>Daphnia magna</i>	<i>P. subcapitata</i>	<i>Myriophyllum spicatum</i>	<i>Chironomus riparius</i>	-
		LC <sub>50</sub>	NOEC	EC <sub>50</sub>	NOEC	E <sub>b</sub> C <sub>50</sub>	E <sub>y</sub> C <sub>50</sub>	NOEC	-
		10.92 mg/L	0.156 mg/L	1.7 mg/L	0.32 mg/L	6.7 mg/L	0.25 mg/L	2.42 mg/L	-
<b>FOCUS Step 1</b>	0.2969	<b>37</b>	<b>0.53</b>	<b>5.7</b>	<b>1.1</b>	23	<b>0.84</b>	<b>8.2</b>	
<b>FOCUS Step 2</b>									
North Europe	0.0423	258	<b>3.7</b>	<b>40</b>	<b>7.6</b>	-	<b>5.9</b>	57	
South Europe	0.0787	139	<b>2.0</b>	<b>22</b>	<b>4.1</b>	-	<b>3.2</b>	31	
<b>FOCUS Step 3*</b>									
D3 / ditch	0.0013	-	120	1308	246	-	192	-	
D4 / pond	0.0005	-	306	333	627	-	490	-	
D4 / stream	0.0011	-	142	1545	291	-	227	-	
D5 / pond	-	-	-	-	-	-	-	-	
D5 / stream	-	-	-	-	-	-	-	-	
R1 / pond	0.00047	-	332	3617	681	-	532	-	
R1 / stream	0.0078	-	20	218	41	-	32	-	
R2 / stream	-	-	-	-	-	-	-	-	
R3 / stream	0.0192	-	<b>8.1</b>	<b>89</b>	17	-	13	-	
R4 / stream	-	-	-	-	-	-	-	-	
Trigger**		100	10	100	10	10	10	10	

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 1-2 should be included in step 3.]

\*\*[If the Trigger value has been adjusted during the risk assessment, it should always be clear on what basis the risk assessment has been performed, i.e. what the AF value is and for which organism and endpoint it refers.]



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

#### FOCUS<sub>sw</sub> step 4 - TERs for ethofumesate – Sugar- and fodder beets (post-emergence), 3 x 333 g ai/ha

##### Organisms *Danio rerio*

Toxicity endpoint: NOEC = 0.156 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R1 / stream	-	10	0.008718	18	10

##### Organisms *Crassostrea virginica*

Toxicity endpoint: EC<sub>50</sub> = 1.7 mg ai/L

Mitigation options	x m non-spray buffer zone (corresponding to ≤ 95 % drift reduction)	xx m vegetated buffer strip (corresponding to ≤ 90 % run-off reduction)	PEC <sub>sw</sub> (mg/L)	TER	Trigger
<b>FOCUS Step 4*</b>					
R3 / stream	-	10	0.008718	195	100

\*[Only scenarios where the trigger is not met at FOCUS<sub>sw</sub> step 3 should be included in step 4].

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

#### Effects on bees (Regulation (EU) N° 283/2013, Annex Part A, point 8.3.1 and Regulation (EU) N° 284/2013 Annex Part A, point 10.3.1)

Species	Test substance	Time scale/type of endpoint	End point	Toxicity
<i>Apis mellifera</i>	a.s.	Acute	Oral toxicity (48 h LD <sub>50</sub> )	> 106.3 µg ai/bee
<i>Apis mellifera</i>	a.s.	Acute	Oral toxicity (48 h LD <sub>50</sub> )	> 50 µg ai/bee
<i>Apis mellifera</i>	a.s.	Acute	Oral toxicity (48 h LD <sub>50</sub> )	> 100 µg ai/bee
<i>Apis mellifera</i>	Ethofumesate 500 SC	Acute	Oral toxicity (48 h LD <sub>50</sub> )	> 108.8 µg ai/bee
<i>Apis mellifera</i>	a.s.	Acute	Contact toxicity (48 h LD <sub>50</sub> )	> 100 µg ai/bee
<i>Apis mellifera</i>	a.s.	Acute	Contact toxicity (48 h LD <sub>50</sub> )	> 50 µg ai/bee
<i>Apis mellifera</i>	a.s.	Acute	Contact toxicity (48 h LD <sub>50</sub> )	> 100 µg ai/bee
<i>Apis mellifera</i>	Ethofol 500 SC	Acute	Contact toxicity (48 h LD <sub>50</sub> )	> 87.4 µg ai/bee
<i>Apis mellifera</i>	Ethofumesate 500 SC	Acute	Contact toxicity (48 h LD <sub>50</sub> )	> 100 µg ai/bee
<i>Apis mellifera</i>	a.s.	Chronic	10 d LC <sub>50</sub>	> 120 mg ai/kg (= 4.4 µg ai/bee)
<i>Apis mellifera carnica</i>	Ethofol 500 SC	Chronic	10 d LC <sub>50</sub>	> 311.6 µg ai/bee/d
<i>Apis mellifera</i>	Ethofumesate 500 SC	Bee brood development	NOEC <sub>larvae</sub>	2500 ppm
<i>Apis mellifera</i>	Ethofol 500 SC	Bee brood development	NOEC <sub>larvae</sub>	500 g ai/ha
<i>Apis mellifera carnica</i>	Ethofol 500 SC	Sub-lethal effects (behavioural and reproductive)	NOEC hypopharyngeal glands	311.6 µg ai/bee/d

