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Document Title

Summary of the residues in or on treated products, food and feed for Mesosulfuron-methyl

Data Requirements

EU Regulation 1107/2009 & EU Regulation 283/2013
Document MCA
Section 6: Residues in or on treated products, food and feed

According to the guidance document, SANCO 10181/2013, for preparing dossiers for the approval of a chemical active substance

Date

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Bayer CropScience

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Version history

Date	Data points containing amendments or additions[1] and brief description	Document identifier and version number
February 2015	MCA 6.1; 6.3.1; 6.7.2; 6.9	

[1] It is suggested that applicants adopt a similar approach to showing revisions and version history as outlined in SANCO/10180/2013 Chapter 4 How to revise an Assessment Report

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CA 6 RESIDUES IN OR ON TREATED PRODUCTS, FOOD AND FEED

This document contains only summaries of studies, which were not available at the time of the first Annex I inclusion of mesosulfuron-methyl and were therefore not evaluated during the first EU review of this compound. In order to facilitate discrimination between new and original information, the old information is written in grey letters. All studies, which were already submitted by Bayer for the first Annex I inclusion, are contained in the Monograph, its Addenda and in the original (baseline) dossier provided by Bayer CropScience and are not summarised in this document.

Mesosulfuron-methyl (AE F130060) is an herbicidal active substance. In the original dossier, submitted to France in 2000, residue trial data supported the use on cereals. In this Approval Renewal ("AIR") dossier, only the "representative crop", cereals will be presented.

According to Article 12 of Regulation (EC) No 396/2005, the European Food Safety Authority (EFSA) has reviewed the Maximum Residue Levels (MRLs) currently established at European level for the pesticide active substance mesosulfuron. A reasoned opinion on the review of the existing maximum residue levels (MRLs) for iodosulfuron was published in EFSA Journal 2012; 10(11):2976.

Report:	KCA Section 6 /01; [redacted];2012;M-475539-01
Title:	Reasoned opinion on the review of the existing maximum residue levels (MRLs) for mesosulfuron according to Article 12 of Regulation (EC) No 396/2005
Report No:	M-475539-01-1
Document No:	M-475539-01-1
Guidelines:	**Article 12 of Regulation (EC) No 396/2005;not specified**
GLP/GEP:	**n.a.**

In this renewal dossier new studies have been submitted for several data points:

- KCA 6.1/02&03 –update of storage stability studies in wheat shoot and wheat straw have been performed to extend the storage period.
- KCA 6.3.1/06 to 08. New residue trials have been performed to further support the representative formulation

CA 6.1 Storage stability of residues

❖ **<u>Stability of residues during storage of samples</u>**

Original Annex II dossier

In the original Annex II dossier, the storage stability of mesosulfuron-methyl was described for cereal matrices (shoot, straw and grain). The results of the respective studies indicated that the compound is stable in deep-frozen samples over periods of 40 months in wheat grain and 24 months in wheat shoot and wheat straw. The analytes were found to be stable upon deep-freeze storage for the durations studied.

Studies submitted and evaluated for the first inclusion of mesosulfuron-methyl on Annex I:

Report:	[redacted]ü;[redacted];2000;M-198607-03; Amended: 2001-09-24
Title:	Stability of AE F130060 in wheat grain during deep freeze storage Code: AE F130060 Interim report
Report No:	C015808
Document No(s):	M-198607-03-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]5;[redacted];2000;M-198612-03
Title:	Stability of AE F130060 in wheat straw during deep freeze storage Mesosulfuron-methyl Code: AE F130060
Report No:	C028927
Document No:	M-198612-03-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]q;[redacted];2000;M-198617-03
Title:	Stability of AE F130060 in wheat shoot during deep freeze storage Mesosulfuron-methyl Code: AE F130060
Report No:	C028928
Document No:	M-198617-03-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]d;[redacted];2000;M-198407-01
Title:	Stability of AE F130060 in soil during deep freeze storage of 24 months Code: AE F130060
Report No:	C009366
Document No:	M-198407-01-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

"AIR3" process/ New studies submitted

Justification for including this report in this "AIR" dossier
Since Annex I inclusion, a new study has been generated with longer storage periods covered (40 months in wheat grain, shoot and wheat straw).

Table CA 6.1- 1 shows the maximum storage stability periods assessed.

Table CA 6.1- 1: Summary of storage stability of mesosulfuron-methyl (AE F130060) in cereal matrices

Active substance	Plant matrix	Stability	Reference
mesosulfuron-methyl	Wheat Shoot	Up to 40 months	M-198617-04-1
	Wheat Straw		M-198612-04-1
	Wheat Grain		M-216176-01-1

Report:	[redacted]u; [redacted];2003;M-216176-01
Title:	Stability of AE F130060 in wheat grain during deep freeze storage Mesosulfuron-methyl Code: AE F130060
Report No:	C028926
Document No:	M-216176-01-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Materials and Methods

The study was designed to determine the stability of residues of the herbicide mesosulfuron-methyl (AE F130060) in wheat grain during storage under deep freeze conditions for up to 40 months.
Samples of wheat grain were spiked with mesosulfuron-methyl (AE F130060) at 0.1 mg/kg and stored at -18 °C. Samples were removed from storage at intervals of up to 40 months for immediate residue analysis (in triplicate per interval).

Residues of AE F130060 were extracted from grain with acetonitrile/water with 0.02 mol/L triethylamine (4:1, v/v). After clean up by liquid/liquid extraction with hexane and acetonitrile/triethylamine and a solid phase extraction on a RP18 cartridge the quantity of AE F130060 was determined by LC-MS/MS.
Residues were calibrated against matrix-matched standards. To establish the calibration curve, matrix test solutions were injected into the LC-MS/MS.
To check the analytical method for efficiency, recovery experiments were run at 0.01 and 0.1 mg/kg in parallel with the analysis of the stored samples.

Findings

In the tables page 24-25 (annex IV) and 26-27 (annex V) "Procedural recovery efficiency", all the residue levels of apparent residue in control samples are not detectable.
In the following tables CA 6.1-2 to CA 6.1-4, residues results are expressed in mg/kg. The recovery rate of stored samples are recalculated by taking the residue level at time t0 as reference (without corrective factor).

Table CA 6.1- 2 : Annex IV, Procedural recovery efficiency (p24)

compound added /Matrix	Storage interval [months]	Lab code	fortification level [mg/kg]	apparent residue in control samples [mg/kg]	residues [mg/kg]	Reco-very [%]	mean recover y [%]	RSD [%]	n
AE F130060 grain	0	R001	0.010	nd	0.007	73			
		R002	0.010	nd	0.008	79	76	6	2
	1	R004	0.010	nd	0.007	72	72	-	1
	3	R007	0.010	nd	0.007	69	69	-	1
	6	R010	0.010	nd	0.009	89	89	-	1
	9	R013	0.010	nd	0.01	92	92	-	1
	13	R016	0.010	nd	0.008	78	78	-	1
	18	R019	0.010	nd	0.01	98	98	-	1
	24	R022	0.010	nd	0.009	90	90	-	1
	40	R025	0.010	nd	0.010	116	116	-	1

Table CA 6.1- 3 : Procedural recovery efficiency (p25)

compound added /Matrix	Storage interval [months]	Lab code	fortification level [mg/kg]	apparent residue in control samples [mg/kg]	residues [mg/kg]	Reco-very [%]	mean recover y [%]	RSD [%]	n
AE F130060 grain	0	R003	0.10	nd	0.09	91			
	1	R005	0.10	nd	0.07	72			
		R006	0.10	nd	0.07	74	73	2	2
	3	R008	0.10	nd	0.09	89			
		R009	0.10	nd	0.09	91	90	2	2
	6	R011	0.10	nd	0.08	76			
		R012	0.10	nd	0.07	74	75	2	2
	9	R014	0.10	nd	0.1	96			
		R015	0.10	nd	0.08	80	88	13	2
	13	R017	0.10	nd	0.09	85			
		R018	0.10	nd	0.09	88	87	2	2
	18	R020	0.10	nd	0.09	89			
		R021	0.10	nd	0.09	91	90	2	2
	24	R023	0.10	nd	0.1	98			
		R024	0.10	nd	0.09	93	96	4	2
	40	R026	0.10	nd	0.11	113			
		R027	0.10	nd	0.12	115	114	1	2

[c] during reducing to dryness, the sample foamed over

Table CA 6.1- 4 : Annex V- Recovery efficiency of the storage samples (p26-27)

compound added /Matrix	storage interval [months]	Lab code	fortification level [mg/kg]	recovered residues [mg/kg]	mean [mg/kg]	recovery [%]	mean recovery [%]	Day-0 normalised recovery [%]	RSD [%]	n
AE F130060 shoot	0	S001	0.10	0.09		92				
		S002	0.10	0.09		88				
		S003	0.10	0.09	0.09	87	89	100	3	3
	1	S004	0.10	0.08		75				
		S005	0.10	0.07		73				
		S006	0.10	0.08	0.08	76	75	85	2	3
	3	S007	0.10	0.08		82				
		S008	0.10	0.09		89				
		S009	0.10	0.09	0.09	90	87	96	5	3
	6	S010	0.10	0.07		72				
		S011	0.10	0.09		86				
		S012	0.10	0.07	0.08	70	76	85	11	3
	9	S013	0.10	0.09		92				

		S014	0.10	0.08		75				
		S015	0.10	0.08	0.08	75	81	93	12	3
	13	S016	0.10	0.10		96				
		S017	0.10	0.10		99				
		S018	0.10	0.08	0.09	83	93	104	9	3
	18	S019	0.10	0.09		93				
		S020	0.10	0.09		92				
		S021	0.10	0.00	0.09	0c	93	100	1	2
	24	S022	0.10	0.00		0c				
		S023	0.10	0.10		98				
		S024	0.10	0.09	0.10	85	92	106	10	2
	40	S025	0.10	0.12		118				
		S026	0.10	0.12		117				
		S027	0.10	0.11	0.12	111	115	130	3	3

[c] during reducing to dryness, the sample foamed over

day 0 normalised recovery= (average recovery / average recovery at day 0) X 100%

0c: value "0" was not used for the mean values, as the sample was not fortified with AE F130060.

