FINAL REGISTRATION REPORT

Part B

Section 6

Mammalian Toxicology

Detailed summary of the risk assessment

Product code: SHA 4300 A

Product name(s): MESOTRIONE 10% SC

Chemical active substance:

Mesotrione, 100 g/L

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

Applicant: Sharda Cropchem España S.L.

Submission date: December 2018

Update date: December 2019

MS Finalisation date: 04/06/2024

Version history

When	What
December 2019	Updated by Applicant
February 2020	Dossier sent for evaluation
September 2023	zRMS finalised evaluation
November 2023	Updated by the Applicant
April 2024	Final version prepared by zRMS after Commenting period
June 2024	Final version prepared by zRMS after the second commenting period

Table of Contents

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

6 Mammalian Toxicology (KCP 7)

6.1 Summary

Table 6.1-1: Information on SHA 4300 A / Mesotrione 10% SC *

Product name and code	SHA 4300 A / Mesotrione 10% SC
Formulation type	Suspension Concentrate [SC]
Active substance(s) (incl. content)	Mesotrione; 100 g/L
Function	Herbicide
Product already evaluated as the 'representative formulation' during the approval of the active substance(s)	No
Product previously evaluated in another MS according to Uniform Principles	No

* Information on the detailed composition of SHA 4300 A / Mesotrione 10% SC can be found in the confidential dRR Part C.

Justified proposals for classification and labelling

According to the criteria given in Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008, the following classification and labelling with regard to toxicological data is proposed for the preparation:

Table 6.1-2: Justified proposals for classification and labelling for SHA 4300 A / Mesotrione 10% SC according to Regulation (EC) No 1272/2008

Hazard class(es), categories:	~~None~~ Reproductive toxicity 2
Hazard pictograms or Code(s) for hazard pictogram(s):	~~None~~ GHS08
Signal word:	~~none~~ Warning
Hazard statement(s):	~~None~~ H361d
Precautionary statement(s):	~~None~~ P201, P280, P308 + P313, P405, P501
Additional labelling phrases:	To avoid risks to man and the environment, comply with the instructions for use. [EUH401]
	Contains 1,2-benzisothiazolin-3-one. May produce an allergic reaction. [EUH208]

Table 6.1-3: Summary of risk assessment for operators, workers, bystanders and residents for SHA4300A / Mesotrione 10% SC

	Result	PPE / Risk mitigation measures
Operators	Acceptable	Work wear (arms, body and legs covered) M/L and A
Workers	Acceptable	Work wear (arms, body and legs covered)
Bystanders	Acceptable	None
Residents	Acceptable	None

No unacceptable risk for operator, worker, bystanders and residents was identified when the product is used as intended. No specific PPE is necessary.

A summary of the critical uses and the overall conclusion regarding exposure for operators, workers and bystanders/residents is presented in the following table.

Table 6.1-4 Critical uses and overall conclusion of exposure assessment

1	2	3	4	5	6	7	8	9	10			
Use-No.*	**Crops and situation (e.g. growth stage of crop)**	**F, Fn, Fpn G, Gn, Gpn or I ****	**Application**		**Application rate**		**PHI (d)**	**Remarks:** **(e.g. safener/synergist (L/ha))** **critical gap for operator, worker, bystander or resident exposure based on [Exposure model]**	**Acceptability of exposure assessment**			
			Method / Kind **(incl. application technique ***)**	**Max. number (min. interval between applications) a) per use b) per crop/ season**	**Max. application rate kg as/ha a) a.s. 1**	**Water L/ha min / max**			**Operator**	**Worker**	**Bystander**	**Residents**
1	Maize (BBCH 10-14)	F	Foliar spraying (TM)	a) 1 (1) b) 1 (1)	~~a) 0.150~~ a) 0.1	200 - 600	-	Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874				

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1

** F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

*** e.g. LC: low crops, HC: high crop, TM: tractor-mounted, HH: hand-held

Explanation for column 10 “Acceptability of exposure assessment”

A	Exposure acceptable without PPE / risk mitigation measures
R	Further refinement and/or risk mitigation measures required
N	Exposure not acceptable/ Evaluation not possible

Comments of zRMS:	No new calculations have been made for the lower dose (1 L product/ha). However, zRMS considers that all risk assessment and calculations done at dose 1.5 L/ha can be considered as the worst case which cover use at dose 1.0 L/ha.

6.2 Toxicological Information on Active Substance(s)

Information regarding classification of the active substances and on EU endpoints and critical areas of concern identified during the EU review are given in Table 6.2-1.

