FINAL REGISTRATION REPORT

Part B

Section 5

Analytical Methods

Detailed summary of the risk assessment

Product code: **CHR/H/ETO 500 SC**

Product name(s):

BITT 500 SC, BETRON 500 SC, ETONAL 500 SC

Chemical active substance:

Ethofumesate, 500 g/~~kg~~L

Central zone

Zonal Rapporteur Member State: Poland

Core assessment

Applicant: Innvigo sp. z o.o.

Submission date: June 2021

MS Finalisation date: 14/01/2022

Version history

When	What
06/2021	Dossier sent for evaluation to Merit Mark (PL)
11/2021	zRMS finalised evaluation
01/2022	Final version prepared by zRMS after Commenting period

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zRMS comments:
This report has been completed by the applicant.
The text highlighted in grey was provided by the evaluator.

5 Analytical methods Conclusion and summary of assessment

In the following document, data for active substance ethofumesate was described during its renewal process in 2016. Were reference to active substance data in the current risk assessment has been made, it was based on the data presented by Bayer.
In June 14th, 2018r Kemiron Koncentrat 500SC product has been renewed in Poland thus according to the art. 59 reg. 1107/2009, data protection for mentioned data expired 30 months from date of first renewal of authorisation of product containing that active substance (in this case December, 14th 2020).
Considering analogous arguments (art. 59 reg 1107/2009) – data protection of studies presented by UPL for renewal of product Bettix Combi 500 SC (renewal of authorisation granted in Poland 14.02.2019 r.) expires August 14th, 2021.
Taking into account that some data was presented by others Notyfiers, Applicant would like to emphasise that unprotected Bayer's endpoints and input parameters accepted during renewal of active substance, should be treated as an equivalent matching data in cases where any of endpoints might be protected.

Sufficiently sensitive and selective analytical methods are available for the active substance(s) and relevant impurities in the plant protection product.
Sufficiently sensitive and selective analytical methods are available for all analytes included in the residue definitions.

Comments of zRMS:	Analytical methods presented are suitable for the determination of a.s. Ethofumesate and relevant impurities – EMS and iBMS in the formulation CHR/H/ETO 500 SC. Methods have been validated in terms of specificity, linearity, precision and accuracy and fulfil requirements of the guideline SANCO/3030/99 rev.5. Accepted

5.1 Methods used for the generation of pre-authorization data (KCP 5.1)

5.1.1 Analysis of the plant protection product (KCP 5.1.1)

5.1.1.1 Determination of active substance and/or variant in the plant protection product (KCP 5.1.1)

An overview on the acceptable methods and possible data gaps for analysis of ethofumesate in plant protection product is provided as follows:

Reference:	KCP 5.1.1/01
Report	CHR/H/ETO 500 SC *Ethofumesate 500SC (CHR/H/ETO 500SC) Method validation for determination of the acive substance content in the formulation, M. Wołoszynowska*
Guideline(s):	SANCO/3030/99 rev.5.
Deviations:	NO
GLP:	YES
Acceptability:	YES

It was confirmed that the methods are specific. There were no peaks from the placebo interfering with the determined compounds. The validation parameters (linearity, repeatability and accuracy) are within the acceptance range and fulfil EU requirements given in SANCO/3030/99 rev.5.

Determination of ethofumesate content was performed using high performance liquid chromatography (HPLC) with UV-DAD and external standard method (MT/BA-12/20).
The content of ethofumesate, determined by developed and validated was 46.32%±0.68%.

Materials and methods

Test item:

Name:	Ethofumesate 500 SC (CHR/H/ETO 500 SC)
Active substances:	Ethofumesate
CAS No:	26225-79-6
Batch No:	6C/20
Date of expiry:	12.2023

Equipment:
- Shimadzu liquid chromatograph equipped with DAD detector
- Column: Kinetex Biphenyl C18, 250 mm x 4.6 mm 5 µm
- Analytical balance, Mettler Toledo AT 261 DU/M

Reagents:
- Acetonitrile for HPLC super gradient
- Deionized water, ultra-pure, Millipore

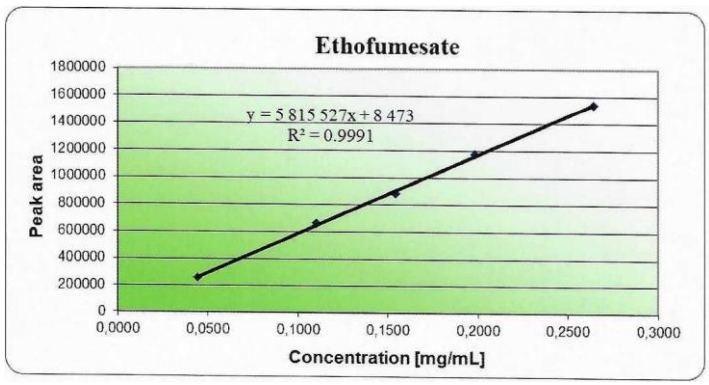
Preparation of Reference Standard Solution
About 5 and 9.5 mg of standards were weighed (with the accuracy of 0.01 mg) into two 10 mL flasks with a screw cap and acetonitrile was added up to the volume. The flask was put into the ultrasonic bath for 5 min. After cooling, the standard solutions were diluted to concentrations of 0.1522 mg/mL and 0.1503 mg/mL and analyzed.