For the procedural recovery efficiency, the overall mean recovery for AE F130060 was 88% with an RSD = 15%. The limit of quantification (LOQ) for AE F130060 was established at 0.01 mg/kg. No decline in residues could be detected for mesosulfuron-methyl in grain during the 40-month storage period. The recoveries of AE F130060 of the stored samples are summarised in Table CA 6.1- 5.

Table CA 6.1 - 5 Storage stability of mesosulfuron-methyl in wheat grain

Storage interval (months)	Procedural recovery [%]			Recovered residues in stored samples (a)				
				uncorrected				corrected
	individual		mean	individual			mean	
0	91		91	92	88	87	89	98
1	72	74	73	75	73	76	75	103
3	89	91	90	82	89	90	87	97
6	76	74	75	72	86	70	76	101
9	96	80	88	92	75	75	81	92
13	85	88	87	96	99	83	93	107
18	89	91	90	93	92		93	103
24	98	93	96	98	85		92	96
40	113	115	114	118	117	111	115	101

(a) For the correction, the mean of the procedural recovery samples that were fortified at the same level as the stored samples was utilised (0.1 mg/kg)

Conclusion

In samples of wheat grain, residues of mesosulfuron-methyl are stable during deep freeze storage at -18 °C for at least 40 months.

Report:	[redacted] 5; [redacted] ;2000;M-198612-04; Amended: 2003-01-27
Title:	Stability of AE F130060 in wheat straw during deep freeze storage Mesosulfuron-methyl Code: AE F130060
Report No:	C028927
Document No:	M-198612-04-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Materials and Methods

The study was designed to determine the stability of residues of mesosulfuron-methyl in samples of wheat straw spiked with mesosulfuron-methyl (AE F130060) at 0.5 mg/kg and stored at -18 °C. Samples were removed from storage at intervals of up to 40 months for immediate residue analysis (in triplicate per interval).

Residues of AE F130060 were extracted from straw with acetonitrile/water with 0.02 mol/L triethylamine (4:1, v/v). After clean up by liquid/liquid extraction with hexane and acetonitrile/triethylamine and liquid/liquid extraction with ethyl acetate/acetonitrile/formic acid (0.2 mol/L), AE F130060 was determined by LC-MS/MS. The determination of the residues was done with matrix-matched standards. To establish the calibration curve, matrix test solutions were injected into the LC-MS/MS. To check the analytical method for efficiency, recovery experiments were run at 0.05 and 0.5 mg/kg in parallel with the analysis of the stored samples.

Findings

In the tables page 24-25 (annex IV) and 26-27 (annex V) “Procedural recovery efficiency”, all the residue levels of apparent residue in control samples are not detectable.
In the following tables CA 6.1-6 to 6.1-8, residues results are expressed in mg/kg. The recovery rate of stored samples are recalculated by taking the residue level at time t0 as reference (without corrective factor).

Table CA 6.1- 6 : Annex IV- Procedural recovery efficiency (p24)

compound added /Matrix	Storage interval [months]	Lab code	fortification level [mg/kg]	apparent residue in control samples [mg/kg]	residues [mg/kg]	Reco-very [%]	mean recovery [%]	RSD [%]	n
AE F130060 straw	0	R001	0.050	nd	0.040	79			
		R002	0.050	nd	0.029	57	68	23	2
	1	R004	0.050	nd	0.029	58	58	-	1
	3	R007	0.050	nd	0.047	88	88	-	1
	6	R010	0.050	nd	0.035	70	70	-	1
	9	R013	0.050	nd	0.043	85	85	-	1
	13	R016	0.050	nd	0.050	103	103	-	1
	18	R019	0.050	nd	0.043	86	86	-	1
	24	R022	0.050	nd	0.050	102	102	-	1
	40	R025	0.050	nd	0.050	102	102	-	1

Table CA 6.1- 7 : Procedural recovery efficiency (p25)

compound added /Matrix	Storage interval [months]	Lab code	fortification level [mg/kg]	apparent residue in control samples [mg/kg]	residues [mg/kg]	Reco-very [%]	mean recover y [%]	RSD [%]	n
AE F130060 straw	0	R003	0.50	nd	0.21	42 c			
	1	R005	0.50	nd	0.35	69			
		R006	0.50	nd	0.34	68	69	1	2
	3	R008	0.50	nd	0.46	92			
		R009	0.50	nd	0.42	84	88	6	2
	6	R011	0.50	nd	0.38	75			
		R012	0.50	nd	0.36	72	74	3	2
	9	R014	0.50	nd	0.31	62			
		R015	0.50	nd	0.31	63	63	1	2
	13	R017	0.50	nd	0.45	89			
		R018	0.50	nd	0.47	95	92	5	2
	18	R020	0.50	nd	0.47	93			
		R021	0.50	nd	0.43	86	90	5	2
	24	R023	0.50	nd	0.42	83			
		R024	0.50	nd	0.48	96	92	7	2
	40	R026	0.50	nd	0.45	90			
		R027	0.50	nd	0.45	91	91	1	2

[c] during reducing to dryness, the sample foamed over

Table CA 6.1- 8 : Annex V- Recovery efficiency of the storage samples (p26-27)

compound added /Matrix	storage interval [months]	Lab code	fortification level [mg/kg]	recovered residues [mg/kg]	mean [mg/kg]	recovery [%]	mean recovery [%]	Day-0 normalised recovery [%]	RSD [%]	n
AE F130060 straw	0	S001	0.50	0.40		79				
		S002	0.50	0.41		82				
		S003	0.50	0.30	0.41	61 c	81	100	3	2
	0	S004	0.50	0.37		74				
		S005	0.50	0.38		76				
		S006	0.50	0.30	0.35	60	70	86	12	3
	1	S007	0.50	0.36		72				
		S008	0.50	0.40		81				
		S009	0.50	0.37	0.38	73	75	93	7	3
	3	S010	0.50	0.36		72				
		S011	0.50	0.50		100				
		S012	0.50	0.50	0.45	99	90	112	18	3
	6	S013	0.50	0.37		73				

		S014	0.50	0.54		108				
		S015	0.50	0.49	0.47	97	93	115	19	3
	9	S016	0.50	0.34		68				
		S017	0.50	0.35		70				
		S018	0.50	0.36	0.35	72	70	86	3	3
	13	S019	0.50	0.53		106				
		S020	0.50	0.52		103				
		S021	0.50	0.46	0.50	92	100	124	7	3
	18	S022	0.50	0.47		94				
		S023	0.50	0.46		93				
		S024	0.50	0.44	0.46	87	91	113	4	3
	24	S025	0.50	0.52		103				
		S026	0.50	0.50		100				
		S027	0.50	0.47	0.50	94	99	123	5	3
	40	S028	0.50	0.44		89				
		S029	0.50	0.48		97				
		S030	0.50	0.48	0.47	95	94	115	4	3

[c] during reducing to dryness, the sample foamed over
day 0 normalised recovery= (average recovery / average recovery at day 0) X 100%

The overall mean recovery for AE F130060 was 82% in straw with an RSD = 17%. The limit of quantification (LOQ) for AE F130060 was established at 0.05 mg/kg. No decline could be detected for mesosulfuron-methyl in straw during the 40-month storage period. The recoveries of the stored samples are given in Table CA 6.1 -9.

Table CA 6.1 -9: Storage stability of mesosulfuron-methyl in wheat straw

Storage interval (months)	Procedural recovery (a) [%]			Recovered residues in stored samples (a)				
				uncorrected				corrected
	individual		mean	individual			mean	
0	-- (b)			79	82	61(c)	81	--
0	69	68	69	74	76	60	70	101
1	69	68	69	72	81	73	75	107
3	92	84	88	72	100	99	90	102
6	75	72	74	73	108	97	93	126
9	62	63	63	68	70	72	70	111
13	89	95	92	106	103	92	100	109
18	93	86	90	94	93	87	91	101
24	87	96	92	103	100	94	99	108
40	90	91	91	89	97	95	94	103

(a) For the correction, the mean of the procedural recovery samples that were fortified at the same level as the stored samples was utilised (0.5 mg/kg).
(b) The procedural recovery sample (fortified level 0.5 mg/kg) was destroyed during work-up
(c) During reduction to dryness, the sample foamed over

Conclusion
In samples of wheat straw, residues of mesosulfuron-methyl are stable during deep freeze storage at -18 °C for at least 40 months.

Report:	[redacted]*;[redacted];2000;M-198617-04; Amended: 2003-01-27
Title:	Stability of AE F130060 in wheat shoot during deep freeze storage Mesosulfuron-methyl Code: AE F130060
Report No:	C028928
Document No:	M-198617-04-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Materials and Methods

The study was designed to determine the stability of residues of mesosulfuron-methyl (AE F130060) in wheat shoots during storage under deep freeze conditions for up to 40 months. Samples of wheat shoots were spiked with mesosulfuron-methyl (AE F130060) at 0.5 mg/kg and stored at -18 °C. Samples were removed from storage at intervals of up to 40 months for immediate residue analysis (in triplicate per interval).

Residues of AE F130060 were extracted with acetonitrile/water with 0.02 mol/L triethylamine (4:1, v/v) from shoot. After clean up by liquid/liquid extraction with hexane and acetonitrile/triethylamine and clean-up on a RP18 cartridge, AE F130060 was determined by LC-MS/MS.

Determination of residues was done using matrix-matched standards. To establish the calibration curve, matrix test solutions were injected into the LC-MS/MS.

To check the analytical method for efficiency, recovery experiments were run at 0.05 and 0.5 mg/kg in parallel with the analysis of the stored samples.

Findings

In the tables page 24-25 (annex IV) and 26-27 (annex V) "Procedural recovery efficiency", all the residue levels of apparent residue in control samples are not detectable.