Table 6.2-1: Information on active substance(s)

	Mesotrione
Common Name	Mesotrione
CAS-No.	104206-82-8
Classification and proposed labelling	

	Mesotrione
With regard to toxicological endpoints (according to the criteria in Reg. 1272/2008, as amended)	~~Not classified~~ Reproductive toxicity 2; H361d STOT RE 2, H373 (eyes, nervous system)
Additional C&L proposal	-
Agreed EU endpoints	
AOEL systemic	0.005 mg/kg bw/d
Reference	SANTE/11654/2016, 23 March 2017
Conditions to take into account/critical areas of concern with regard to toxicology	
EFSA Conclusion for active substance	The review has identified several acceptable exposure scenarios for operators, workers, residents, bystanders and groundwater which require however to be confirmed for each plant protection product in accordance with the relevant sections.

6.3 Toxicological Evaluation of Plant Protection Product

A summary of the toxicological evaluation for SHA 4300 A/Mesotrione 10% SC is given in the following tables. Full summaries of studies on the product that have not been previously considered within an EU peer review process are described in detail in Appendix 2.

Table 6.3-1: Summary of evaluation of the studies on acute toxicity including irritancy and skin sensitisation for SHA 4300 A/Mesotrione 10% SC

Type of test, species, model system (Guideline)	**Result**	**Acceptability**	**Classification (acc. to the criteria in Reg. 1272/2008)**	**Reference**
LD_{50} oral, rat (OECD 423)	5000 mg/kg bw	Yes	None	C.C. Magar, 2017
LD_{50} dermal, rat (OECD 402)	> 2000 mg/kg bw	Yes	None	C.C. Magar, 2017
LC_{50} inhalation, rat (OECD 403)	> 4.37 mg/L air	Yes	None	J.J. Patil, 2017
Skin irritation, rabbit (calculation)	Non-Irritant	Yes	None	Calculated
Eye irritation, rabbit (calculation)	Non-Irritant	Yes	None	Calculated
Skin sensitisation, guinea pig (OECD 406)	Non-sensitizer	Yes	None	C.C. Magar, 2017
Supplementary studies for combinations of plant protection products	No data – not required			

Table 6.3-2: Additional toxicological information relevant for classification/labelling of SHA4300A / Mesotrione 10% SC

	Substance (Concentration in product, % w/w)	Classification of the substance (acc. to the criteria in Reg. 1272/2008)	Reference	Classification of product (acc. to the criteria in Reg. 1272/2008)
Toxicological properties of active substance(s) (relevant for classification of product)	Mesotrione ~~(9.73 % w/w)~~ (9.33 % w/w)	~~Not classified~~ STOT RE2, H373 (criteria ≥ 10%) H361d (criteria ≥ 3,0 %)	Reg. 1272/2008	Repr. 2, H361d
Toxicological properties of non-active substance(s) (relevant for classification of product)	Coformulant 1 (<1% w/w)	H318	MSDS	Not classified
Toxicological properties of non-active substance(s) (relevant for classification of product)	Coformulant 2 (<1% w/w)	Acute Tox.4, H302, Skin Sens. 1,H317 [SCL: Skin Sens. 1, H317: C≥0.05%]; Skin Corr. 1B, H314	Reg. 1272/2008, MSDS	Not classified EUH208
Further toxicological information	No data – not required			

6.4 Toxicological Evaluation of Groundwater Metabolites

PECgw calculations after leaching from soil for MNBA were performed (see Part B, Section 8, chap-ter 8.8). The uses for which concentrations of MNBA were considered to exceed 0.1 µg/L are listed in Table 10.2 1. Part B, Section 10. Details are given in Part B, Section 8, chapter 8.8.

With regard to toxicological relevance of MNBA, studies previously submitted on this metabolite indicated that it is of comparatively low acute toxicity. MNBA is a potential skin sensitizer.

6.5 Dermal Absorption (KCP 7.3)

A summary of the dermal absorption rates for the active substances in SHA 4300 A/Mesotrione 10% SC are presented in the following table.

Table 6.4-1: Dermal absorption rates for active substances in SHA 4300 A/Mesotrione 10% SC

	Mesotrione	
	Value	**Reference**
Concentrate	1.0%	New study reported in Appendix 2
Dilution	3.3%	New study reported in Appendix 2

6.5.1 Justification for proposed values - Mesotrione

Proposed dermal absorption rates for Mesotrione are based on dermal absorption studies on a formulation Mesotrione 10% SC. The study results are summarised in the following table. Full summaries of studies on

the dermal absorption of Mesotrione 10% SC that have not previously been evaluated within an EU peer review process are described in detail in Appendix 2.
The dermal absorption of Mesotrione is summarised in Table 6.4-2.