Preparation of Specimen Solution
About 35 mg of preparation was weighted (with the accuracy of 0.01 mg) into a 10 mL flask with a screw cap, 2 mL of water was added and acetonitrile up to the volume. The flask was put into the ultrasonic bath for 5 min. After cooling, the solution was diluted 10 times and analyzed.

Validation - Results and discussions

Table 5.1-1: Methods suitable for the determination of active substance ethofumesate in plant protection product CHR/H/ETO 500 SC

	Ethofumesate
Author(s), year	M.Wołoszynowska, 2020
Principle of method	HPLC-DAD
Linearity (linear between mg/L / % range of the declared content) (correlation coefficient, expressed as r)	The resulting curve is linear in the tested concentrations. Linearity range of ethofumesate is from 0.0440mg/ml to 0.2642 mg/mL. Correlation coefficient R^2=0. 9991

	Ethofumesate
	 Correlation coefficient should be $R^2 \geq 0.99$
Precision – Repeatability Mean and Accuracy n=6	~~RDS~~ RSDr for substance at the concentration of ~ 46% should be less than or equal to 1.50% and Hr≤1 RSD[%] 1.33 Hr=0.89 For the main ingredient at concentration of >10% the average recovery value should be 100±3%. The obtained result of 101.35% is acceptable.
Interference/ Specificity	There are no interferences between the analyte and other components of the specimen.
Comment	The determined validation parameters such as specificity, linearity, repeatability (precision) and accuracy are compliant with EU requirements given in SANCO/3030/99 rev.5.

Conclusion

It was confirmed that the method is specific. There were no peaks from placebo interfering with determined compounds.
The validation parameters (specificity, linearity, instrument precision, repeatability and accuracy) are within the acceptance range and fulfil EU requirements given in *SANCO/3030/99 -rev.5*.

5.1.1.2 Description of analytical methods for the determination of relevant impurities (KCP 5.1.1)

An overview on the acceptable methods and possible data gaps for analysis of relevant impurities in plant protection product is provided as follows

Reference:	KCP 5.1.1/02
Report	Method Validation of Relevant Impurities of Ethofumesate 500SC, S. Lobstein, 2021
Guideline(s):	SANCO/3030/99 rev.5.
Deviations:	NO
GLP:	YES
Acceptability:	YES

Materials and methods

Anadiag In-House GC/MS method MA 1657 was evaluated for the determination of the relevant impurities content in Ethofumesate 500 SC (ANADIAG Analytical conditions referenced MA_1657_04).
The relevant impurities are extracted from the test item with dichloromethane and analysed by Gas Chromatography with Mass spectrometric detection (GC/MS). Quantification is performed using the response factors of the bracketing standard solutions.

Aliquots of the intermediate calibration solutions are diluted in dichloromethane to obtain suitable calibration solutions at 12 levels with the working range of approximately 0.6 to 26 ng/mL.

It was confirmed that the methods are specific. There were no peaks from the placebo interfering with the determined compounds. The validation parameters (linearity, repeatability and accuracy) are within the acceptance range and fulfil EU requirements given in SANCO/3030/99 rev.5.

Validation - Results and discussions

Table 5.1-2: Methods suitable for the determination of the relevant impuritiesy EMS in plant protection product (PPP) CHR/H/ETO 500 SC