Potential for accumulative toxicity: No
Semi-field test (Cage and tunnel test)
Not required

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Field tests
Not required

### Ethofol 500 SC

**Risk assessment** for sugar beet and fodder beet at 1 x 1000 g a.s./ha (pre- and post-emergence)

Species	Test substance	Risk quotient	HQ/ETR	Trigger
<i>Apis mellifera</i>	a.s.	HQ <sub>oral</sub>	< 9.4	50
<i>Apis mellifera</i>	a.s.	HQ <sub>contact</sub>	< 10	50
<i>Apis mellifera</i>	Ethofumesate 500 SC	HQ <sub>oral</sub>	< 9.2	50
<i>Apis mellifera</i>	Ethofumesate 500 SC	HQ <sub>contact</sub>	< 10	50
<i>Apis mellifera</i>	Ethofol 500 SC	HQ <sub>contact</sub>	< 11.4	50
<i>Apis mellifera</i>	a.s.	ETR <sub>chronic adult oral</sub>	<b>1.7</b>	0.03
<i>Apis mellifera</i>	a.s.	ETR <sub>chronic adult oral</sub>	0.009 Field margin	0.03 <sup>a</sup>
<i>Apis mellifera</i>	a.s.	ETR <sub>chronic adult oral</sub>	0.005 Adjacent crop	0.03 <sup>a</sup>
<i>Apis mellifera</i>	Ethofol 500 SC	ETR <sub>chronic adult oral</sub>	0.024	0.03
<i>Apis mellifera</i>	Ethofol 500 SC	ETR <sub>hpg</sub>	0.024	1

Bee brood feeding test (Ethofol 500 SC): No adverse effects on mortality, bee brood development (eggs, young larvae, old larvae, pupae) and colony development by feeding honey bee colonies sugar syrup at a concentration of 1.16 kg prod./ha, equivalent to 500 g ai/ha.

Bee brood feeding test (Ethofumesate 500 SC): No adverse effects on mortality, bee brood development (eggs, young larvae, old larvae, pupae) and colony development by feeding honey bee colonies sugar syrup at a concentration typically present in the spray tank (2500 ppm)

<sup>a</sup> As the likelihood of bees being in early post-emergence sugar, red or fodder-beet field is low, the Tier 1 risk assessment focuses on the exposure of foraging bees visiting plants in the field margin or on an adjacent crop.

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

### Laboratory tests with standard sensitive species

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

Species	Test Substance	End point	Toxicity
<i>Typhlodromus pyri</i>	Ethofumesate 500 SC	Mortality, LR <sub>50</sub>	> 1000 g ai/ha
		Reproduction, ER <sub>50</sub>	> 1000 g ai/ha
<i>Aphidius rhopalosiphi</i>	Ethofumesate 500 SC	Mortality, LR <sub>50</sub>	> 1000 g ai/ha
		Reproduction, ER <sub>50</sub>	> 1000 g ai/ha
<i>Typhlodromus pyri</i>	Ethofol 500 SC	Mortality, LR <sub>50</sub>	> 1000 g ai/ha
		Reproduction, ER <sub>50</sub>	> 1000 g ai/ha
<i>Aphidius rhopalosiphi</i>	Ethofol 500 SC	Mortality, LR <sub>50</sub>	> 1000 g ai/ha
		Reproduction, ER <sub>50</sub>	> 1000 g ai/ha
Additional species			
<i>Aleochara bilineata</i>	Tramat 500	Mortality, LR <sub>50</sub>	> 1252.5 g ai/ha
		Reproduction, ER <sub>50</sub>	> 1252.5 g ai/ha
<i>Chrysoperla carnea</i>	Tramat 500	Mortality, LR <sub>50</sub>	> 2000 g ai/ha
		Reproduction, ER <sub>50</sub>	> 2000 g ai/ha
<i>Poecilus cupreus</i>	Tramat 500	Mortality, LR <sub>50</sub>	> 2000 g ai/ha