Table 6.4-3: Default dermal absorption rates for Mesotrione

	Value	Justification for value	Acceptability of justification
Concentrate	1.0%	*In vitro* human skin	yes
Dilution	3.3%	*In vitro* human skin	yes

6.6 Exposure Assessment of Plant Protection Product (KCP 7.2)

Table 6.6-1: Product information and toxicological reference values used for exposure assessment

Product name and code	SHA 4300 A / Mesotrione 10% SC
Formulation type	SC
Category	Herbicide
Active substance (incl. content)	**Mesotrione** 100 g/L
AOEL systemic	0.005 mg/kg bw/d
Inhalation absorption	100 %
Oral absorption	100 % [50%]*
Dermal absorption	Concentrate: 1.0 % Dilution: 3.3 %

* oral absorption according to the document EFSA Journal 2016;14(3):4419

6.6.1 Selection of critical use(s) and justification

The critical GAP used for the exposure assessment of the plant protection product are shown in Table 6.1 4. A list of all intended uses within the southern zone is given in Part B, Section 0.

Justification
The current critical GAPs are taking into account the maximal exposure for the opera-tor/worker/bystander/resident/consumer.

6.6.2 Operator exposure (KCP 7.2.1)

6.6.2.1 Estimation of operator exposure

A summary of the exposure models used for estimation of operator exposure to the active substance during application of SHA4300A / Mesotrione 10% SC according to the critical use is presented in Table 6.6-2. Outcome of the estimation is presented in Table 6.6-3. Detailed calculations are in Appendix 3.

Table 6.6-2: Exposure models for intended uses

Critical use(s)	Maize (max. 1.5 L product/ha) (dose reduction to 1.0 product/ha)
	Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874 calculator version: 30/03/201

Table 6.6-3: Estimated operator exposure (longer term exposure)

		Mesotrione	
Model data	**Level of PPE**	**Total absorbed dose (mg/kg/day)**	**% of systemic AOEL**
Tractor mounted boom spray application outdoors to low crops			
Application rate		1 x 0.015 kg a.s./ha	
Spray application (AOEM**;** 75th percentile) Body weight: 60 kg	Without RPE/PPE Potential exposure	0.0074636	149
	Work wear (arms, body and legs covered) M/L and A	0.0047038	**94**

Conclusion:
According to the AOEM model, calculations, it can be concluded that the risk for the operator using Mesotrione 10% SC is acceptable with the use of working clothing (long sleeved shirt and trousers) during mixing /loading and application.

Implication for labelling: None
Operator exposure calculations were carried out at a dose of 1.5 L product/ha. The applicant considers this dose as the worst case and after reducing the dose to 1 L product/ha it can be concluded that the exposure results will be lower than those presented in the calculation.

6.6.3 Measurement of operator exposure

Since the operator exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) will not be exceeded under conditions of intended uses and considering above mentioned personal protective equipment (PPE), a study to provide measurements of operator exposure was not necessary and was therefore not performed.

Comments of zRMS:	The calculations presented by applicant are correct. Operator exposure estimations indicate that the AOEL is not exceeded under conditions of intended uses according to the EFSA model with the use of work wear (arms, body and legs covered) during mixing/loading and application. Considering classification of product operator should wear the personal protective equipment: protective gloves and protective clothing when handling the concentrate (mixing-loading) and during application.

6.6.4 Worker exposure (KCP 7.2.3)

6.6.4.1 Estimation of worker exposure

Table 6.6-4 shows the exposure model used for estimation of worker exposure after entry into a previously treated area or handling a crop treated with SHA 4300 A / Mesotrione 10% SC according to the critical use. Outcome of the estimation is presented in **Błąd! Nie można odnaleźć źródła odwołania.**. Detailed calculations are in Appendix 3.

Table 6.6-4: Exposure models for intended uses

Critical use(s)	Maize (max. 1.5 L product/ha) (dose reduction to 1.0 product/ha)
Model	Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874 calculator version: 30/03/2015

Table 6.6-5: Estimated worker exposure (longer term exposure)

		Mesotrione	
Model data	**Level of PPE**	**Total absorbed dose (mg/kg bw/day)**	**% of systemic AOEL**
Maize			
Inspection, irrigation/Outdoor Work rate: 2 hours/day, DT_{50}: 30 days DFR: 3µg/cm^2/kg a.s./ha			
Application rate		1 × 0.15 kg a.s./ha	
Body weight: 60 kg	Potential TC:12500 cm^2/person/h	0.0061875	124
	Work wear (arms, body and legs covered) TC: 1400 cm^2/person/h	0.0006930	~~15~~ **14**

Conclusion:
It is concluded that no unacceptable risk is anticipated for the worker re-entering the treated crop even without suitable protective clothing after inspection.
Moreover, as a standard rule, it should be mentioned on the label that treated crops should not be re-entered before spray deposits on leaf surfaces have completely dried.

Implication for labelling: None

Worker exposure calculations were carried out at a dose of 1.5 L product/ha. The applicant considers this dose as the worst case and after reducing the dose to 1 L product/ha it can be concluded that the exposure results will be lower than those presented in the calculation.

6.6.4.2 Refinement of generic DFR value (KCP 7.2)

Not required.
If no DFR data for the specific compound are available, a conservative default value for the DFR may be taken as 3 µg/cm2 (30 mg a.s./m2).