<table>
<tr><td></td><td colspan="7">EMS (Ethyl methane sulfonate) max 0.1 mg/kg</td></tr>
<tr><td>Author(s), year</td><td colspan="7">S. Lobstein, 2021</td></tr>
<tr><td>Principle of method</td><td colspan="7">GC- MS</td></tr>
<tr><td>Linearity (linear between mg/L) (correlation coefficient, expressed as r)</td><td colspan="7">The linearity was evaluated by the analysis of calibration solutions at least at 10 levels (single injection) bracketing the target level.
The linear correlation coefficient was > 0.99, showing a good linearity.
<table>
<tr><th></th><th></th><th>Min – Max (ng/mL)</th><th>Min – Max (µg/kg)</th><th>Number of levels</th><th>R²</th><th>r</th></tr>
<tr><td>EMS</td><td>seq201105</td><td>0.63 – 26.1</td><td>6.3 – 261</td><td>12</td><td>0.99839</td><td>0.99920</td></tr>
<tr><td></td><td>seq210224</td><td>0.63 – 26.2</td><td>6.3 – 262</td><td>12</td><td>0.99982</td><td>0.99991</td></tr>
</table>
y=4,5185E - 03x + 0.170 (where y –concentration, x –peak area)
R^2= 0.99839
R=0.99920</td></tr>
<tr><td>Accuracy</td><td colspan="7">
<table>
<tr><th></th><th>Spiking level (µg/kg)</th><th>Number of determinations</th><th>Average Percentage of recovery (%)</th><th>Average Theoretical Amount in spiked samples (µg/kg)</th><th>RSD (%)</th><th>RSD_r (1) (%)</th></tr>
<tr><td>EMS</td><td>25</td><td>5</td><td>104.5</td><td>26.0</td><td>2.40</td><td>18.57</td></tr>
<tr><td></td><td>50</td><td>5</td><td>101.9</td><td>52.1</td><td>2.80</td><td>16.72</td></tr>
</table>
The results obtained show a good accuracy which indicates acceptable data (acceptability according to the values given in SANCO/3030/99 rev.5 (22/03/19), mean recovery must be between 70 and 130 % for a theoretical amount in spiked samples below 100 mg/kg and RSD < RSD_r (1) given by modified Horwitz equation based on theoretical amount in the spiked samples).</td></tr>
<tr><td>Repetabbility</td><td colspan="7">
<table>
<tr><th></th><th>Average Percentage of recovery (%)</th><th>Number of determinations</th><th>Average Theoretical Amount in spiked samples (µg/kg)</th><th>RSD (%)</th><th>RSD_r (1) (%)</th><th>Horrat value H_r</th></tr>
<tr><td>EMS</td><td>104.5</td><td>5</td><td>26.0</td><td>2.40</td><td>18.57</td><td>0.13</td></tr>
</table>
The results obtained indicate a good precision of the data (RSD < RSD_r (1) given by modified Horwitz equation based on the theoretical amount in spiked samples and a Horrat value $H_r \leq 1$).</td></tr>
<tr><td>Interference/ Speci-</td><td colspan="7">The specificity of the method was evaluated by the absence of interfering peaks in the area</td></tr>
</table>

	EMS (Ethyl methane sulfonate) max 0.1 mg/kg
ficity	of interest. When injecting blank formulation solutions and solvent **no interfering peak** shows ~~—pat~~ up at the retention time where the relevant impurities signal is expected
LOQ and LOD	**LOQ (w/w in sample) (µg/kg)** / **LOD (concentration in solution) (ng/mL)** / **LOD (w/w in sample) (µg/kg)** **EMS**: 25.0 / 0.35 / 3.5
Comment	The determined validation parameters such as specificity, linearity, limit of quantification (LOQ), repeatability (precision) and accuracy are compliant with EU requirements given in SANCO/3030/99 rev.5.

Table 5.1-3: Methods suitable for the determination of the relevant impuritiesy iBMS in plant protection product (PPP) CHR/H/ETO 500 SC

	iBMS (Iso-butyl methane sulfonate) max 0.1 mg/kg
Author(s), year	S. Lobstein, 2021
Principle of method	GC- MS
Linearity (linear between mg/L) (correlation coeffi-cient, expressed as r)	The linearity was evaluated by the analysis of calibration solutions at least at 10 levels (single injection) bracketing the target level. The linear correlation coefficient was > 0.99, showing a good linearity. **iBMS**: seq201105: Min – Max (ng/mL) 0.83 – 20.7; Min – Max (µg/kg) 8.3 - 207; Number of levels 10*; R^2 0.99756; r 0.99878 seq210224: 0.61 – 25.6; 6.1 - 256; 12; 0.99971; 0.99986 y=6.1565E – 03x + 0.435 (where y –concentration, x –peak area) R^2=0.99756 r=0.99878
Accuracy	**iBMS**: Spiking level (µg/kg) 25; Number of determinations 5; Average Percentage of recovery (%) 101.7; Average Theoretical Amount in spiked samples (µg/kg) 25.9; RSD (%) 2.94; RSD_r (1) (%) 18.58 50; 5; 97.2; 51.8; 6.02; 16.74 The results obtained show a good accuracy which indicates acceptable data (acceptability according to the values given in SANCO/3030/99 rev.5 (22/03/19), mean recovery must be between 70 and 130 % for a theoretical amount in spiked samples below 100 mg/kg and RSD < RSD_r (1) given by modified Horwitz equation based on theoretical amount in the spiked samples).
Repetabbility	**iBMS**: Average Percentage of recovery (%) 101.7; Number of determinations 5; Average Theoretical Amount in spiked samples (µg/kg) 25.9; RSD (%) 2.94; RSD_r (1) (%) 18.58; Horrat value H_r 0.16 The results obtained indicate a good **precision** of the data (RSD < RSD_r (1) given by modified Horwitz equation based on the theoretical amount in spiked samples and a Horrat value $H_r \leq 1$).