In the following tables CA 6.1-10 to CA 6.1-12, residues results are expressed in mg/kg. The recovery rate of stored samples are recalculated by taking the residue level at time t0 as reference (without corrective factor).

Table CA 6.1- 10 : Annex IV- Procedural recovery efficiency (p24)

compound added /Matrix	Storage interval [months]	Lab code	fortification level [mg/kg]	apparent residue in control samples [mg/kg]	residues [mg/kg]	Recovery [%]	mean recovery [%]	RSD [%]	n
AE F130060 shoot	0	R001	0.050	nd	0.044	88			
		R002	0.050	nd	0.033	66	77	20	2
	1	R004	0.050	nd	0.025	49	49	-	1
	3	R007	0.050	nd	0.045	89	89	-	1
	6	R010	0.050	nd	0.015	30	30	-	1
	9	R013	0.050	nd	0.048	96	96	-	1
	13	R016	0.050	nd	0.041	83	83	-	1
	18	R019	0.050	nd	0.037	72	72	-	1
	24	R022	0.050	nd	0.047	93	93	-	1
	40	R025	0.050	nd	0.050	99	99	-	1

Table CA 6.1- 11 : Procedural recovery efficiency (p25)

compound added /Matrix	Storage interval [months]	Lab code	fortification level [mg/kg]	apparent residue in control samples [mg/kg]	residues [mg/kg]	Reco-very [%]	mean recover y [%]	RSD [%]	n
AE F130060 shoot	0	R003	0.50	nd	0.36	72	72		
	1	R005	0.50	nd	0.26	52			
		R006	0.50	nd	0.29	58	55	8	2
	3	R008	0.50	nd	0.4	80			
		R009	0.50	nd	0.4	79	80	1	2
	6	R011	0.50	nd	0.37	74			
		R012	0.50	nd	0.33	66	70	8	2
	9	R014	0.50	nd	0.39	78			
		R015	0.50	nd	0.44	88	83	9	2
	13	R017	0.50	nd	0.38	75			
		R018	0.50	nd	0.43	85	80	9	2
	18	R020	0.50	nd	0.27	55			
		R021	0.50	nd	0.34	68	62	15	2
	24	R023	0.50	nd	0.48	97			
		R024	0.50	nd	0.46	93	95	3	2
	40	R026	0.50	nd	0.47	93			
		R027	0.50	nd	0.49	98	96	4	2

[c] during reducing to dryness, the sample foamed over

Table CA 6.1- 12 : Annex V- Recovery efficiency of the storage samples (p26-27)

compound added /Matrix	storage interval [months]	Lab code	fortification level [mg/kg]	recovered residues [mg/kg]	mean [mg/kg]	recovery [%]	mean recovery [%]	Day-0 normalised recovery [%]	RSD [%]	n
AE F130060 shoot	0	S001	0.50	0.33		66				
		S002	0.50	0.35		70				
		S003	0.50	0.36	0.35	71	69	100	4	3
	1	S004	0.50	0.31		62				
		S005	0.50	0.33		66				
		S006	0.50	0.34	0.33	67	65	94	4	3
	3	S007	0.50	0.43		85				
		S008	0.50	0.43		86				
		S009	0.50	0.42	0.43	83	85	123	2	3
	6	S010	0.50	0.35		70				
		S011	0.50	0.37		74				
		S012	0.50	0.44	0.39	87	77	112	12	3
	9	S013	0.50	0.63		126				

		S014	0.50	0.42		83				
		S015	0.50	0.38	0.48	76	95	138	28	3
	13	S016	0.50	0.41		82				
		S017	0.50	0.44		87				
		S018	0.50	0.46	0.44	91	87	126	5	3
	18	S019	0.50	0.46		92				
		S020	0.50	0.50		99				
		S021	0.50	0.50	0.49	99	97	140	4	3
	24	S022	0.50	0.49		98				
		S023	0.50	0.48		95				
		S024	0.50	0.44	0.47	88	94	136	5	3
	40	S025	0.50	0.45		96				
		S026	0.50	0.50		99				
		S027	0.50	0.46	0.47	93	96	136	3	3

[c] during reducing to dryness, the sample foamed over

day 0 normalised recovery= (average recovery / average recovery at day 0) X 100%

The overall mean overall recovery for AE F130060 was 77% with an RSD = 23%. The limit of quantification (LOQ) for AE F130060 in shoot was established at 0.05 mg/kg. No decline could be detected for mesosulfuron-methyl in shoot during the 40-month storage period. The recoveries of AE F130060 storage samples are summarised in Table CA 6.1-13.

Table CA 6.1- 13: Storage stability of mesosulfuron-methyl in wheat shoots

Storage interval (months)	Procedural recovery [%]			Recovered residues in stored samples (a)				
				uncorrected				corrected
	individual		mean	individual			mean	
0	72		72	66	70	71	69	96
1	52	58	55	62	66	67	65	118
3	80	79	80	85	86	83	85	106
6	74	66	70	70	74	87	77	110
9	78	88	83	126	83	76	95	114
13	75	85	80	82	87	91	87	109
18	55	68	62	92	99	99	97	156
24	97	93	95	98	95	88	94	99
40	93	98	96	96	99	93	96	100

(a) For the correction, the mean of the procedural recovery samples that were fortified at the same level as the stored samples was utilised (0.5 mg/kg).

Conclusion

Residues of mesosulfuron-methyl, in samples of wheat shoot, are stable during deep freeze storage at – 18 °C for at least 40 months.

Overall conclusion

The storage stabilities of mesosulfuron-methyl were carried out in different cereal matrices (wheat shoot, straw and grain). The results of these studies demonstrate that the compounds are stable in the tested plant commodities for the tested periods. These cover the longest period of time for which

samples from supplementary field residue trials presented or summarised in this dossier were stored prior to analysis. These time periods are given in Table CA 6.1- 11.

Table CA 6.1- 14: Maximum storage time of the crop samples before analysis and maximum storage stability

Compound	Commodity	Duration covered	Maximum storage
Mesosulfuron-methyl	Wheat Grain	40 months	20.8 months (625 days)
	Wheat Straw		25.2 months (755 days)
	Wheat Shoot		23.2 months (696 days)

❖ **Stability of residues in samples extracts**

During the developpement of the method EMF 08/99-0 further renamed 00815 used for the analysis of the residue trials given in reports C009932 (KCA 6.3.1 /06), relevant information on the stability of residues in the final or any intermediate extracts was derived from the fortification experiments performed during sample analysis. Every analytical batch contained at least one freshly fortified sample for concurrent recovery determination. The extracts of the fortified samples and of the study samples were handled and stored in parallel. If the recoveries in the fortified samples are within acceptable ranges, the stability of the sample extracts is considered as sufficiently proven.

During the developpement of the method modification 00815/M001 (M-226888-01-1, KCA 4.2/16) used for the analysis of the residue trials given in reports RA-2677/03 and RA-2690/03, the stability of sulfonylureas (SU) in solvent (acetonitrile/aqueous triethylamine 0.02 mol/L (1/1, v/v); secondary standard solution: 0.005 mg/L of each SU) was tested. After nominal storage periods of 1, 2 and 4 months the aged standard solution was quantified against a freshly prepared standard solution. The aged standard solution was stored in a volumetric flask in a refrigerator at 4°C ± 3°C protected from light. All compounds tested are stable in solvent (acetonitrile/aqueous triethylamine 0.02 mol/L (1/1, v/v)) for at least two months. After a period of two months solutions containing the tested SU should be prepared freshly. After a period of four months, amidosulfuron, iodosulfuron-methyl and mesosulfuron-methyl declined up to 13%, compared to the mean of aged and freshly prepared standard solutions.

The stability of sulfonylureas (SU) in representative matrices was tested, e.g. flax (grain) and wheat (grain, green material) at the respective LOQ and the ten-fold LOQ levels. After initial analysis, the analytical solutions were stored in a refrigerator and reanalysed after 2 weeks. Storage was conducted at the same conditions as used for analytical solutions (in a refrigerator at 4°C ± 3°C). This investigation showed that the SU are stable in representative matrix solutions for at least two weeks. In general, the stability of the residues in analytical solutions during the whole analytical procedure is monitored by performing concurrent recovery experiments with each sample set.

During the development of the enforcement method 01360 (Report MR-13/007) for the determination of mesosulfuron-methyl and other sulfonylureas in samples from plant origin by HPLC-MS/MS, the stability in final plant extracts was checked for the tested sample materials over a period of 16 to 43 days (KCA 4.2/19 [redacted]M-455564-01-1) and it has also been checked during the Independent Lab Validation over a period of 3 to 13 days (KCA 4.2/20 [redacted]M-470160-01-1). The results are presented below and the studies are detailed in the Analytical Methods section.

Report:	[redacted]b; [redacted]; [redacted];2013;M-455564-01-1
Title:	Analytical method 01360 for the determination of amidosulfuron, metsulfuron-methyl, iodosulfuron-methyl-sodium, mesosulfuron-methyl, and foramsulfuron in samples from plant origin by HPLC-MS/MS
Report No:	MR-13/007
Document No:	M-455564-01-1
Guidelines:	**Regulation (EC) No 1107/2009 of the European Parliament and the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC** **Guidance document on residue analytical methods, SANCO/825/00/rev. 8.1, European Commission, Directorate General Health and Consumer Protection 16/11/2010** **US EPA Residue Chemistry Test Guideline OCSPP 860.1340: Residue Analytical Method** **OECD Guideline, ENV/JM/MONO (2007)17, Aug 13, 2007;not applicable**
GLP/GEP:	**yes**

Material and Methods

Stability of residues in sample extracts was studied in sugar beet body, sugar beet leaf, lemon fruit, oilseed rape and cereal straw (0.1 mg/kg). The following table shows the recoveries comparing initial day of analysis and analysis after storage of the final samples at 4°C ± 3°C under dark conditions over the given periods. To check the stability after freshly prepared matrix standards were prepared and analyzed together with the aged recovery samples.

Findings

Mesosulfuron-methyl was not stable for all matrices at the given conditions. In lemon fruit a significant decrease could be observed, in cereals straw an increase was observed, which can be a result of different matrix effects in fresh matrix standards compared to old recovery samples.