6.6.4.3 Measurement of worker exposure

Since the worker exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) will not be exceeded under conditions of intended uses and considering above mention PPE, a study to provide measurements of worker exposure was not necessary and was therefore not per-formed.

Comments of zRMS:	The calculations presented by applicant are correct. It is concluded that no unacceptable risk is anticipated for the worker (wearing work wear) re-entering the treated crop after inspection

	Moreover, as a standard rule, it should be mentioned on the label that treated crops should not be re-entered before spray deposits on leaf surfaces have completely dried.

6.6.5 Bystander and resident exposure (KCP 7.2.2)

6.6.5.1 Estimation of bystander and resident exposure

Table 6.6-6 shows the exposure model(s) used for estimation of bystander and resident exposure to Mesotrione. Outcome of the estimation is presented in **Błąd! Nie można odnaleźć źródła odwołania.**. Detailed calculations are in Appendix 3.

Table 6.6-6: Exposure models for intended uses

Critical use(s)	Maize (max. 1.5 L product/ha) (dose reduction to 1.0 product/ha)
Model	Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products; EFSA Journal 2014;12(10):3874 calculator version: 30/03/2015.

Table 6.6-7: Estimated resident exposure (longer term exposure)

		Mesotrione	
Model data		**Total absorbed dose (mg/kg bw/day)**	**% of systemic AOEL**
Maize			
Tractor mounted - application outdoors Buffer zone: 2-3 (m) Drift reduction technology: no DT_{50}: 30 days DFR: 3 µg/cm^2/kg a.s./ha Interval between treatments: 365 days			
Number of applications and application rate		1 × 0.15 kg a.s./ha	
Resident child Body weight: 10 kg	Drift (75th perc.)	0.0006801	13.60
	Vapour (75th perc.)	0.0010700	21.40
	Deposits (75th perc.)	0.0001939	3.88
	Re-entry (75th perc.)	0.0008353	16.71
	Sum (mean)	0.0022433	44.87
Resident adult Body weight: 60 kg	Drift (75th perc.)	0.0001602	3.20
	Vapour (75th perc.)	0.0002300	4.60
	Deposits (75th perc.)	0.0000337	0.67
	Re-entry (75th perc.)	0.0004641	9.28
	Sum (mean)	0.0007013	14.03

Table 6.6-8: Estimated bystander exposure (acute exposure)

		Mesotrione	
Model data		**Total absorbed dose (mg/kg bw/day)**	**% of systemic AAOEL**
Maize			
Tractor mounted - application outdoors Buffer zone: 2-3(m) Drift reduction technology: no DFR: 3 µg/cm^2/kg a.s./ha			
Application rate		0.15 kg a.s./ha	
Bystander child Body weight: 10 kg	Drift (95th perc.)	0.0015858	31.72
	Vapour (95th perc.)	0.0010700	21.40
	Deposits (95th perc.)	0.0005375	10.75
	Re-entry (95th perc.)	0.0008353	16.71
Bystander adult Body weight: 60 kg	Drift (95th perc.)	0.0004155	8.31
	Vapour (95th perc.)	0.0002300	4.60
	Deposits (95th perc.)	0.0001017	2.03
	Re-entry (95th perc.)	0.0004641	9.28

Resident exposure calculations were carried out at a dose of 1.5 L product/ha. The applicant considers this dose as the worst case and after reducing the dose to 1 L product/ha it can be concluded that the exposure results will be lower than those presented in the calculation.

6.6.5.2 Measurement of bystander and/or resident exposure

Since the bystander and/or resident exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) mesotrione will not be exceeded under conditions of intended uses and considering above mentioned risk mitigation measures, a study to provide measurements of bystander/resident exposure was not necessary and was therefore not performed

Comments of zRMS:	The reference value acutely toxic active substance (RVAAS) for the mesotrione are not allocated. Consequently, it is assumed that the estimation of bystander exposure is covered by the calculation of resident exposure. The estimations performed according to AOEM indicate that the systemic exposure to mesotrione contained in the formulation SHA 4300 A / Mesotrione 10% SC not exceed the value of AOEL for this substance. Resident exposure after the application of SHA 4300 A / Mesotrione 10% SC is estimated to 45% and 14% of the AOEL for children and adult respectively. Therefore, there is no undue risk for residents when SHA 4300 A / Mesotrione 10% SC is applied as intended.

6.6.6 Combined exposure

Not relevant. The product contains only one active substance.