<table>
<tr><td></td><td>iBMS (Iso-butyl methane sulfonate) max 0.1 mg/kg</td></tr>
<tr><td>Interference/ Specificity</td><td>The specificity of the method was evaluated by the absence of interfering peaks in the area of interest.
When injecting blank formulation solutions and solvent no interfering peak shows up at the retention time where the relevant impurities signal is expected.</td></tr>
<tr><td>LOQ and LOD</td><td><table><tr><th></th><th>LOQ
(w/w in sample)
(µg/kg)</th><th>LOD
(concentration in solution)
(ng/mL)</th><th>LOD
(w/w in sample)
(µg/kg)</th></tr><tr><td>iBMS</td><td>25.0</td><td>0.36</td><td>3.6</td></tr></table></td></tr>
<tr><td>Comment</td><td>The determined validation parameters such as specificity, linearity, limit of quantification (LOQ), repeatability (precision) and accuracy are compliant with EU requirements given in SANCO/3030/99 rev.5.</td></tr>
</table>

Conclusion

The determined validation parameters such as specificity, linearity, limit of quantification (LOQ), repeatability (precision) and accuracy are compliant with EU requirements given in *SANCO/3030/99 rev.5*.

5.1.1.3 Description of analytical methods for the determination of formulants (KCP 5.1.1)

Please refer to PART C – Confidential data.

5.1.1.4 Applicability of existing CIPAC methods (KCP 5.1.1)

The CIPAC method available for the determination of ethofumesate in technical grade active substance can be found in the FAO specification 233/~~T~~SC/M/3 (CIPAC Handbook J, p.~~44~~ 48, 2000).

5.1.2 Methods for the determination of residues (KCP 5.1.2)

zRMS comments:
The Applicant did not provide any new studies. The dossier is based on studies assessed at Community level during the renewal of approval for ethofumesate as an active substance. The Applicant has informed that it has the right to use the studies assessed at the renewal stage. Authorities competent for authorization should verify whether the explanations provided by the Applicant in this regard are correct and sufficient.
The analytical methods assessed at Community level are sufficient for the uses proposed for CHR/H/ETO BITT 500 SC.

An overview on the acceptable methods and possible data gaps for analysis of residues of ethofumesate for the generation of pre-authorization data is given in the following table. For the detailed evaluation of additional studies it is referred to Appendix 2.

Table 5.1-3: Validated methods for the generation of pre-authorization data

Component of residue definition: Ethofumesate, ethofumesate-lactone (NC 9607), ethofumesate-carboxylic acid (NC 20645) and its conjugate (their sum expressed as ethofumesate)				
Matrix type	**Method type**	**Method LOQ**	**Principle of method (i.e. GC-MS or HPLC-UV)**	**Author(s), year / missing / EU agreed**
Sugar beet (leaves)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; 2014, *EFSA Journal 2016;14(1):4374; RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Wheat (grain)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; 2014, *EFSA Journal 2016;14(1):4374; RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Rape (seed)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; 2014, *EFSA Journal 2016;14(1):4374; RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Orange (fruit)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P,2014 *EFSA Journal2016;14(1):4374; RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Hop (green cone)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; 2014 *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Milk	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Eggs	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A

Muscle	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012, *EFSA Journal 2016;14(1):4374* *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Liver	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012, *EFSA Journal 2016;14(1):4374* *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Fat	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012, *EFSA Journal 2016;14(1):4374* *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Component of residue definition: Ethofumesate				
Surface water Drinking water	Primary	0.05 mg/kg	GC-MS (SIM 3 fragment ions)	Krebber, R.; Braune, M., *EFSA Journal 2016;14(1):4374* *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Soil	Primary	0.05 mg/kg	LC -MS/MS one transitions	Brumhard, B; 2003, *EFSA Journal 2016;14(1):4374* *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	0.05 mg/kg	GC-MS	Schneider, E. 2000, *EFSA Journal 2016;14(1):4374* *RAR, Volume 3, Annex B-Ethofumesate*
Air	Primary	0.5 µg/m³	GC-MS	Schneider, E. 2000, *EFSA Journal 2016;14(1):4374* *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Body fluids and tissues	Primary	0.01 mg/kg (milk, meat)	LC-MS/MS	Report P 2173 G from 2012; *EFSA Journal 2016;14(1):4374*
	Confirmatory (if required)	N/A	N/A	N/A
	Primary	0.1 mg/L Dog plasma	LC-MS/MS	(Report C 507 from 1994) in the original DAR (1998); *EFSA Journal 2016;14(1):4374*
	Confirmatory (if required)	N/A	N/A	N/A

5.2 Methods for post-authorization control and monitoring purposes (KCP 5.2)

Data provided in Table 5.2-3 is sufficient for post-authorizations methods.