### Ethofol 500 SC / Ethofumesate 500 SC

#### First tier risk assessment for sugar, fodder and red beet at 1 x 1000 g a.s./ha (pre- and post-emergence)

Test substance	Species	Effect (LR <sub>50</sub> )	HQ in-field	HQ off-field <sup>1</sup>	Trigger
Ethofumesate 500 SC	<i>Typhlodromus pyri</i>	> 1000 g ai/ha	< 1	< 0.03	2
Ethofumesate 500 SC	<i>Aphidius rhopalosiphi</i>	> 1000 g ai/ha	< 1	< 0.03	2
Ethofol 500 SC	<i>Typhlodromus pyri</i>	> 1000 g ai/ha	< 1	< 0.03	2
Ethofol 500 SC	<i>Aphidius rhopalosiphi</i>	> 1000 g ai/ha	< 1	< 0.03	2

<sup>1</sup> A distance of 1 m and a drift value of 2.77% (field crops, 1 application) is assumed.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### Extended laboratory tests, aged residue tests

Species	Life stage	Test substance, substrate	Time scale	Dose (g/ha) <sup>1,2</sup>	End point	% effect <sup>3</sup>	ER <sub>50</sub>

<sup>1</sup> indicate whether initial or aged residues

<sup>2</sup> for preparations indicate whether dose is expressed in units of a.s. or preparation

<sup>3</sup> indicate if positive percentages relate to adverse effects or not

### First tier risk assessment for sugar, fodder and red beet at 1 x 1000 g a.s./ha (pre- and post-emergence)

Species	ER <sub>50</sub> (g/ha)	In-field rate	Off-field rate <sup>1</sup>
<i>Aleochara bilineata</i>	> 1252.5	1000 g ai/ha	2.77 g ai/ha
<i>Poecilus cupreus</i>	> 2000	1000 g ai/ha	2.77 g ai/ha
<i>Chrysoperla carnea</i>	> 2000	1000 g ai/ha	2.77 g ai/ha

<sup>1</sup> A distance of 1 m and a drift value of 2.77% (field crops, 1 application) is assumed. The laboratory studies were conducted in a 2-D design, hence the vegetation distribution factor used to calculate the off-field drift rate was 10.

Semi-field tests
Note required
Field studies
Note required
Additional specific test
Note required

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

Test organism	Test substance	Application method of test a.s./ OM <sup>1</sup>	Time scale	End point	Toxicity
Earthworms					
<i>Eisenia fetida</i>	Ethofol 500 SC	Overspray / OM 10%	Chronic, 56 d	Reproduction	NOAEC = 10.5 mg ai/kg soil dw NOAEC <sub>corr.</sub> = 5.25 mg ai/kg soil dw
<i>Eisenia fetida</i>	Ethofumesate 500 SC	Overspray / OM 10%	Chronic, 56 d	Reproduction	NOEC = 25 mg ai/kg soil dw NOEC <sub>corr.</sub> = 12.5 mg ai/kg soil dw