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	Verte-brate study Y/N	Owner
KCP 7.1.1	xxxxxx	2017	Mesotrione 10% SC: Acute Oral Toxicity Study in Rat, xxxxxxx, Report No. R/15342/AOR/17 GLP, Unpublished	Y	SHARDA Cropchem Ltd.
KCP 7.1.2	xxxxxxx	201	Mesotrione 10% SC: Acute Dermal Toxicity Study in Rat xxxxxxxxx, Report No. R/15343/ADR/17 GLP, Unpublished	Y	SHARDA Cropchem Ltd.
KCP 7.1.3	xxxxxxx	2017	Mesotrione 10% SC: Acute Inhalation Toxicity Study in Rat xxxxxxx, Report No. R/15344/AIR/17 GLP, Unpublished	Y	SHARDA Cropchem Ltd.
KCP 7.1.6	xxxxxxx	2017	Mesotrione 10% SC: Skin Sensitisation Study by Guinea Pig Maximitzation Test (GPMT) xxxxxxxxx, Report No. Report No. R/15347/SS-GPMT/17 GLP, Unpublished	Y	SHARDA Cropchem Ltd.
KCP 7.6.2	A.A. Reus	2018	In vitro percutaneous absorption of Mesotrione, formulated as Mesotrione 10% SC, through human skin, A.A. Reus., 2018, STUDY REPORT V21130/10 GLP,Unpublished	N	SHARDA Cropchem Ltd.

Appendix 2 Detailed evaluation of the studies relied upon

A 2.1 Statement on bridging possibilities

Comments of zRMS:	No bridging statement was provided. Not required.

A 2.2 Acute oral toxicity (KCP 7.1.1)

Comments of zRMS:	In the view of current regulation (EC Regulation 1272/2008, EC Regulation 1107/2009, EC Regulation 1907/2006), *in vivo* tests on animals should be avoided. Tests on animals within the meaning of Directive 86/609/EEC shall be undertaken only where no other alternatives, which provide adequate reliability and quality of data, are possible. In case of acute oral toxicity, it is possible to classify the product based on the additivity formula if all ingredients are of defined toxicological properties. This criteria is met for Mesotrione 10% SC. Taking into account the composition of the product and in accordance with the provisions of the Regulation EC 1272/2008, the formulation Mesotrione 10% SC does not require classification in regards to oral, dermal and inhalation toxicity. However, bearing in minds that the acute systemic toxicity of many formulations is not the sum of the ingredients' toxicity (additivity); but rather, ingredients in a formulation can interact to result in lower or higher toxicity than predicted by the GHS additivity formula (Corvaro et al., 2016[1]; Van Cott et al., 2018[2]), it seems reasonable and justified to use the results of *in vivo* studies if such have been generated and their results are available. In case of Mesotrione 10% SC, acute oral, dermal and inhalation toxicity study was performed on rats. The results of these studies are consistent with the results of additive formula calculation. [1] http://dx.doi.org/10.1016/j.yrtph.2016.10.007 [2] https://doi.org/10.1016/j.yrtph.2017.12.024

Comments of zRMS:	Study acceptable, according to recent guidelines, used in evaluation

Acute toxicity studies for Mesotrione 10% SC were not evaluated as part of the EU review of mesotrione. Therefore, all relevant data are provided here and are considered adequate

Reference:	KCP 7.1.1 - 01
Report	Mesotrione 10% SC: Acute Oral Toxicity Study in Rat (OECD guideline No. 423) xxxxxxxxxxxx, 2017, report No. R/15342/AOR/17
Guideline(s):	Yes OECD 423
Deviations:	No
GLP:	Yes
Acceptability:	Yes
Duplication (if vertebrate study)	No

Materials and methods

Test material (Lot/Batch No.)	Mesotrione 10% SC (Lot/Batch No. : SWEPL - 41203)
Species	Rat, Wistar
No. of animals (group size)	3 rats/female

Dose(s)	2000 mg/kg bw
Exposure	Once by gavage
Vehicle/Dilution	None
Post exposure observation period	14 days
Remarks	None

Results and discussions

Table A 1: Results of acute oral toxicity study in rats of Mesotrione 10% SC

Dose (mg/kg bw)	Toxicological results *	Duration of signs	Time of death	LD50 (mg/kg bw) (14 days)
Female rats				
2000	0/0/3	-	-	5000 (cut-off)
2000	0/0/3	-	-	5000 (cut-off)

* Number of animals which died/number of animals with clinical signs/number of animals used

Table A 2: Summary of findings of acute oral toxicity study in rats of Mesotrione 10% SC

Mortality:	No mortality occurred.
Clinical signs:	No clinical signs of toxicity were observed.
Body weight:	Body weight gain was considered to be normal.
Macroscopic examination:	The necropsies performed at the end of the study revealed no apparent findings.

Conclusion

Under the experimental conditions. the oral LD50 of Mesotrione 10% SC is 5000 mg/kg bw in rats (cut-off value).
According to the Regulation EU No. 1272/2008. Mesotrione 10% SC is not classified. No signal word or hazard statement is required.