5.2.1 Analysis of the plant protection product (KCP 5.2)

For active substance Ethofumesate all presented methods are sufficient and no new methods are necessary. Please refer to KCP 5.1.2

5.2.2 Description of analytical methods for the determination of residues

For active substance ethofumesate all presented methods are sufficient and no new methods are necessary. Descriptions are provided in Part B.7.

5.2.2.1 Overview of residue definitions and levels for which compliance is required

Table 5.2-1: Relevant residue definitions for monitoring/enforcement and levels for which compliance is required

Component of residue definition: Ethofumesate, ethofumesate-lactone (NC 9607), ethofumesate-carboxylic acid (NC 20645) and its conjugate (their sum expressed as ethofumesate)				
Matrix type	**Method type**	**Method LOQ**	**Principle of method (i.e. GC-MS or HPLC-UV)**	**Author(s), year / missing / EU agreed**
Sugar beet (leaves) (high water content)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.;), EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Wheat (grain) (High protein/high starch content) (dry)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.;), EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Rape (seed) (High oil content)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Orange (fruit) (High acid content)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Hop (green cone) (Difficult, if required, depends on intended use)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; 2014; EFSA Journal 2016;14(1):4374; *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A

Milk	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Eggs	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012 ; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Muscle	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012 ; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Liver	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Fat	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012 ; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Component of residue definition: Ethofumesate				
Surface water Drinking water	Primary	0.05 µg/L	LC-MS/MS two transitions	Krebber, R.; Braune, M., *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Soil	Primary	0.05 mg/kg	LC -MS/MS one transitions	Brumhard, B; 2003, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	0.05 mg/kg	GC-MS	Schneider, E. 2000, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate,*
Air	Primary	0.5 µg/m³	GC-MS	Schneider, E. 2000, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A

Body fluids and tissues	Primary	0.01 mg/kg(milk, meat)	LC-MS/MS	Report P 2173 G from 2012; *EFSA Journal 2016;14(1):4374*
	Confirmatory (if required)	N/A	N/A	N/A
	Primary	0.1 mg/L dog plasma	…	(Report C 507 from 1994) in the original DAR (1998); *EFSA Journal 2016;14(1):4374*
	Confirmatory (if required)	N/A	N/A	N/A

5.2.2.2 Description of analytical methods for the determination of residues in plant matrices (KCP 5.2)

An overview on the acceptable methods and possible data gaps for analysis of ethofumesate and its metabolites in plant matrices is given in the following tables. For the detailed evaluation of additional studies it is referred to Appendix 2.

Table 5.2-2: Validated methods for food and feed of plant origin (required for all matrix types, "difficult" matrix only when indicated by intended GAP)

Component of residue definition: Ethofumesate, ethofumesate-lactone (NC 9607), ethofumesate-carboxylic acid (NC 20645) and its conjugate (their sum expressed as ethofumesate)				
Matrix type	**Method type**	**Method LOQ**	**Principle of method (i.e. GC-MS or HPLC-UV)**	**Author(s), year / missing / EU agreed**
Sugar beet (leaves) (high water content)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; 2014 ; EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate
	ILV	0.01 mg/kg	LC-MS/MS	Betson, S.; 2014; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Wheat (grain) (High protein/high starch content) (dry)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.;), EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Betson, S.; 2014; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Rape (seed) (High oil content)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*

Component of residue definition: Ethofumesate, ethofumesate-lactone (NC 9607), ethofumesate-carboxylic acid (NC 20645) and its conjugate (their sum expressed as ethofumesate)				
Matrix type	**Method type**	**Method LOQ**	**Principle of method (i.e. GC-MS or HPLC-UV)**	**Author(s), year / missing / EU agreed**
	ILV	0.01 mg/kg	LC-MS/MS	Betson, S.; 2014; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Orange (fruit) (High acid content)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Betson, S.; 2014; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Hop (green cone) (Difficult, if required, depends on intended use)	Primary	0.01 mg/kg	LC-MS/MS	Schulte, G.; Diehl, P.; 2014; EFSA Journal 2016;14(1):4374; *RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Betson, S.; 2014; EFSA Journal 2016;14(1):4374 *RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A

Table 5.2-3: Statement on extraction efficiency

	Method for products of plant origin
Required, available from:	Radiovalidation Williams, L.E. (2002), method 01392 (Schulte, G.; Diehl, P.)
Not required, because:	N/A

The radiovalidation was done by Williams, L. E. (2002) using red beet tops as representative matrix. The new method 01392 uses the same or comparable solvents and well comparable extraction steps as the standard US method.
Although the radiovalidation study shows some deficiencies, it has been clearly shown that the constituents of the plant residue definition can be extracted sufficiently.