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

Test organism	Test substance	Application method of test a.s./ OM <sup>1</sup>	Time scale	End point	Toxicity
<i>Eisenia fetida</i>	Ethofumesate 500 SC	Incorporated in soil / OM 5%	Chronic, 56 d	Reproduction	NOEC = 27.6 mg ai/kg soil dw NOEC <sub>corr.</sub> = 13.8 mg ai/kg soil dw
<i>Eisenia fetida</i>	NC 8493	Incorporated in soil / OM 5%	Chronic, 56 d	Reproduction	NOEC = <b>16</b> mg/kg soil dw
<i>Eisenia fetida</i>	NC 8493	Incorporated in soil / OM 5%	Chronic, 56 d	Reproduction	NOEC = 100 mg/kg soil dw
<i>Eisenia fetida</i>	NC 20645	Incorporated in soil / OM 5%	Chronic, 56 d	Reproduction	NOEC = 100 mg/kg soil dw
Other soil macroorganisms					
<i>Folsomia candida</i>	Ethofol 500 SC	Incorporated in soil / OM 5%	Chronic, 28 d	Mortality, reproduction,	NOEC = 26.7 mg ai/kg soil dw NOEC <sub>corr.</sub> = <b>13.35</b> mg ai/kg soil
<i>Folsomia candida</i>	Ethofumesate 500 SC	Incorporated in soil / OM 5%	Chronic, 28 d	Reproduction	NOEC = 44.1 mg ai/kg soil dw NOEC <sub>corr.</sub> = 22.05 mg ai/kg soil dw
<i>Folsomia candida</i>	NC 8493	Incorporated in soil / OM 5%	Chronic, 28 d	Mortality, reproduction,	NOEC = <b>100</b> mg/kg soil dw
<i>Folsomia candida</i>	NC 8493	Incorporated in soil / OM 5%	Chronic, 28 d	Mortality, reproduction,	NOEC = 556 mg/kg soil dw
<i>Folsomia candida</i>	NC 20645	Incorporated in soil / OM 5%	Chronic, 28 d	Mortality, reproduction,	NOEC = 100 mg/kg soil dw

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Section 5 Ecotoxicology

Test organism	Test substance	Application method of test a.s./ OM <sup>1</sup>	Time scale	End point	Toxicity
<i>Hypoaspis aculeifer</i>	Ethofumesate 500 SC	Incorporated in soil / OM 5%	Chronic, 14 d	Mortality, reproduction,	NOEC = 44.2 mg ai/kg soil dw NOEC <sub>corr.</sub> = <b>22.1</b> mg ai/kg soil dw
<i>Hypoaspis aculeifer</i>	Ethofumesate 500 SC	Incorporated in soil / OM 5%	Chronic, 14 d	Mortality, reproduction	NOEC = 441 mg ai/kg soil dw NOEC <sub>corr.</sub> = 220.5 mg ai/kg soil dw
<i>Hypoaspis aculeifer</i>	NC 8493	Incorporated in soil / OM 5%	Chronic, 14 d	Mortality, reproduction	NOEC = <b>309</b> mg/kg soil dw

Litter bag test: Test item was the herbicide Ethofumesate SC45 (code: AE B049913 00 SC45 A203, analysed content of ai 43.8 % w/w)

An amount of 75 g ai/ha (= 171 g prod./ha), corresponding to a plateau concentration of Ethofumesate of 0.05 mg ai/kg soil, and an amount of 1000 g ai/ha (= 2283 g prod./ha), the calculated annual application rate of ethofumesate, was applied to the treatment plots.

The application of the estimated plateau concentration of ethofumesate resulted in soil residues of 42.9 µg ai/kg dry soil, which is 85.8 % of the nominal amount of 50 µg/kg. The application of the annual rate of Ethofumesate SC45 resulted in soil residues of 769 µg ai/kg dry soil, corresponding to 107 % of the nominal amount directly after the spray application.

No statistically significant difference in proportion of straw degradation could be observed between untreated control plots and the plots treated with Ethofumesate SC45.

(Lechelt-Kunze, C., 2003)

<sup>1</sup>To indicate whether the test substance was oversprayed/to indicate the organic content of the test soil (e.g. 5 % or 10 %).

**Bold** written values were used for risk assessment.

Higher tier testing (e.g. modelling or field studies)

Not required

Nitrogen transformation	a.s.	42 d	< 20% effect at day 42 at 0.3 mg ai/kg soil dw < 20% effect at day 42 at 3.0 mg ai/kg soil dw
Nitrogen transformation	Ethofol 500 SC	28 d	-4.38% effect at day 28 at 1.29 mg ai/kg soil dw -18.87% effect at day 28 at 6.47 mg ai/kg soil dw

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Nitrogen transformation	Ethofumesate 500 SC	42 d	-16.0% effect at day 42 at 1.3 mg ai/kg soil dw -14.3% effect at day 42 at 13.0 mg ai/kg soil dw
Nitrogen transformation	NC 8493	28 d	-1.4% effect at day 28 at 1.20 mg/kg soil dw -15.2% effect at day 28 at 12 mg/kg soil dw
Nitrogen transformation	NC 20645	28 d	6.9% effect at day 28 at 1.38 mg/kg soil dw 6.7% effect at day 28 at 13.8 mg/kg soil dw