Table CA 6.1- 15: Stability of mesosulfuron-methyl in Plant Extracts, Quantifier Mass Transition

Sample Material	Fortification Level [mg/kg]		Recovery Rates [%]					Mean
Sugar beet, body	0.1	Day 0 (initial analysis)	98	98	105	102	102	
		43 days reanalyses	97	96	92	93	93	
		deviation day 0/43 days	1.0	2.0	12.4	8.8	8.8	6.6
Sugar beet, leaf	0.1	Day 0 (initial analysis)	89	96	99	99	97	
		43 days reanalyses	96	90	91	92	93	
		deviation day 0/43 days	7.9	6.3	8.1	7.1	4.1	6.7
Lemon, fruit	0.1	Day 0 (initial analysis)	96	99	102	98	104	
		16 days reanalyses	83	85	73	72	75	
		deviation day 0/16 days	13.5	14.1	28.4	26.5	27.9	22.1
Oilseed Rape	0.1	Day 0 (initial analysis)	99	100	101	96	96	
		38 days reanalyses	95	93	94	94	91	
		deviation day 0/38 days	4.0	7.0	6.9	2.1	5.2	5.1
Cereals Straw	0.1	Day 0 (initial analysis)	101	99	98	94	95	
		30 days reanalyses	172	162	174	156	160	
		deviation day 0/30 days	70.3	63.6	77.6	66.0	68.4	69.2

The results suggest that samples should be analysed as soon as possible after preparation, because not all analytes are stable in final plant extracts. This is not surprising when considering the hydrolytical data of sulfonylureas.

Report:	[redacted] g; [redacted] ;2013;M-470160-01-1
Title:	Independent lab validation of BCS method 01360 for the determination of residues of Amidosulfuron, Metsulfuron-methyl, Iodosulfuron-methyl-sodium, Mesosulfuron-methyl and Foramsulfuron in samples from plant origin by HPLC-MS/MS
Report No:	2013/0060/01
Document No(s):	M-470160-01-1
Guidelines:	**Regulation (EC) No 1107/2009 of the European Parliament and the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC** **Guidance document on residue analytical methods, SANCO/825/00/rev. 8.1, European Commission, Directorate General Health and Consumer Protection 16/11/2010** **US EPA Residue Chemistry Test Guideline OCSPP 860.1340: Residue Analytical Method** **OECD Guideline, ENV/JM/MONO (2007) 17, Aug 13, 2007**
GLP:	yes

Material and Methods

During the development of the Independent Lab Validation, the stability was tested after storage of the final samples in the dark at a temperature between 2 – 8°C over three to thirteen days. The following table shows the measurements comparing initial day of analysis and analysis after storage of the final samples over the given periods. Calibration was conducted with freshly prepared matrix standards at initial analysis and for analysis after storage.

Findings

Table CA 6.1- 16: Stability of mesosulfuron-methyl in Plant Extracts, Quantifier Mass Transition

Sample Material	Fortification Level [mg/kg]	Date of analysis	Concentration [ng/ml]			Mean deviation [%]*
Sugar beet, body	0.1	2013-08-28	10.40	10.20	9.75	6
		2013-09-10	10.30	10.80	11.00	
Sugar beet, leaf	0.1	2013-08-29	10.30	9.21	9.38	12
		2013-09-09	9.92	9.80	9.71	
Lemon, fruit	0.1	2013-09-06	9.04	8.74	9.03	69
		2013-09-09	2.94	2.65	2.84	
Oilseed Rape	0.1	2013-09-02	10.90	10.60	10.90	-70
		2013-09-09	3.28	3.23	3.14	
Cereals Straw	0.1	2013-09-04	7.22	7.57	7.38	23
		2013-09-09	9.17	9.52	8.62	

* Mean deviation [%] between initial analysis and days of reanalysis

Conclusion
Significant deviations between initial and re-analysis were observed especially for the matrices lemon fruit and oilseed rape. Therefore the analysis of the samples has to be conducted within 1 day.

CA 6.2 Metabolism, distribution and expression of residues

CA 6.2.1 Plants

Original Annex II dossier
In the original Annex II dossier, the behavior and metabolism of mesosulfuron-methyl was investigated in cereals only because mesosulfuron-methyl was not intended for use in other crops.
In these metabolism studies mesosulfuron-methyl was radiolabelled with ^{14}C in the 2-^{14}C-pyrimidyl position and in the U-^{14}C-phenyl position.

Studies submitted and evaluated for the first inclusion of mesosulfuron-methyl on Annex I:

Report:	[redacted]$;[redacted];[redacted];[redacted];[redacted];2000;M-197766-02; Amended: 2001-10-26
Title:	Metabolism in wheat (Triticum aestivum) following single and double treatment at a nominal application rate of 10 g a.s./ha each Code: (2-14C-pyrimidyl)-AE F130060
Report No:	C008761
Document No:	M-197766-02-1
Guidelines:	**BBA: IV 3-2; EU (=EEC): 1607/VI/97/rev.1; USEPA (=EPA): OPPTS 860.1300;Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]§;[redacted];[redacted];[redacted];2000;M-198861-01
Title:	Metabolism in wheat (Triticum aestivum) following single and double treatment at a nominal application rate of 30 g a.s./ha Each Code: (U-14C-phenyl)-AE F130060
Report No:	C009588
Document No:	M-198861-01-1
Guidelines:	**BBA: IV 3-2; EU (=EEC): Work. doc. 1607/VI/97/rev. 1; USEPA (=EPA): OPPTS 860.1300;Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]o;[redacted];2003;M-260002-01
Title:	Comparison of the two wheat metabolism studies with 14C-AE F130060
Report No:	M-260002-01-1
Document No:	M-260002-01-1
Guidelines:	**Not specified;Not specified**
GLP/GEP:	**n.a.**

The metabolism of mesosulfuron-methyl in wheat was investigated using both the U-phenyl-^{14}C-labelled and the 2-^{14}C-pyrimidyl-labelled active ingredients. The wheat plants were treated at a late tillering stage at rates between 10 g a.s./ha and 2 x 30 g a.s./ha. In order to avoid phytoxicity the compound was applied in a mixture with the safener mefenpyr-diethyl (1:3, parent: safener). The total radioactive residues at harvest were low, since even after treatment at the exaggerated rate of 2 x 30 g a.s./ha these residues did not exceed 0.0012 mg/kg in grain and 0.0457 mg/kg in straw. Besides the parent compound several metabolites were identified in straw. The same metabolites were detected in immature wheat plants, but with the parent compound accounting for a higher proportion of the total residue. Identification of the extractable residues in grain was not possible due to the extremely low concentrations. All the metabolites detected in wheat were also found in animal metabolism studies.

It was concluded that the submitted studies give sufficient information to propose a definition of the residue, in plant materials, as mesosulfuron-methyl.

CA 6.2.2 Poultry

Original Annex II dossier

Report:	[redacted]ö; [redacted]; [redacted];1999;M-192019-01
Title:	Poultry - Metabolism, distribution and nature of the residue on eggs and edible tissues Code: AE F130060
Report No:	C005417
Document No(s):	M-192019-01-1
Guidelines:	**EU (=EEC): 96/68; USEPA (=EPA): OPPTS 860.1300;Deviation: not specified**
GLP/GEP:	**yes**

"AIR3" process

Dietary burden calculation

Mesosulfuron-methyl is authorised on cereals which might be fed to poultry. The median and maximum dietary burdens were therefore calculated for different groups of livestock using the OECD model.

Table CA 6.2.2- 1: Input values for the dietary burden calculation

Commodity	Dietary burden	
	Input value (mg/kg)	Comment
Risk assessment residue definition: mesosulfuron-methyl		
Rye, triticale forage	0.05	Highest residue
Rye, triticale straw	0.05	Highest residue
Wheat forage	0.09	Highest residue
Wheat straw	0.06	Highest residue
Rye, triticale, wheat grain	0.01	Median residue

Table CA 6.2.2- 2: Results of the dietary burden calculation according to OECD model

	Residue level in total feed dry matter (mg/kg)	Residue intake (mk/kg bw/day)
Poultry broiler	0.008	0.001
Poultry – layer	0.044	0.003
Poultry - turkey	0.007	0.000

The calculated dietary burdens for different groups of poultry do not exceed the trigger value of 0.004 mg/kg bw/day.

Therefore, no poultry metabolism studies are required.

However, a poultry metabolism study was nevertheless conducted to satisfy formal requirements in the course of an anticipated registration of the active substance mesosulfuron-methyl in the USA. This

study was available at the time of submission of the original EU dossier and has therefore already been reviewed.

The metabolism of mesosulfuron-methyl was investigated in laying hens. U-^{14}C-phenyl-AE F130060 was orally administered at dose rates equivalent to 10 ppm (hens). Mesosulfuron-methyl was shown to be rapidly and efficiently excreted. The levels of radioactive residues in eggs and edible tissues were very low, thus indicating that there is no risk of accumulation of mesosulfuron-methyl residues in food of animal origin. The major identified residue component was parent mesosulfuron-methyl with several cleavage and hydroxylation metabolites usually being present in lower amounts.

CA 6.2.3 Lactating ruminants

Original Annex II dossier

Report:	[redacted]0; [redacted]; [redacted]-1999-M-192023-01
Title:	Ruminant - Metabolism, distribution and nature of the residues in milk and edible tissues Code: AE F130060
Report No:	C005418
Document No(s):	M-192023-01-1
Guidelines:	**EU (=EEC): 96/68; USEPA (=EPA): OPPTS 860.1300; Deviation not specified**
GLP/GEP:	**yes**

"AIR3" process

Dietary burden calculation

Mesosulfuron-methyl is authorised on cereals which might be fed to livestock. The median and maximum dietary burdens were therefore calculated for different groups of livestock using the OECD model.