5.2.2.3 Description of analytical methods for the determination of residues in animal matrices (KCP 5.2)

An overview on the acceptable methods and possible data gaps for analysis of ethofumesate in animal matrices is given in the following tables. For the detailed evaluation of additional studies it is referred to Appendix 2.

Component of residue definition: Ethofumesate, ethofumesate-lactone (NC 9607), ethofumesate-carboxylic acid (NC 20645) and its conjugate (their sum expressed as ethofumesate)				
Milk	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Schlewitz, P. 2013; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Eggs	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Schlewitz, P. 2013; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Muscle	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Schlewitz, P. 2013; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Liver	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Schlewitz, P.,2013; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A
Fat	Primary	0.01 mg/kg	LC-MS/MS	Jooß S., 2012; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.01 mg/kg	LC-MS/MS	Schlewitz, P. 2013; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory (if required)	N/A	N/A	N/A

Table 5.2-4: Validated methods for food and feed of animal origin (if appropriate)

Table 5.2-5: Statement on extraction efficiency

	Method for products of animal origin
Required, available from:	-
Not required, because:	no new methods submitted,

No residues (according to the residue definition; refer to chapter B.7) above the LOQ are present in food commodities (representative use: sugar beets). Therefore there is no need to address extraction efficiency. Reference to guidance document SANCO/825/00 rev.8.1.

5.2.2.4 Description of methods for the analysis of soil (KCP 5.2)

An overview on the acceptable methods and possible data gaps for analysis of ethofumesate and its metabolites in soil is given in the following tables. For the detailed evaluation of additional studies it is referred to Appendix 2.

Table 5.2-6: Validated methods for soil (if appropriate)

Soil	Primary	0.05 mg/kg	LC -MS/MS one transitions	Brumhard, B; 2003, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	ILV	-	-	-
	Confirmatory (if required)	0.05 mg/kg	GC-MS LOQ	Schneider, E. 2000, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*

5.2.2.5 Description of methods for the analysis of water (KCP 5.2)

An overview on the acceptable methods and possible data gaps for analysis of Ethofumesate in surface and drinking water is given in the following tables. For the detailed valuation of additional studies it is referred to Appendix 2.

Table 5.2-7: Validated methods for water (if appropriate)

Component of residue definition: Ethofumesate				
Matrix type	**Method type**	**Method LOQ**	**Principle of method (i.e. GC-MS or HPLC-UV)**	**Author(s), year / missing**
Drinking water	Primary	0.05 µg/L	A validation for drinking water was not necessary because the limit of quantitation for surface water is below the drinking water limit of 0.1 µg/L.	Krebber, R.; Braune, M., 2013, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	ILV	0.05µg/L	LC-MS/MS	Stanislowski, T., 2013; *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate;*
	Confirmatory	-	-	N/A
Surface water	Primary	0.05 µg/L	LC-MS/MS	Krebber, R.; Braune, M.,

Component of residue definition: Ethofumesate				
Matrix type	**Method type**	**Method LOQ**	**Principle of method (i.e. GC-MS or HPLC-UV)**	**Author(s), year / missing**
				2013, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
	Confirmatory	-	-	N/A

5.2.2.6 Description of methods for the analysis of air (KCP 5.2)

An overview on the acceptable methods and possible data gaps for analysis of Ethofumesate in air is given in the following tables. For the detailed evaluation of additional studies please refer to Appendix 2.

Table 5.2-8: Validated methods for air (if appropriate)

Component of residue definition: Ethofumesate			
Method type	**Method LOQ**	**Principle of method (i.e. GC-MS or HPLC-UV)**	**Author(s), year / missing**
Primary	0.5 µg/m^3	GC-MS	Schneider, E. 2000, *EFSA Journal 2016;14(1):4374 RAR, Volume 3, Annex B-Ethofumesate*
ILV	-	-	-
Confirmatory	-	-	N/A

5.2.2.7 Description of methods for the analysis of body fluids and tissues (KCP 5.2)

No methods required as Ethofumesate is not classified as toxic or highly toxic.
According to guidance document SANCO/825/00 rev. 8.1 no method is required since ethofumesate is not classified. In addition no residue definition is set. However, to be in line with Regulation 1107/99 analytical methods are available for animal matrices including tissues (meat) and fluids (milk) in DRAR (2015) and is as well addressed for dog plasma in the original DAR (1998).

zRMS comments:
According to the EFSA Journal 2016;14(1):4374:
Body fluids and tissues (analytical technique and LOQ) - Dog plasma (Report C 507 from 1994) in the original DAR (1998): LOQ: 0.1 mg/L UPL+Taskforce: Report P 2173 G from 2012 LC-MS/MS LOQ: 0.01 mg/kg (milk, meat) Analyte: Ethofumesate

5.2.2.8 Other studies/ information

Not relevant.