## Toxicity/exposure ratios for soil organisms

### Ethofumesate 500 SC

#### Risk assessment for sugar, fodder and red beet at 1 x 1000 g a.s./ha (post- emergence)

Test organism	Test substance	Time scale	Soil PEC <sup>1</sup>	TER	Trigger
Earthworms					
<i>Eisenia fetida</i>	Ethofumesate 500 SC	Chronic	1.069	11.7	5
<i>Eisenia fetida</i>	NC 8493	Chronic	0.233	68.7	5
Other soil macroorganisms					
<i>Folsomia candida</i>	Ethofumesate 500 SC	Chronic	1.069	20.6	5
<i>Folsomia candida</i>	NC 8493	Chronic	0.233	429	5
<i>Hypoaspis aculeifer</i>	Ethofumesate 500 SC	Chronic	1.069	206	5
<i>Hypoaspis aculeifer</i>	NC 8493	Chronic	0.233	1326	5

<sup>1</sup>plateau PEC

### Ethofol 500 SC

#### Risk assessment for sugar and fodder beet at 1 x 1000 g a.s./ha (pre- and post- emergence)

Test organism	Test substance	Time scale	Soil PEC <sup>1</sup>	TER	Trigger
Earthworms					
<i>Eisenia fetida</i>	Ethofol 500 SC	Chronic	1.336	<b>3.9</b>	5
<i>Eisenia fetida</i>	Ethofol 500 SC	Chronic	0.357 <sup>2</sup>	15	5
<i>Eisenia fetida</i>	NC 8493	Chronic	0.291	55	5
Other soil macroorganisms					
<i>Folsomia candida</i>	Ethofol 500 SC	Chronic	1.336	10	5



## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

Test organism	Test substance	Time scale	Soil PEC <sup>1</sup>	TER	Trigger
<i>Folsomia candida</i>	NC 8493	Chronic	0.291	344	5
<i>Hypoaspis aculeifer</i>	Ethofol 500 SC	Chronic	1.336	17	5
<i>Hypoaspis aculeifer</i>	NC 8493	Chronic	0.291	1062	5

<sup>1</sup> plateau PEC

<sup>2</sup> sugar beet and fodder beet, post-emergence (3 x 0.333 kg ai/ha)

## Effects on terrestrial non target higher plants (Regulation (EU) N° 283/2013, Annex Part A, point 8.6 and Regulation (EU) N° 284/2013 Annex Part A, point 10.6)

### Screening data

Not required for herbicides or plant growth regulators as ER <sub>50</sub> tests should be provided
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### Laboratory dose response tests

Species	Test substance	ER <sub>50</sub> (L/ha) <sup>2</sup> vegetative vigour	ER <sub>50</sub> (L/ha) <sup>2</sup> emergence	Exposure <sup>1</sup> (L/ha) <sup>2</sup>	TER	Trigger
<i>Avena sativa</i> (oat)	Ethofol 500 SC	ER <sub>50</sub> > 2 prod.	ER <sub>50</sub> = 0.328 prod.	0.0554 prod.	5.92	5
<i>Triticum aestivum</i> (wheat)	Ethofumesate 500 SC	ER <sub>50</sub> = 1.24 prod.	ER <sub>50</sub> = 0.101 prod.	0.0554 prod.	1.82	5
Species Sensitivity Distribution (SSD)	Ethofumesate 500 SC	-	HC <sub>5</sub> = 0.1882 prod. (mean)	0.0554 prod.	3.40	1
Extended laboratory studies : Not required Semi-field and field test: Not required						

<sup>1</sup> based on a drift value of 2.77% and a maximal single application rate of 2.0 L prod./ha

<sup>2</sup> for preparations indicate whether dose is expressed in units of a.s. or preparation

## Effects on biological methods for sewage treatment (Regulation (EU) N° 283/2013, Annex Part A, point 8.8)

Test type/organism	end point
Activated sludge	3 h EC <sub>50</sub> > 1000 mg ai/L
<i>Pseudomonas sp</i>	Not required

## Monitoring data (Regulation (EU) N° 283/2013, Annex Part A, point 8.9 and Regulation (EU) N° 284/2013, Annex Part A, point 10.8)