Comments of zRMS:	LD50 oral is >2000 mg/kg bw. According to the Regulation EU No. 1272/2008 Mesotrione 10% SC (SHA 4300 A) is not classified. No signal word or hazard statement is required.

A 2.3 Acute percutaneous (dermal) toxicity (KCP 7.1.2)

Comments of zRMS:	Study acceptable, according to recent guidelines, used in evaluation.

Acute percutaneous (dermal) toxicity study for Mesotrione 10% SC was not evaluated as part of the EU review of the mesotrione. Therefore, all relevant data are provided here and are considered adequate.

A 2.3.1 Study 1

Reference:	KCP 7.1.2 - 01
Report	Mesotrione 10% SC: Acute Dermal Toxicity Study in Rat (OECD Guideline No. 402), xxxxxxxxxxx, 2017, R/15343/ADR/17
Guideline(s):	Yes, OECD 402

Deviations:	No
GLP:	Yes
Acceptability:	Yes
Duplication (if vertebrate study)	No

Materials and methods

Test material (Lot/Batch No.)	Mesotrione 10% SC (Lot/Batch No. : SWEPL - 41203)
Species	Rat, Wistar
No. of animals (group size)	5 rats/sex
Dose(s)	2000 mg/kg bw
Exposure	24 hours (dermal)
Vehicle/Dilution	None
Post exposure observation period	14 days
Remarks	None

Results and discussions

Table A 3: Results of acute dermal toxicity study in rats of Mesotrione 10% SC

Dose (mg/kg bw)	Toxicological results *	Duration of signs	Time of death	LD50 (mg/kg bw) (14 days)
Male rats				
2000	0/0/5	-	-	> 2000
Female rats				
2000	0/0/5	-	-	> 2000

* Number of animals which died/number of animals with clinical signs/number of animals used

Table A 4: Summary of findings of acute dermal toxicity study in rats of Mesotrione 10% SC

Mortality:	No mortality occurred.
Clinical signs:	No clinical signs of toxicity were observed.
Body weight:	Body weight gain was considered to be normal.
Macroscopic examination:	The necropsies performed at the end of the study revealed no apparent findings.

Conclusion

Under the experimental conditions. the dermal LD50 of the Mesotrione 10% SC was found to be higher than 2000 mg/kg in rats. Thus, no classification is required according to Regulation (EC) No. 1272/2008. No signal word or hazard statement is required..

Comments of zRMS:	LD50 dermal is >2000 mg/kg/bw. According to the Regulation EU No. 1272/2008 Mesotrione 10% SC (SHA 4300 A) is not classified. No signal word or hazard statement is required.

A 2.4 Acute inhalation toxicity (KCP 7.1.3)

Comments of zRMS:	Study acceptable, according to mentioned guidelines, used in evaluation.

Acute toxicity studies for Mesotrione 10% SC were not evaluated as part of the EU review of the mesotrione. Therefore, all relevant data are provided here and are considered adequate.

A 2.4.1 Study 1

Reference:	KCP 7.1.3 - 01
Report	Mesotrione 10% SC: Acute Inhalation Toxicity Study in Rat (OECD Guideline No. 403), xxxxxxxxxx , 2017, R/15344
Guideline(s):	Yes, OECD 403
Deviations:	No
GLP:	Yes
Acceptability:	Yes
Duplication (if vertebrate study)	No

Materials and methods

Test material (Lot/Batch No.)	Mesotrione 10% SC (Lot/Batch No. : SWEPL - 41203)
Species	HanRcc:WIST rats
No. of animals (group size)	3 rats/sex/dose
Concentration(s)	4. 37 mg /L air
Exposure	4 hours (nose only)
Vehicle/Dilution	None
Post exposure observation period	14 days
Remarks	None

Results and discussions

Table A 5: Concentration(s) and exposure conditions

Target conc. (mg/L air)	or	Nominal conc. (mg/L air)	Actual conc. (mg/L air)	MMAD * (µm)	GSD ** (µm)
5		10.07	4.37	1.43	2.86 and 2.69

* MMAD = Mass Median Aerodynamic Diameter
** GSD = Geometric Standard Deviation

Table A 6: Results of acute inhalation toxicity study in rats of Mesotrione 10% SC

Concentration (mg/L air)	Toxicological results *	Duration of signs	Time of death	LC_{50} (mg/L air) (15 days)
Male rats				
4.37	0/0/3	-	-	< 4.37
Female rats				
4.37	0/0/3	-	-	< 4.37

* Number of animals which died/number of animals with clinical signs/number of animals used

Table A 7: Summary of findings of acute inhalation toxicity study in rats of Mesotrione 10% SC

Mortality	No mortality occurred.
Clinical signs	These included hypoactivity abd ruffled appearance. These signs were found to be reversible in nature and the animals were free of these signs on day 2 after exposure at latest.
Body weight	Body weight gain by the treated male and female rats during the 14 days observation period post exposure.
Macroscopic examination	The necropsies performed at the end of the study revealed no apparent findings.