Appendix 1 Lists of data considered in support of the evaluation

List of data submitted by the applicant and relied on

Data point	Author(s)	Year	**Title** **Company Report No.** **Source (where different from company)** **GLP or GEP status** **Published or not**	**Vertebrate study Y/N**	**Owner**
KCP 5.1.1/01	Wołoszynowska, M.	2020	*Ethofumesate 500SC (CHR/H/ETO 500SC) Method validation for dwtermination of the active substance content in the formulation* 1/19/008/K Łukasiewicz Research Network – Institute of Industrial Organic Chemistry 6 Annopol St., 03-236 Warsaw, Poland GLP- Yes Unpublished	N	Chemirol
KCP 5.1.1/02	*Lobstein, S.*	2021	*Method Validation of Relevant Impurities of Ethofumesate 500SC,* *C0348* ANADIAG 16, rue Ampère 67500 HAGUENAU FRANCE GLP- Yes Unpublished	N	Chemirol

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

Data point	Author(s)	Year	**Title** **Company Report No.** **Source (where different from company)** **GLP or GEP status** **Published or not**	**Vertebrate study Y/N**	**Owner**
KCP 5.1.2/01 KCP 5.2	Schulte, G.; Diehl, P.	2014	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/02 KCP 5.2	Schulte, G.; Diehl, P.	2014	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 5.1.2/03 KCP 5.2	Schulte, G.; Diehl, P.	2014	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/04	Schulte, G.; Diehl, P.	2014	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/05	Schulte, G.; Diehl, P.	2014	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/06	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/07 KCP 5.2	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/08 KCP 5.2	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 5.1.2/09 KCP 5.2	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/10	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/11 KCP 5.2	Krebber, R.; Braune, M	2013	*Analytical method 01387 for the determination of various pesticides in drinking and surface water by HPLCMS*/MS MR-13/085 Bayer CropScience, GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/12	Brumhard, B.	2003	*Method 00806 for the determination of residues of Ethofumesate in soil by HPLCMS/MS* 00806 Bayer CropScience GLP- Yes Unpublished	N	Bayer CropScience
KCP 5.1.2/13	Schneider, E.	2000	*PR00/003 - Confirmation method for the determination of residues of ethofumesate in soil* OFC00004917 Dr.Krebs Analytik, Koeln, Germany GLP- Yes Unpublished	N	Adama (formerly Feinchemie Schwebda)
KCP 5.1.2/14	Schneider, E.	2000	*PR00/002 - Validation of an analytical method for the determination of residues of ethofumesate in air - Monitoring method* OFC00004919 UCL GmbH, Koeln, Germany GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/15			Report P 2173 G from 2012		TaskForce Ethofumesate

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 5.1.2/16			*Dog plasma (Report C 507 from 1994) in the original DAR (1998)* GLP- Yes Unpublished	N	TaskForce Ethofumesate
KCP 5.1.2/17	Schulte, G.; Diehl, P.	2014	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/18	Schulte, G.; Diehl, P.	2007	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/19	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/20	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/21	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/22	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 5.1.2/23	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/24	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/25	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/26	Jooß S.,	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/27	Krebber, R.; Braune, M	2013	*Analytical method 01387 for the determination of various pesticides in drinking and surface water by HPLCMS*/MS MR-13/085 Bayer CropScience, GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/28	Brumhard, B.	2003	*Method 00806 for the determination of residues of Ethofumesate in soil by HPLCMS/MS* 00806 Bayer CropScience GLP- Yes Unpublished	N	Bayer CropScience

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 5.1.2/29	Schneider, E.	2000	*PR00/003 - Confirmation method for the determination of residues of ethofumesate in soil* OFC00004917 Dr.Krebs Analytik, Koeln, Germany GLP- Yes Unpublished	N	Adama (formerly Feinchemie Schwebda)
KCP 5.1.2/30	Schneider, E.	2000	*PR00/002 - Validation of an analytical method for the determination of residues of ethofumesate in air - Monitoring method* OFC00004919 UCL GmbH, Koeln, Germany GLP- Yes Unpublished	N	TaskForce Ethofumesate
KCP 5.1.2/31			*Dog plasma (Report C 507 from 1994) in the original DAR (1998)* GLP- Yes Unpublished	N	TaskForce Ethofumesate
KCP 5.1.2/32	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/33	Betson, S.	2014	*Independent Laboratory Validation (ILV) of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLCMS/MS* RL/ SN/ 2014-001/ M-497682-01-1 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/34	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/35	Betson, S.	2014	*Independent Laboratory Validation (ILV) of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLCMS/MS* RL/ SN/ 2014-001/ M-497682-01-1 GLP- Yes Unpublished	N	Task Force Ethofumesate