Table CA 6.2.3- 3: Input values for the dietary burden calculation

Commodity	Dietary burden	
	Input value (mg/kg)	Comment
Risk assessment residue definition: mesosulfuron-methyl		
Rye, triticale forage	0.05	Highest residue
Rye, triticale straw	0.05	Highest residue
Wheat forage	0.09	Highest residue
Wheat straw	0.06	Highest residue
Rye, triticale, wheat grain	0.01	Median residue

Table CA 6.2.3- 4: Results of the dietary burden calculation according to OECD model

	Residue level in total feed dry matter (mg/kg)	Residue intake (mk/kg bw/day)
Cattle – beef	0.077	0.002
Cattle – dairy	0.077	0.003
Sheep – rams/ewes	0.149	0.005

Sheep - lambs	0.115	0.005
Swine – breeding	0.080	0.002
Swine – finishing	0.008	0.000

The calculated dietary burden is below the trigger value of 0.004 mg/kg bw/day for cattle and swine and for sheep rams/ewes and lambs slightly above at 0.005 mg/kg bw/day. Therefore, a livestock metabolism study is required. This study was already available at the time of submission of the original EU dossier and has therefore already been reviewed. It is shortly presented below.

The livestock metabolism of mesosulfuron-methyl was investigated in a lactating cow. U-^{14}C-phenyl-AE F130060 was orally administered at dose rates equivalent to 20.5 ppm (cow). Mesosulfuron-methyl was shown to be rapidly and efficiently excreted. The levels of radioactive residues in milk and edible tissues were very low, thus indicating that there is no risk of accumulation of mesosulfuron-methyl residues in food of animal origin. The major identified residue component was parent mesosulfuron-methyl, with several cleavage and hydroxylation metabolites usually being present in lower amounts.

CA 6.2.4 Pigs

A pig metabolism study was not conducted, since metabolism followed comparable pathways in all other tested species (rat, dog, hen and cow).

CA 6.2.5 Fish

Since no residues above 0.01 mg/kg were found in cereal grain and no accumulation is to be expected in tissues (log Pow < 3), the fish metabolism study is not required.

CA 6.3 Magnitude of residue trials in plants

Mesosulfuron-methyl (AE F130060) is a herbicidal active substance. In 2000, the original Annex II dossier was submitted to France. In that dossier, uses on cereals were supported with residue trial data. Some new studies have since been conducted with mesosulfuron-methyl-containing formulations for use in European cereals, which is the "safe use" crop supported in the AIR3 process.

CA 6.3.1 Cereals

Original Annex II dossier

Application takes place once per season in spring or autumn. The residue trials were made in spring in order to cover the shortest pre-harvest interval (PHI). The critical GAP for mesosulfuron-methyl consists of one treatment in cereal, in spring at a maximum rate of 15 g a.i./ha and at growth stages up to BBCH 32 (end of tillering, node 2 at least 2 cm above node 1). To increase its selectivity, the product contains the safener mefenpyr-diethyl (maximum rate of 45 g/L). The safener has no herbicidal activity; it decreases the sensitivity of the treated crop to the two sulfonylurea active substances allowing efficient weed control without phytotoxicity to the treated crop.

Studies submitted and evaluated for the first inclusion of mesosulfuron-methyl on Annex I:
A total of 17 residue trials have been submitted in the original dossier. All trials were performed with an oil flowable formulation, the representative formulation for the original Annex I inclusion review. The trial locations were spread over main growing areas of the EU Northern zone (8 trials) and EU Southern zone (9 trials) in order to cover different soil and climatic conditions.

Report:	[redacted]1;[redacted];[redacted];[redacted];2000;M-193491-01
Title:	Decline of residues in cereals European Union (northern zone) 1997 AE F130060 and AE F107892 (mefenpyr-diethyl) oil flowable 30 and 90 g/L Code: AE F130060 01 1K12 A201
Report No:	C006208
Document No:	M-193491-01-1
Guidelines:	**EU (=EEC): 7029/VI/95 rev.5 - 22/07/97;Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]<;[redacted];2000;M-195315-01
Title:	Residues at harvest in wheat European Union (northern zone) 1998 AE F130060 and mefenpyr-diethyl oil flowable 30 + 90 g/L Code: AE F130060 01 1K12 A701
Report No:	C007152
Document No:	M-195315-01-1
Guidelines:	**EU (=EEC): 7029/VI/95 rev.5 - 22/07/97;Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]1;[redacted];[redacted];[redacted];2000;M-193494-01
Title:	Decline of residues in cereals European Union (southern zone) 1997 AE F130060 and AE F107892 (mefenpyr-diethyl) oil flowable 30 and 90 g/L Code: AE F130060 01 1K12 A201
Report No:	C006209
Document No:	M-193494-01-1
Guidelines:	**EU (=EEC): 7029/VI/95 rev.5 - 22/07/97;Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]b;[redacted];[redacted];2000;M-197167-01
Title:	Residues at harvest in cereals European Union (southern zone) 1998 AE F130060 + mefenpyr-diethyl oil flowable 30 + 90 g/L Code: AE F130060 01 1K12 A701
Report No:	C008063
Document No:	M-197167-01-1
Guidelines:	**EU (=EEC): 7029/VI/95 rev.5 - 22/07/97;Deviation not specified**
GLP/GEP:	**yes**

"AIR3" process/ New studies submitted

Table CA 6.3.1- 17: Use pattern (GAPs) for the spray application of iodosulfuron-methyl-sodium containing formulations on cereals in Europe (Northern and Southern regions)

Crop	Member state or country	F / G or I	Formulation Conc. of as	Pests or group of pests controlled	Growth stage	Number	Water (L/ha)	Application (g as/ha)	PHI
Winter wheat	S-EU N-EU	F	Atlantis OD	Grassy and dicot weed species	BBCH 20-32 End of winter frost	1 per season	200-400	3 g IMS + 15 g MSM + 45 g MPR	Covered by normal vegetation period between last application and harvest

Supplementary trials:

The Residue Trial Tables can be found in the document below. They include the supplementary trials presented in this dossier in support of product Iodosulfuron-methyl-sodium + Mesosulfuron-methyl +Mefenpyr-diethyl OD 42.

Report:	[redacted];[redacted];2014;M-475643-01
Title:	Residue trial tables - Mesosulfuron-methyl - Annex I Renewal
Report No:	M-475643-01-1
Document No:	M-475643-01-1
Guidelines:	**EU Regulation 1107/2009 & EU Regulation 283/2013; Document MCA; Section 6: Residues in or on treated products, food and feed; According to the guidance document, SANCO 10181/2013, for preparing dossiers for the approval of a chemical active substance;not specified**
GLP/GEP:	**n.a.**

In 1999 and 2003, a total of 11 new trials was performed, 7 in Northern Europe and 4 in Southern Europe.

A water dispersible granule (AE F130060 02 WG13 A2) a non -aqueous and an oil dispersion formulation (AE F115008 06 OD04 A1) containing respectively 30 g/L mesosulfuron-methyl or 10 g/L mesosulfuron-methyl were applied. Mesosulfuron-methyl was applied to cereals (wheat, rye) at a maximum rate of 15 g a.s./ha in combination with the safener mefenpyr-diethyl (maximum rate of 45 g a.s/ha) with the exception of one trial at a rate of 16.5 g a.s./ha for mesosulfuron-methyl and 50 g a.s./ha for mefenpyr-diethyl. The applications were carried out at growth stage 32 (Node 2 at least 2 cm above node 1) to 39 (flag leaf stage) with the exception of two trials which were applied at growth stage 47 (flag leaf sheath opening) and 49 (first awns visible (in awned forms only)).

The formulations used in the residue trials are presented below:

Formulation name	Formulation type	Composition
AE F130060 02 WG13 A2*	WG13: Water dispersible granule	- 30 g/kg mesosulfuron-methyl, - 10 g/kg iodosulfuron-methyl-sodium, - 90 g/kg mefenpyr-diethyl
AE F115008 06 OD04 A1	OD42: oil dispersion formulation	- 10 g/L mesosulfuron-methyl-sodium, - 2 g/L iodosulfuron-methyl-sodium, - 30 g/L mefenpyr-diethyl

* An external adjuvant, Actirob B, Genapol = Biopower® or Mero® was used to improve the plant uptake of mesosulfuron-methyl

The number and distribution of residue trials are described in Table CA 6.3.1- 2.

Table CA 6.3.1- 18: Number and distribution of residue trials conducted per geographical region on cereals (wheat, triticale, rye)

Formulation	Climatic zone, Countries	Formulation type	Year / No. of trials	Study number / Reference No.
Europe North				
AE F130060 02 WG13 A2	Germany	WG13	1999 / 2	ER99ECN523 / M-199542-01-1 (b)
AE F130060 02 WG13 A2	Northern France	WG13	1999 / 1	ER99ECN523 / M-199542-01-1 (b)
AE F115008 06 OD04 A1	Germany	OD42	2003 / 1	RA-2677/03 / M-227133-02-1 (c)
AE F115008 06 OD04 A1	Sweden	OD42	2003 / 1	RA-2677/03 / M-227133-02-1 (c)
AE F115008 06 OD04 A1	United Kingdom	OD42	2003 / 1	RA-2677/03 / M-227133-02-1 (c)
AE F115008 06 OD04 A1	Northern France	OD42	2003 / 1	RA-2677/03 / M-227133-02-1 (c)
Europe South				
AE F130060 02 WG13 A2	France	WG13	1999 / 1	ER99ECN523 / M-199542-01-1 (b)
AE F115008 06 OD04 A1	Italy	OD42	2003 / 2	RA-2690/03 / M-227096-02-1 (c)
AE F115008 06 OD04 A1	France	OD42	2003 / 1	RA-2690/03 / M-227096-02-1 (c)

(b) Samples were analysed with the following analytical method: EM F08/99-0
(c) Samples were analysed with the following analytical method: 00815/M001

❖ **Comparability between the different formulations used in the supervised field trials**

To support the representative use, two types of formulations have been used: an OD (representative formulation) and a WG. No differences in terms of residues are expected applying the WG or the OD formulations. Actually, as an adjuvant (Actirob B, Genapol=Biopower® or Mero®) is added to the WG formulation as a tank mix, it is considered that the mixture applied is very close to an OD formulation.