Conclusion

Under the experimental conditions, the inhalation LC_{50} of Mesotrione 10% SC is 4.37 mg/L air in rats. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

Comments of zRMS:	Based upon the findings of this study the inhalation LC_{50} of Mesotrione 10% SC is 4.37 mg/L air (maximum attainable concentration) in rats. According to the Regulation EU No. 1272/2008 Mesotrione 10%SC (SHA 4300 A) is not classified. No signal word or hazard statement is required.

A 2.5 Skin irritation (KCP 7.1.4)

Comments of zRMS:	No study was submitted. Mesotrione 10%SC contains one relevant ingredient classified Skin Corr. 1B; H314. Its content in PPP is below general concentration limit for the classification for skin irritation. Composition- see Part C of this registration report. Mesotrione 10%SC according to Regulation (EC) No 1272/2008 is not classified.

Acute toxicity studies for Mesotrione 10% SC were **not** evaluated as part of the EU review of Mesotrione. Therefore, all relevant data are provided here and are considered adequate. Details of the co-formulants and their classification and the calculation methodology that was used to assess the acute oral toxicity of Mesotrione 10% SC can be found in an appendix to the confidential dossier of this submission (Registration Report, Part C).

The product contains < 1% of formulants considered as skin corrosive (classified as: Skin Corr. 1B; H314: Causes severe skin burns and eye damage). Under the GHS classification system these components are below the additive trigger value of value of 1% for formulants/co-formulants for the “H315: Causes skin irritation” the classification according to Regulation (EC) no. 1272/2008.

According to the Regulation EC No. 1272/2008, Mesotrione 10% SC is **not classified**. No signal word or hazard statement is required for this hazard.

A 2.6 Eye irritation (KCP 7.1.5)

Comments of zRMS:	No study was submitted. In the current formulation the sum of ingredients classified for eye effects category 1 or skin corrosion category 1 is below 1% and thereby below the generic concentration limit of ≥3% and ≥1% for classification of mixtures for eye effects category 1 and category 2, respectively. Composition - see Part C of this registration report According to the Regulation EC No. 1272/2008, Mesotrione 10% SC is not classified. No signal word or hazard statement is required for this hazard.

Acute toxicity studies for Mesotrione 10% SC were **not** evaluated as part of the EU review of Mesotrione. Therefore, all relevant data are provided here and are considered adequate. Details of the co-formulants and their classification and the calculation methodology that was used to assess the acute oral toxicity of Mesotrione 10% SC can be found in an appendix to the confidential dossier of this submission (Registration Report, Part C).
The product contains < 1% of formulants considered as eye damage and skin corrosive (classified as: Eye Dam. 1; H318 and Skin Corr. 1B; H314). Under the GHS classification system these com-ponents are below the additive trigger value of value of 3% for formulants/co-formulants for the "H318: Causes serious eye damage" and below the additive trigger value of value of 1% for for-mulants/co-formulants for the "H319: Causes serious eye irritation" the classification according to Regulation (EC) no. 1272/2008.

According to the Regulation EC No. 1272/2008, Mesotrione 10% SC is **not classified**. No signal word or hazard statement is required.

A 2.7 Skin sensitisation (KCP 7.1.6)

Comments of zRMS:	Study acceptable, according to mentioned guidelines, used in evaluation.

Skin sensitisation test for Mesotrione 10% SC was not evaluated as part of the EU review of the mesotrione. Therefore, all relevant data are provided here and are considered adequate

A 2.7.1 Study 1

Reference:	KCP 7.1.6 - 01
Report	Mesotrione 10% SC: Skin Sensitisation Study by Guinea Pig Maximitzation Test (GPMT). (OECD guideline No.406), xxxxxxxxxx, 2017, R/15347
Guideline(s):	Yes (OECD 406)
Deviations:	No
GLP:	Yes
Acceptability:	Yes
Duplication (if vertebrate study)	No

Materials and methods

Test material (Lot/Batch No.)	Mesotrione 10% SC (Lot/Batch No. : SWEPL - 41203)
Species	Guinea pig, Hartley albino
No. of animals (group size)	Test substance group: 20 male guinea pigs Vehicle control goup: 10 male guinea pigs
Range finding:	Yes
Exposure (concentration(s), no. of applications)	Intradermal induction, (5%, v/v) Topical inductione sterile water Challenge, sterile water
Vehicle	Sterile water
Pretreatment prior to topical application	Yes (sodium lauryl sulfate)
Reliability check	α-Hexylcinnamaldehyde ≥ 95%
Remarks	None

Results and discussions

Table A 8: Results of skin sensitisation study of Mesotrione 10% SC

	24 hours	48 hours	Total number of animals affected
	After challenge		
Mesotrione 10% SC	0/10*	0/20*	0% of total animal
Test Vehicle Control Group	0/5*	0/10*	0% of total animal
Positive control	N/A	N/A	50% of total animal

* Number of animals with positive dermal response/number of animals in dose group

Clinical signs:	Was observed followed by darkening after in inducion ny intradermal injection made on day 0, in both treatment and vehicle control groups. There was evidence of scab formation on latest day 9 in animals at injection sites which received 1:1 mxture of FCA/water, either with or without the test item.