Available monitoring data concerning adverse effect of the a.s. No data available Available monitoring data concerning effect of the PPP. No data available
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## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### Definition of the residue for monitoring (Regulation (EU) N° 283/2013, Annex Part A, point 7.4.2) Ecotoxicologically relevant compounds<sup>1</sup>

Compartment	
soil	Ethofumesate
water	Ethofumesate
sediment	Ethofumesate
groundwater	Ethofumesate

<sup>1</sup> metabolites are considered relevant when, based on the risk assessment, they pose a risk comparable or higher than the parent

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Section 5 Ecotoxicology

### Classification and labelling with regard to ecotoxicological data (Regulation (EU) N° 283/2013, Annex Part A, Section 10)

Substance	Ethofumesate
Harmonised classification according to Regulation (EC) No 1272/2008 and its Adaptations to Technical Process [Table 3.1 of Annex VI of Regulation (EC) No 1272/2008 as amended] <sup>10</sup> :	H411
Peer review proposal <sup>11</sup> for harmonised classification according to Regulation (EC) No 1272/2008:	<p>H400/H410</p> <p>Acute category 1: <math>E_rC_{50} = 0.479 \text{ mg ai/L}</math> (<i>Myriophyllum spicatum</i>), i.e. <math>&lt; 1 \text{ mg/L}</math></p> <p>Chronic category 1: Not readily biodegradable, not rapidly degradable in the water sediment system (mean <math>DT_{50}</math> whole system = 170 days)</p> <p><math>NOE_rC = 0.036 \text{ mg ai/L}</math> (<i>Myriophyllum spicatum</i>), i.e. <math>&lt; 0.1 \text{ mg ai/L}</math> for not rapidly degradable substances</p>

<sup>10</sup> Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. OJ L 353, 31.12.2008, 1-1355.

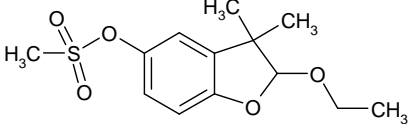
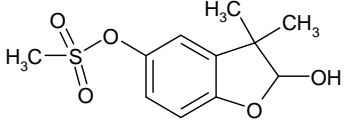
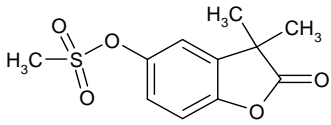
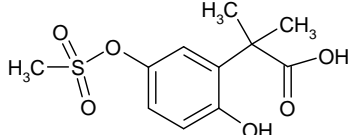
<sup>11</sup> It should be noted that harmonised classification and labelling is formally proposed and decided in accordance with Regulation (EC) No 1272/2008. Proposals for classification made in the context of the evaluation procedure under Regulation (EC) No 1107/2009 are not formal proposals.

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

## Appendix

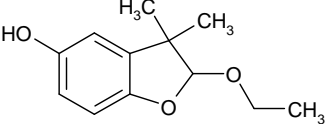
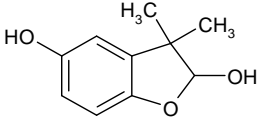
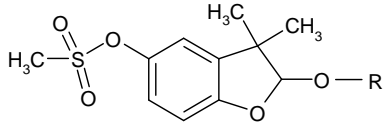
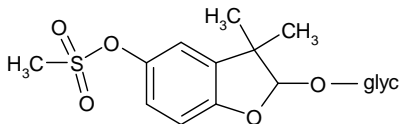
### Used compounds code(s)

Code/Trivial name*	IUPAC name/SMILES notation	Compound found in	Structural formula
<b>Ethofumesate</b>  Synonym: a.s. NC 8438, AE B049913	(RS)-2-ethoxy-2,3-dihydro-3,3-dimethylbenzofuran-5-yl methanesulfonate (IUPAC)  5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate (CAS) [CAS No.: 26225-79-6]	All matrices	
<b>Ethofumesate-2-hydroxy</b>  Synonym: NC 8493, AE C508493, BCS-BB94377, hydroxy-derivative, 2-hydroxy-ethofumesate, Fumesate 2-OH-ethofumesate	2,3-dihydro-2-hydroxy-3,3-dimethylbenzofuran-5-yl methane-sulfonate (IUPAC)	Animals Rat Lactating cow Laying hen  Plants Sugar beet Ryegrass CRC  Soil Soil aerobic Soil anaerobic  Water Photolysis in water	
<b>Ethofumesate-lactone</b>  Synonym: NC 9607, AE C509607, 2-keto-Ethofumesate, Ethofumesate-2-keto, Oxo-derivative, Fumesate lactone	2,3-dihydro-3,3-dimethyl-2-oxo-benzofuran-5-yl methanesulfonate (IUPAC)	Animals Rat Lactating cow Laying hen  Plants Sugar beet Ryegrass CRC  Soil Soil aerobic Soil anaerobic	
Ethofumesate-carboxylic acid  Synonym: NC 20645, AE C520645, BCS-AV65501, RO 9607 ("ring-open 9607"), "Hydrolyzed AE C509607" [res. method no.	2-(2-hydroxy-5-methanesulfoxyphenyl)-2-methyl propionic acid (IUPAC)	Animals Rat Lactating cow Laying hen  Plants Sugar beet Onion Tobacco Ryegrass CRC	