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/36	Betson, S.	2014	*Independent Laboratory Validation (ILV) of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLCMS/MS* RL/ SN/ 2014-001/ M-497682-01-1 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/37	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/38	Betson, S.	2014	*Independent Laboratory Validation (ILV) of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLCMS/MS* RL/ SN/ 2014-001/ M-497682-01-1 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/39	Schulte, G.; Diehl, P.	2002	*Validation of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLC-MS/MS* MR-13/101, M-479926-01 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/40	Betson, S.	2014	*Independent Laboratory Validation (ILV) of the analytical method 01392 for the determination of the relevant ethofumesate metabolites in plant matrices by HPLCMS/MS* RL/ SN/ 2014-001/ M-497682-01-1 GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/41	Jooß S., 2012	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 5.1.2/42	Schlewitz, P.	2013	*INDEPENDENT LABORATORY VALIDATION OF AN ANALYTICAL METHOD FOR THE ANALYSIS OF ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC 20645 IN FOODSTUFFS OF ANIMAL ORIGIN* *R B1218* *Anadiag S.A., Haguenau, France* *GLP- Yes* *Unpublished*	N	UPL
KCP 5.1.2/43	Jooß S., 2012	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/44	Schlewitz, P.	2013	*INDEPENDENT LABORATORY VALIDATION OF AN ANALYTICAL METHOD FOR THE ANALYSIS OF ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC 20645 IN FOODSTUFFS OF ANIMAL ORIGIN* *R B1218* *Anadiag S.A., Haguenau, France* *GLP- Yes* *Unpublished*	N	UPL
KCP 5.1.2/45	Jooß S., 2012	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/46	Schlewitz, P.	2013	*INDEPENDENT LABORATORY VALIDATION OF AN ANALYTICAL METHOD FOR THE ANALYSIS OF ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC 20645 IN FOODSTUFFS OF ANIMAL ORIGIN* *R B1218* *Anadiag S.A., Haguenau, France* *GLP- Yes* *Unpublished*	N	UPL

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 5.1.2/47	Jooß S., 2012	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/48	Schlewitz, P.	2013	*INDEPENDENT LABORATORY VALIDATION OF AN ANALYTICAL METHOD FOR THE ANALYSIS OF ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC 20645 IN FOODSTUFFS OF ANIMAL ORIGIN* *R B1218* *Anadiag S.A., Haguenau, France* *GLP- Yes* *Unpublished*	N	UPL
KCP 5.1.2/49	Jooß S., 2012	2012	*ETHOFUMESATE - VALIDATION OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF THE ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC20645 IN FOODSTUFFS OF ANIMAL ORIGIN* P 2371 G PTRL Europe, Ulm, Germany GLP- Yes Unpublished	N	UPL
KCP 5.1.2/50	Schlewitz, P.	2013	*INDEPENDENT LABORATORY VALIDATION OF AN ANALYTICAL METHOD FOR THE ANALYSIS OF ETHOFUMESATE AND ITS TWO METABOLITES NC 9607 AND NC 20645 IN FOODSTUFFS OF ANIMAL ORIGIN* *R B1218* *Anadiag S.A., Haguenau, France* *GLP- Yes* *Unpublished*	N	UPL
KCP 5.1.2/51	Brumhard, B.	2003	*Method 00806 for the determination of residues of Ethofumesate in soil by HPLCMS/MS* 00806 Bayer CropScience GLP- Yes Unpublished	N	Bayer CropScience
KCP 5.1.2/52	Schneider, E.	2000	*PR00/003 - Confirmation method for the determination of residues of ethofumesate in soil* OFC00004917 Dr.Krebs Analytik, Koeln, Germany GLP- Yes Unpublished	N	Adama (formerly Feinchemie Schwebda)

Data point	Author(s)	Year	**Title** **Company Report No.** **Source (where different from company)** **GLP or GEP status** **Published or not**	Vertebrate study Y/N	Owner
KCP 5.1.2/53	Krebber, R.; Braune, M	2013	*Analytical method 01387 for the determination of various pesticides in drinking and surface water by HPLCMS*/MS MR-13/085 Bayer CropScience, GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/54	Stanislowski, T.,	2013	*Independent laboratory validation of BCS analytical methods 01333 and 01387 for determination of various pesticides in surface water by Di-HPLC-MS/MS* P3117 G GLP- Yes Unpublished	N	Task Force Ethofumesate
KCP 5.1.2/55	Schneider, E.	2000	*PR00/002 - Validation of an analytical method for the determination of residues of ethofumesate in air - Monitoring method* OFC00004919 UCL GmbH, Koeln, Germany GLP- Yes Unpublished	N	TaskForce Ethofumesate

Appendix 2 Detailed evaluation of submitted analytical methods

A 2.1 Analytical methods for ethofumesate

No new residues studies are submitted. All relevant information can be found in the section B7.