❖ **Storage stability**

Storage stability studies were conducted in wheat grain, wheat straw and wheat shoot. These studies demonstrated stability of up to 40 months for these three matrices. Samples in the reported residue trials were kept for a maximum of 755 days (about 25 months). Therefore the analytical results are considered valid.

❖ **Northern Europe residue trials**

Report:	[redacted]0;[redacted];2000;M-199542-01
Title:	Decline of residues in wheat European Union Northern Zone and Southern France 1999 Iodosulfuron-methyl-sodium + mesosulfuron-methyl + mefenpyr-diethyl water dispersible granule 1 % + 3 % + 9 % Code: AE F130060 02 WG13 A202
Report No:	C009932
Document No:	M-199542-01-1
Guidelines:	**EU (=EEC): 7029/VI/95 rev.5 - 22/07/97;Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]ü;[redacted];2004;M-227133-02; Amended: 2007-01-16
Title:	Determination of residues of iodosulfuron-methyl-sodium, mesosulfuron-methyl-sodium and mefenpyr-diethyl in / on wheat following spray application of AE F115008 06 OD04 A1 (042 OD) in the field in Germany, Sweden, Great Britain, and Norther
Report No:	RA-2677/03
Document No(s):	M-227133-02-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Test system

A total of 7 trials (see Table CA 6.3.1- 2) was performed with two formulations: AE F130060 02 WG13 A2 (WG13: water dispersible granule) and AE F115008 06 OD04 A1 (OD42: oil dispersion formulation). Mesosulfuron-methyl was applied to cereals (wheat, rye) at a maximum rate of 15 g a.s./ha in combination with the safener mefenpyr-diethyl (maximum rate of 45 g a.s/ha) with the exception of one trial at a rate of 16.5 g a.s./ha for mesosulfuron-methyl and 50 g a.s./ha for mefenpyr-diethyl. The applications were carried out at growth stage 32 (Node 2 at least 2 cm above node 1) to 39 (flag leaf stage) with the exception of one trial which was applied at growth stage 49 (first awns visible (in awned forms only)). Samples for analysis were taken at the day of application (shoot) and at harvest (grain and straw). In some trials, shoot samples were taken at intermediate growth stages.

Storage times between extraction and sample analysis

- Report C009932, M-199542-01-1

For the analyte AE F130060, dates of sample work-up and dates of data acquisition (analysis) are given on pages 27-28 "Annex III for fortification samples – Data on work-up of extracts and recovery efficiencies", on pages 33-34 "Annex IV for control samples - Data on work-up of extracts and apparent residue levels" and on pages 43-46 "Annex V for treated samples – Data on work-up of extracts and residue levels".

Overall, considering all mentioned samples there is a timeframe of maximum 5 days between start of sample work-up and analysis.

- Report RA-2677/03; M-227133-02-1

Based on the raw data which can be made available upon request, the timeframe between date of last extraction and date of analysis is of maximum 5 days.

This period of 5 days is covered by the stability data obtained during the development of the method 00815/M001 (cf. CA 6.1 Stability of residues in samples extracts).

Findings

Detailed results are shown in Table CA 6.3.1- 3. Residues of parent mesosulfuron-methyl in shoots ranged between 0.15 mg/kg and 0.90 mg/kg at the day of application and declined to < 0.05 mg/kg by the second sampling (15 to 27 days after application). At harvest (50 to 103 days after application) residues in grain and straw were always less than the respective limits of quantification (grain: 0.01 mg/kg, straw: 0.05 mg/kg).

Mesosulfuron-methyl when applied to cereals according to GAP did not lead to residues of parent compounds in grain at or above the limit of quantification. Also, the type of adjuvant (study ER99ECN523: adjuvants tested = Actirob B, Mero and Genapol LRO= Biopower) or of formulation type (WG and OD) did not significantly influence at harvest the residue levels of mesosulfuron-methyl.

Table CA 6.3.1- 19: Residue data for mesosulfuron-methyl (AE F130060), Northern Europe

Study Trial No. [a] GLP Year	Crop Variety	Country	Application					Residues		
			FL	No	g/ha (a.s.)	g/hL (a.s.)	GS	Portion analysed	PHI (days)	AE F130060 (mg/kg)
ER99ECN523 (b) DEU0301-P2 DEU0301-P3 DEU0301-P4 GLP yes 1999	Wheat, soft Tambor	Germany [redacted] Europe, North	WG13 (1)	1	15.0	5.1	39	Shoot Shoot Straw Grain	0 21 100 100	0.38 – 0.46 <0.05 <0.05 <0.01
ER99ECN523 (b) DEU0501-P2 DEU0501-P3 DEU0501-P4 GLP yes 1999	Wheat, soft Triso	Germany [redacted] Europe, North	WG13 (1)	1	15.0	5.1	49	Shoot Shoot Straw Grain	0 21 50 50	0.27 - 0.31 <0.05 <0.05 <0.01
ER99ECN523 (b) FRA0101-P2 FRA0101-P3 FRA0101-P4 GLP yes 1999	Wheat, soft Bourbon	France [redacted] Europe, North	WG13 (1)	1	15.0	6.0	39	Shoot Shoot Straw Grain	0 15 85 85	0.23 - 0.24 <0.05 <0.05 <0.01
RA-2677/03 R2003 0638/7 GLP yes 2003	Wheat, Ritmo	Germany [redacted] North	OD42 (2)	1	15.0	5.0	39	Shoot Straw Grain	0 63 63	0.15 <0.05 <0.01
RA-2677/03 R2003 0495/1 GLP yes 2003	Wheat, Kris	Sweden [redacted] Europe, North	OD42 (2)	1	15.0	5.0	32	Shoot Straw Grain	0 85 85	0.90 <0.05 <0.01
RA-2677/03 R2003 0497/8 GLP yes 2003	Wheat, Consort	United Kingdom [redacted] Europe, North	OD42 (2)	1	16.5	5.1	32	Shoot Straw Grain	0 103 103	0.60 <0.05 <0.01
RA-2677/03 R2003 0498/6 GLP yes 2003	Wheat, Premie	France [redacted] Europe, North	OD42 (2)	1	15.0	5.0	32	Shoot Straw Grain	0 91 91	0.53 <0.05 <0.01

FL = formulation, PHI = pre-harvest interval
a Trial number as used in the Tier I tables,
b Each trial consisted of four treatments, an untreated control plot and three treated plots. The first of the treated plots received the formulation alone (P2), the second (P3) the formulation plus the surfactants Actirob B or Mero and the third (P4) the formulation plus the surfactant Genapol LRO.
(1) AE F130060 02 WG13 A2 (2) AE F115008 06 OD04 A1

During the sample analysis, recoveries in wheat shoot, wheat straw and wheat grain, were performed. The data is presented in Table CA 6.3.1- 4. These data demonstrate the method performance, accuracy, and robustness.

Table CA 6.3.1- 20: Recovery data for mesosulfuron-methyl (AE F130060) in cereals

Study GLP Year	Crop	Portion analysed	a.s./metabolite	n	Fortification level (mg/kg)		Recovery (%)		
					Min	Max	Individual values	Mean	RSD
ER99ECN523 GLP yes 1999	Wheat	shoot	mesosulfuron-methyl [a]	8	0.05	1.0	76 / 80 / 91 / 86 / 79 / 95 / 100 / 96	88	10
		straw	mesosulfuron-methyl [a]	6	0.05	0.50	128 / 82 / 114 / 88 / 85 / 111	101	19
		grain	mesosulfuron-methyl [a]	4	0.01	0.10	100 / 102 / 94 / 93	97	3
RA-2677/03 GLP yes 2003	Wheat	shoot	mesosulfuron-methyl [a]	15	0.05	0.50	92 / 92 / 95 / 91 / 93 / 91 / 94 / 94 / 91 / 92 / 100 / 105 / 102 / 98 / 101	96	5.5
		straw	mesosulfuron-methyl [a]	15	0.05	0.50	99 / 94 / 91 / 103 / 95 / 96 / 99 / 95 / 95 / 95 / 93 / 97 / 93 / 91 / 96	95	3.3
		grain	mesosulfuron-methyl [a]	15	0.01	0.10	97 / 97 / 103 / 100 / 97 / 100 / 93 / 93 / 105 / 103 / 96 / 95 / 95 / 100 / 94	98	3.9

a Final determination as: mesosulfuron-methyl; residues calculated as: mesosulfuron-methyl
b RSD = 21% outside target range (+/- 20%) due to 1 value out of 6, at 130%.

Southern Europe residue trials

Report:	[redacted];[redacted];2000;M-199542-01
Title:	Decline of residues in wheat European Union Northern Zone and Southern France 1999 Iodosulfuron-methyl-sodium + mesosulfuron-methyl + mefenpyr-diethyl water dispersible granule 1 % + 3 % + 9 % Code: AE F130060 02 WG13 A202
Report No:	C009932
Document No:	M-199542-01-1
Guidelines:	**EU (=EEC): 7029/VI/95 rev.5 - 22/07/97;Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted];[redacted];2004;M-227133-02; Amended: 2007-01-16
Title:	Determination of residues of iodosulfuron-methyl-sodium, mesosulfuron-methyl-sodium and mefenpyr-diethyl in / on wheat following spray application of AE F115008 06 OD04 A1 (042 OD) in the field in Italy and Southern France
Report No:	RA-2690/03
Document No:	M-227096-02-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**yes**

Test system

A total of 4 trials (see Table CA 6.3.1- 5) was performed with the following formulations: 1 trial with AE F130060 02 WG13 A2 (WG13) + adjuvant and 3 trials with AE F115008 06 OD04 A1 (OD42). Mesosulfuron-methyl was applied to cereals (wheat, triticale) at a rate of 15 g a.s./ha in combination with the safener mefenpyr-diethyl (rate of 45 g a.s/ha). The applications were carried out at growth stage 39 (flag leaf stage), 33 (Node 3 at least 2 cm above node 2), 37 (flag leaf just visible, still rolled) and 49 (first awns visible (in awned forms only). Samples for analysis were taken at the day of application (shoot) and at harvest (grain and straw). In one trial shoot samples were taken at intermediate growth stages.