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

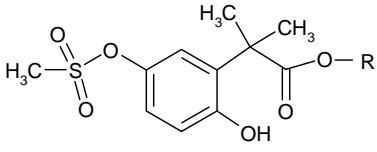
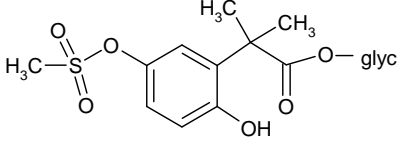
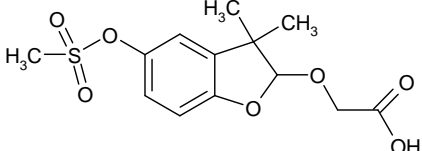
## Appendix

01116/M001], Ethofumesate- $\gamma$ -hydroxy-carboxylic acid, open-ring-2-keto-ethofumesate, ring opened lactone ----- AE C639175 (potassium salt) BCS-CU88901 (sodium salt)		Soil Soil aerobic Soil anaerobic  Water Water/sediment Aerobic mineralization in surface water	
<b>Ethofumesate-5-hydroxy</b>  Synonym: NC 10458 AE C510458	2-ethoxy-3,3-dimethyl-2,3-dihydro-1-benzofuran-5-ol (IUPAC)	Plants CRC (in traces following acidic extraction in radish foliage)  Soil (in traces)  Water (in traces in natural water photolysis)	
<b>Ethofumesate-2,5-dihydroxy</b>  Synonyms: NC 17900 AE C517900	3,3-dimethyl-2,3-dihydro-1-benzofuran-2,5-diol (IUPAC)	Plants CRC (in traces following acidic extraction in radish foliage)  Soil (only proposed)  Water (in traces in natural water photolysis)	
<b>Ethofumesate-2-hydroxy-conjugate</b> :		Plants Sugar beet Tobacco Ryegrass CRC	 the conjugate R in crops was not identified
<b>Ethofumesate-2-hydroxy-glycoside</b>		Soil Preparative soil aerobic study for identification of unknown metabolites in lysimeter leachate	 aglycon ethofumesate-2-hydroxy identified, hexose not specified

## List of end points

Rapporteur Member State	Month and year	Active Substance (Name)
Austria	January 2015	Ethofumesate

### Appendix

<b>Ethofumesate-carboxylic acid conjugate</b>		<b>Plants</b> Sugar beet Onion Tobacco Ryegrass	 <p>the conjugate R in crops was not identified</p>
<b>Ethofumesate-carboxylic acid glycoside</b>		<b>Soil:</b> Preparative soil aerobic study for identification of unknown metabolites in lysimeter leachate	 <p>aglycon ethofumesate-carboxylic acid identified, hexose not specified</p>
<b>Ethofumesate-acetic acid</b>  Synonym: BCS-CW35117	({3,3-dimethyl-5-[(methylsulfonyl)oxy]-2,3-dihydro-1-benzofuran-2-yl}oxy)acetic acid (IUPAC)	<b>Water</b> aerobic mineralization in surface water	
<b>Methanesulfonic acid</b>  Synonym: MSA, Methansulphonic acid	Methanesulfonic acid	<b>Plants</b> excluded in sugar beet as representative matrix for plants  All other matrices: not significant in all other matrices (but not analyzed in soil, water)	CH <sub>3</sub> -SO <sub>3</sub> H
<b>Carbon dioxide</b>  Synonym: CO <sub>2</sub>		<b>Soil</b>	CO <sub>2</sub>

\* The compound code / trivial name in bold is the name used in the list of endpoints.