Storage times between extraction and sample analysis

- Report C009932

For the analyte mesosulfuron-methyl (AE F130060), dates of sample work-up and dates of data acquisition (analysis) are given on pages 27-28 "Annex III for fortification samples – Data on work-up of extracts and recovery efficiencies", on pages 33-34 "Annex IV for control samples – Data on work-up of extracts and apparent residue levels" and on pages 43-46 "Annex V for treated samples – Data on work-up of extracts and residue levels".

Overall, considering all analysed samples there is a timeframe of maximum 5 days between start of sample work-up and analysis.

- Report RA-2690/02; M-227096-02-1

Based on the raw data which can be made available upon request, the timeframe between date of last extraction and date of analysis is of maximum 6 days.

This period of 5 or 6 days is covered by the stability data obtained during the development of the method 00815/M001 (cf. CA 6.1 Stability of residues in samples extracts).

Findings

Please refer to Table CA 6.3.1- 5 for detailed results. Residues of parent mesosulfuron-methyl in shoots ranged between 0.27 mg/kg and 0.66 mg/kg at the day of application. At harvest (48 to 58 days after application) residues were always less than the limit of quantification in the grain (0.01 mg/kg) and ranged between <0.05 and 0.06 mg/kg in the straw (LOQ=0.05 mg/kg).

Mesosulfuron-methyl when applied to cereals according to GAP did not lead to residues in wheat grain of parent compound at or above the limit of quantification.

Table CA 6.3.1- 21: Residue data for mesosulfuron-methyl (AE F130060), Southern Europe

Study Trial No. [a] GLP Year	Crop Variety	Country	Application FL	No	g/ha (a.s.)	g/hL (a.s.)	GS	Residues Portion analysed	PHI (days)	AE F130060 (mg/kg)
ER99ECN523 (b) FRA0301-P2 FRA0301-P3 GLP yes 1999	Wheat, soft Soissons	France [redacted] Europe, South	WG 13 (1)	1	15.0	6.0	39	Shoot Shoot Straw Grain	0 16 56 56	0.22 - 0.34 <0.05 <0.05 <0.01
RA-2690/03 R 2003 0499/4 GLP yes 2003	Wheat, hard Creso	Italy I-[redacted] Europe, South	OD 42 (2)	1	15.0	5.0	33	Shoot Straw Grain	0 58 58	0.43 0.06 <0.01
RA-2690/03 R 2003 0500/1 GLP yes 2003	Wheat, hard Creso	Italy I-[redacted] Europe, South	OD 42 (2)	1	15.0	5.0	37	Shoot Straw Grain	0 58 58	0.66 0.05 <0.01
RA-2690/03 R 2003 0503/6 GLP yes 2003	Wheat, hard Apache	France F-[redacted] Europe, South	OD 42 (2)	1	15.0	6.0	49	Shoot Straw Grain	0 48 48	0.30 <0.05 <0.01

FL = formulation, PHI = pre-harvest interval
a Trial number as used in the Dier I tables
b This trial consisted of three treatments, an untreated control plot and two treated plots. The first of the treated plots received the formulation alone (P2), the second (P3) the formulation plus the surfactants Actirob B or Mero.
(1) AE F130060 02 WG13 A2 (2) AE F115008 06 OD04 A1

During the sample analysis, recoveries in wheat shoot, wheat straw, and wheat grain, were performed. The data are presented in Table CA 6.3.1- 6. These data demonstrate the method performance, accuracy, and robustness.

Table CA 6.3.1- 6: Recovery data for mesosulfuron-methyl (AE F130060) in cereals

Study GLP Year	Crop	Portion analysed	a.s./metabolite	n	Fortification level (mg/kg)		Recovery (%)		
					Min	Max	Individual values	Mean	RSD
ER99ECN523 GLP yes 1999	Wheat	shoot	mesosulfuron-methyl [a]	8	0.05	1.0	76 / 80 / 91 / 86 / 79 / 95 / 100 / 96	88	10
		straw	mesosulfuron-methyl [a]	6	0.05	0.50	128 / 82 / 114 / 88 / 85 / 111	101	19
		grain	mesosulfuron-methyl [a]	4	0.01	0.10	100 / 102 / 94 / 93	97	5
RA-2690/03 GLP yes 2002/2003	Wheat	shoot	mesosulfuron-methyl [a]	15	0.05	0.50	93 / 92 / 95 / 91 / 93 / 91 / 94 / 94 / 91 / 92 / 106 / 105 / 102 / 98 / 101	96	5.5
		straw	mesosulfuron-methyl [a]	15	0.05	0.50	99 / 94 / 91 / 103 / 95 / 96 / 99 / 95 / 95 / 95 / 93 / 97 / 93 / 91 / 96	95	3.3
		grain	mesosulfuron-methyl	15	0.01	0.10	97 / 97 / 103 / 100 / 97 / 100 / 93 / 93 / 105 / 103 / 96 / 95 / 95 / 100 / 94	98	3.9

[a] Final determination as: mesosulfuron-methyl; residues calculated as: mesosulfuron-methyl

❖ **Conclusions**

In addition to the 17 trials included in the original AII dossier showing residues of mesosulfuron-methyl at harvest always lower than the respective LOQ (LOQ grain: 0.01 mg/kg and LOQ straw: 0.05 mg/kg), news trials have been performed that support the Atlantis OD product.

Northern Europe: Seven residue trials were conducted with two different formulation types (WG13 and OD42). The formulations were applied once at growth stage BBCH 32 to 49. Residues of mesosulfuron-methyl in shoot ranged from 0.15 to 0.90 mg/kg at the day of the application and declined to < 0.05 mg/kg by the second sampling (15 to 27 days after application). At harvest, residues of mesosulfuron-methyl at harvest were always lower than the respective LOQ in both wheat grain and wheat straw (LOQ grain: 0.01 mg/kg and LOQ straw: 0.05 mg/kg).

Southern Europe: Four residue trials were conducted with two different formulation types (WG13, and OD42). The formulations were applied once at growth stage BBCH 33 to 49. Residues of parent mesosulfuron-methyl in shoots ranged between 0.27 mg/kg and 0.66 mg/kg at the day of application. At harvest (48 to 58 days after application) residues were always less than the limit of quantification in the grain (0.01 mg/kg) and ranged between < 0.05 and 0.06 mg/kg in the straw (LOQ=0.05 mg/kg).
In wheat grain at harvest, residues of mesosulfuron-methyl were always lower than the respective LOQ (LOQ grain: 0.01 mg/kg).

Results were comparable between Northern and Southern Europe. Residues of mesosulfuron-methyl in cereal grain, at harvest, were always lower than the limit of quantification.

According to Article 12 of Regulation (EC) No 396/2005, the European Food Safety Authority (EFSA) has reviewed the Maximum Residue Levels (MRLs) currently established at European level for the pesticide active substance iodosulfuron-methyl-sodium. A reasoned Opinion on the review of the existing maximum residue levels (MRLs) for mesosulfuron-methyl was published in EFSA Journal 2012; 10(11):2976. To assess the magnitude of mesosulfuron-methyl residues resulting from critical GAPs chosen by EFSA (1x 20 g as/Ha; GS 32; PHI of 90 days), all trials reported in the PROFile including residue trials evaluated in the framework of the peer review were considered.A sufficient number of trials complying with the GAP was reported by the RMS France for the Northern outdoor GAP on wheat and rye. The number of residue trials supporting the Southern outdoor GAP was not compliant with the data requirements for these crops. However, the reduced number of residue trials was considered acceptable in this case because all results were below the LOQ and a no residue situation is expected in grains.

CA 6.4 Feeding studies

The cereal commodities likely to be fed to livestock consist of grain (which is fed to poultry, pigs and cattle) and straw (which is fed to cattle only). Use of mesosulfuron-methyl in cereals according to the recommended GAP is not likely to result in significant residues (i.e. > 0.1 mg/kg) in any of these commodities.
Furthermore, livestock metabolism studies showed that mesosulfuron-methyl do not accumulate in eggs, milk or edible tissues. Therefore, no livestock feeding studies to investigate the residue levels of mesosulfuron-methyl in food of animal origin are required.

CA 6.4.1 Poultry

No study was performed.

CA 6.4.2 Ruminants

No study was performed.

CA 6.4.3 Pigs

No study was performed.

CA 6.4.4 Fish

No study was performed.

CA 6.5 Effects of processing

Metabolism studies conducted with mesosulfuron-methyl at an application rate between 10 g and 2x30 g a.s./ha in cereals showed residues of 0.001 mg/kg TRR (total radioactive residue) in the edible agricultural commodity grain.

In the field residue trials, no residues of mesosulfuron-methyl above 0.01 mg/kg (Limit of quantification) were found in grain at the application rate of 15 g a.s./ha. Consequently, no residues of the active substance are to be expected at levels above the trigger value of 0.1 mg/kg under normal field conditions.

Furthermore mesosulfuron-methyl is of low toxicity.

Therefore, no processing study is required to investigate the residues of mesosulfuron-methyl in processed cereal commodities.

CA 6.5.1 Nature of the residue

No studies on the effects of processing on the nature of the residue were performed.

CA 6.5.2 Distribution of the residue in peel and pulp

Not relevant for cereals.

CA 6.5.3 Magnitude of residues in processed commodities

No studies were performed.

CA 6.6 Residues in rotational crops

Original Annex II dossier

All data submitted for metabolism in plants and succeeding/rotational crops were considered to be acceptable during the EU review. In the Inclusion Directive and the Review Report there were no areas of potential concern highlighted for plant metabolism.
According to soil degradation studies, DT90 values of mesosulfuron are expected to be higher than 100 days.

Table CA 6.6-1: Summary of available metabolism studies in rotational crops

Crop group	Crop	Application and sampling details					
		Label position	Method F or G [a]	Rate (kg a.s./ha)	Sowing intervals (DAT)	Harvest intervals (DAT)	Remarks
Leafy vegetables	Spinach	^{14}C-pyrimidyl and ^{14}C-phenyl	Bare soil, F	0.0015	32, 120, 365	162, 411	32 DAT spinach not harvested
Root and tuber vegetables	Carrot					139, 237, 487	-
Cereals	Wheat					131, 238, 482	-

(a): outdoor/field application (F) or glasshouse/protected/indoor application (G)

Confined crop rotation studies for mesosulfuron-methyl were performed using both the U-phenyl-^{14}C-labelled and the 2-^{14}C-pyrimidyl-labelled active ingredients. In both cases the substance was applied to bare soil at a rate of 15 g a.s./ha, with wheat, carrots, and spinach being planted 1, 4, and 12 months later. As expected, the spinach of the first re-cropping did not grow normally due to phytotoxicity. The total radioactive residues in the edible part of all the plants that did develop were extremely low (maximum of 0.0016 mg/kg in wheat grain of the first re-cropping). The residues in the non-edible part of the plants were also low. The total residues in straw did not exceed 0.0219 mg/kg (in wheat of the first re-cropping). No residues at or above the limit of quantification (< 0.01 mg/kg) can be expected in succeeding crops.

CA 6.6.1 Metabolism in rotational crops

A reasoned opinion on the review of the existing maximum residue levels (MRLs) for mesosulfuron-methyl was published in EFSA Journal 2012; 10(11):2976. Based on the rotational field crop studies, considering that it was carried out on a bare soil, mesosulfuron-methyl residue levels in rotational commodities are not expected to exceed 0.01 mg/kg, provided that mesosulfuron is applied in compliance with the GAPs reported in Document D-1 of this dossier.

Specific plant back restrictions related to the use of mesosulfuron-methyl are therefore not required.

CA 6.6.2 Magnitude of residues in rotational crops

Studies submitted and evaluated for the first inclusion of mesosulfuron-methyl on Annex I:

Report:	[redacted];2000;M-197310-01
Title:	Residues in rotated crops sown 31 days after application to bare soil at a rate of 15 g a.s./ha (2-14C-pyrimidyl)-AE F130060
Report No:	C008238
Document No:	M-197310-01-1
Guidelines:	**BBA: Part IV 3-10 (1988); EU (=EEC): Work.Doc.Rev. 2 (1997); USEPA (=EPA): N, § 166-1 (1982) (now OPPTS 860.1850);Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted];2000;M-197312-01
Title:	Residues in rotated crops sown 31 days after application to bare soil at a rate of 15 g a.s./ha (U-14C-phenyl)-AE F130060
Report No:	C008240
Document No:	M-197312-01-1
Guidelines:	**BBA: Part IV 3-10 (1988); EU (=EEC): Work.Doc.Rev. 2 (1997); USEPA (=EPA): N, § 166-1 (1982) (now OPPTS 860.1850);Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]1;[redacted];[redacted];2000;M-197314-01
Title:	Residues in rotated crops sown 4 months after application to bare soil at a rate of 15 g a.s./ha Code: (2-14C-pyrimidyl)-AE F130060
Report No:	C008242
Document No:	M-197314-01-1
Guidelines:	**BBA: Part IV, 3-10 (1988); EU (=EEC): Work. Doc. Rev. 2 (1997); USEPA (=EPA): N § 165-1 (1982), OPPTS 860.1850 (1996);Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]7;[redacted];[redacted];2000;M-197315-01
Title:	Residues in rotated crops sown 4 months after application to bare soil at a rate of 15 g a.s./ha Code: (U-14C-phenyl)-AE F130060
Report No:	C008243
Document No:	M-197315-01-1
Guidelines:	**BBA: Part IV, 3-10 (1988); EU (=EEC): Work. Doc. Rev. 2 (1997); USEPA (=EPA): N § 165-1 (1982), OPPTS 860.1850 (1996);Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted]0;[redacted];[redacted];2000;M-197311-01
Title:	Residues in rotated crops sown 1 year after application to bare soil at a rate of 15 g a.s./ha Code: (2-14C-pyrimidyl)-AE F130060
Report No:	C008239
Document No:	M-197311-01-1
Guidelines:	**BBA: Part IV, 3-10 (1988); EU (=EEC): work. Doc. Rev. 2 (1997); USEPA (=EPA): N § 165-1 (1982), OPPTS 860.1850 (1996);Deviation not specified**
GLP/GEP:	**yes**

Report:	[redacted];[redacted];[redacted];2000;M-197313-01
Title:	Residues in rotated crops sown 1 year after application to bare soil at a rate of 15 g a.s./ha Code: (U-14C-phenyl)-AE F130060
Report No:	C008241
Document No:	M-197313-01-1
Guidelines:	**BBA: Part IV, 3-10 (1988); EU (=EEC): Work. Doc. Rev. 2 (1997); USEPA (=EPA): N § 165-1 (1982), OPPTS 860.1850 (1996);Deviation not specified**
GLP/GEP:	**yes**

CA 6.7 Proposed residue definitions and maximum residue levels

CA 6.7.1 Proposed residue definitions

According to Article 12 of Regulation (EC) No 396/2005, the European Food Safety Authority (EFSA) has reviewed the Maximum Residue Levels (MRLs) currently established at European level for the pesticide active substance mesosulfuron-methyl. A reasoned opinion on the review of the existing maximum residue levels (MRLs) for mesosulfuron-methyl was published in EFSA Journal 2012; 10(11):2976.

Table CA 6.7.1- 1: Current proposed residue definitions

Matrices	Residue definition		Reference
Food of plant origin: cereals	Risk assessment and Monitoring	mesosulfuron-methyl	EFSA Journal 2012; 10(11):2976
Food of animal origin	Risk assessment and Monitoring	None, as no residue anticipated	

CA 6.7.2 Proposed MRLs and justification of the acceptability of the levels proposed

According to the EFSA review, MRLs for the animal commodities are not required because animals are not expected to be exposed to significant levels of residues.

Table CA 6.7.2- 1: Current MRLs established by EFSA

Commodity	MRL (mg/kg)	Reference
Rye grain	0.01*	EFSA Journal 2012; 10(11):2976
Wheat grain	0.01*	

* indicates that the MRL is set at the limit of analytical quantification.

MRLs for mesosulfuron-methyl have been published in the Commission Regulation (EU) No 289/2014 of 21 March 2014. An MRL of 0.01* mg/kg has been set for cereal grains.

CA 6.7.3 Proposed MRLs and justification of the acceptability of the levels proposed for imported products (import tolerance)

No import tolerances have been proposed in the EU or applied for in any EU Member State.

CA 6.8 Proposed safety intervals

It is not necessary to define a pre-harvest interval. Instead, the pre-harvest interval is given by the growing period between the growth stage at treatment and harvest.

The product is not intended for use in areas where livestock animals may be grazed. Therefore no re-entry period needs to be proposed.

The product is applied early post-emergence on very young plants. Thus, dermal exposure to persons entering a treated field is negligible. No use in buildings is intended. Therefore no re-entry period needs to be proposed for man.

Handling of treated cereals is generally not required before harvest, which is always done mechanically. Therefore there is no need to define a waiting period between application and handling of treated products.

The use of mesosulfuron-methyl in cereals is not likely to result in significant uptake of residues by succeeding crops. Thus, it is not necessary to set a waiting period between last application and sowing or planting succeeding crops.

CA 6.9 Estimation of the potential and actual exposure through diet and other sources

Original Annex II dossier

The Acceptable Daily Intake (ADI) of 1.0 mg/kg body weight was established based on the mouse 24-month oncogenicity study with a safety factor of 100 (SANCO/10298/2003 (25 June 2004)).

Report:	[redacted]q;[redacted];2000;M-198999-01
Title:	TMDI estimation of dietary intake of AE F130060 from residues in cereals (Statement) Mesosulfuron-methyl Code: AE F130060
Report No:	C009656
Document No:	M-198999-01-1
Guidelines:	**Deviation not specified**
GLP/GEP:	**no**

The report C009656 is part of the original Annex II dossier and corresponds to a risk calculation from 2000. The updated calculation done in the AIR dossier is appropriately based on the current MRL of 0.01* mg/kg published in Commission Regulation No 289/2014.

AIR3 process

In order to evaluate the potential chronic exposure to mesosulfuron-methyl residues through the diet, the Theoretical Maximum Dietary Intakes (TMDI) was estimated using the EFSA PRIMo model (revision 2). For the evaluation of the chronic exposure the model uses 5 WHO diets relevant to the EU and 22 national diets from 13 different EU Member States.

TMDI calculation was performed using the MRLs given in Table CA 6.9-1.

Table CA 6.9- 5 : Input values used for TMDI calculation of mesosulfuron-methyl

Commodity	Chronic risk assessment		
	Input value (mg/kg)	Comment	Origin of the MRL
Rye grain	0.01*	Rye grain	EFSA Journal 2012; 10(11):2976
Wheat grain	0.01*	Wheat grain	

As shown in Table CA 6.9- 2, the highest TMDI calculated for mesosulfuron-methyl represented less than 1% of the ADI, which denotes considerable margins of safety.

Table CA 6.9- 6: Highest TMDI calculated for mesosulfuron-methyl according to the EFSA model

Compound	EFSA model	Highest contributor	
	Highest TMDI (%ADI)	MS diet	Commodity / group of commodities
Mesosulfuron-methyl	0.01	WHO Cluster diet B	cereals

Acute Reference Dose (ARfD) and Dietary Exposure Calculation

No ARfD was allocated. On the basis of its toxicological profile, mesosulfuron-methyl is considered unlikely to present an acute hazard.

CA 6.10 Other studies

The summary for the active substance sufficiently addresses aspects of the residue situation. Therefore, other special studies are not needed.

CA 6.10.1 Effect on the residue level in pollen and bee products

Mesosulfuron-methyl is applied on cereals early in the growing season (latest at BBCH 32) and no residues are expected in pollen and bee products.