Conclusion

According to the Regulation EC No. 1272/2008, Mesotrione 10% SC is **not classified**. No signal word or hazard statement is required

Comments of zRMS:	According to the Regulation EC No. 1272/2008, Mesotrione 10% SC is not classified. Additional labelling phrase: EUH208 Contains 1,2-benzisothiazolin-3-one. May produce an allergic reaction.

A 2.8 Supplementary studies for combinations of plant protection products (KCP 7.1.7)

No supplementary studies are necessary.

A 2.9 Data on co-formulants (KCP 7.4)

A 2.9.1 Material safety data sheet for each co- formulant

Information regarding material safety data sheets of the co-formulants can be found in the confidential dossier of this submission (Registration Report - Part C).

A 2.9.2 Available toxicological data for each co-formulant

Available toxicological data for each co-formulant can be found in the confidential dossier of this submission (Registration Report - Part C).

A 2.10 Studies on dermal absorption (KCP 7.3)

Dermal absorption to Mesotrione 10% SC, **was not** evaluated as part of the EU review of Mesotrione. Therefore, all relevant data and risk assessments are provided here and are considered adequate.

A 1.1.1 Study 1 – Mesotrione 10% SC in Mesotrione 10% SC

A 1.1.2 Comparative dermal absorption, in vitro using rat and human skin

Comments of zRMS:	Study is acceptable, according to recent guidelines, used in evaluation

Reference KCP 7.6.2

Report	In vitro percutaneous absorption of Mesotrione, formulated as Mesotrione 10% SC, through human skin, A.A. Reus., 2018, V21130/10
Guideline(s)	OECD Guideline 428 “Skin Absortion: in vitro Method” April 2004
Deviations	Yes
GLP	Yes
Acceptability	Yes
Duplication (if vertebrate study)	No

Materials and methods

Test material	Name (Lot/Batch No.)	Mesotrione technica (SCL-62581)
	Test preparation	radioformulation
	Specific activity	9.033 MBq.mg-1
	Radiochemical purity	100 %
Product	Name (Lot/Batch No.)	Mesotrione 10% SC (SCL-34891)
	Company code	Mesotrione
	Concentration a.s.	104 g.L-1
	Formulation type	SC
Blank product	Name (Lot/Batch No.)	Mesotrione 10% SC (w/v) EC blank (SCL-42205)
	Concentration a.s.	0 g/L

Test system		
Diffusion cell	Cell type	dynamic
	(if dynamic) Flow rate	1.0 mL.min-1
	Exposed skin area	0.64 cm2
Membrane	Skin type	isolated epidermis
	Skin thickness range	0.2-0.4 mm
	Skin donors age	58, 37, 33, 58 years
	Skin donors sex	-
	Location	breast and abdomen
	Source	Human abdominal and breast skin
	Integrity test	yes
Receptor	Receptor medium	Scintillation liquid (Ultima Gold™)
	Solubility in receptor medium	n
Sample Time	Exposure time	8 h
Sampling	Sample intervals	24 h
Washing		At 8 h, using cottons swabs, a mild soap solution (3% Dove) and water
Final Procedure	Tape stripping	y
	TS1-2 analysed separately	n
Remarks:		

Tested doses	Concentrate	Spray dilution 1
Target concentration [g.L-1]	104	0.26
Area dose [µg/cm²]	1018 ± 24	2.54 ± 0.08
Specific activity [MBq.mL-1]	2.14	0.24
No. of donors	8	8

Results and discussions

Table A 9: In-vitro dermal penetration of Mesotrione formulated as Mesotrione 10% Sc through human skin - Recovery data

Dose group	High dose (Formulation concentrate)		Low dose (Spray dilution 1:400)	
Target concentration [a.i..L-1]	100		0.25	
Target dose [µg/cm²]	100		0.25	
Mean actual applied dose [µg/cm²]	1018±24		2,54 ± 0.08	
Number of replicates (n)	8		8	
	Recovery [%]		Recovery [%]	
	Mean	S.D.	Mean	S.D.
Dislodgeable dose				
Donor chamber wash	0.219	0.282	0.18	0.13
Dose associated to skin				
Tape strips: 1st sample, strips 1 + 2	0.062	0.014	0.17	0.12
Tape strips: 2nd sample; strips 3 - n	0.25	0.09	0.45	0.12
Stripped skin	0.46	0.25	1.96	1.00
Absorbed dose	0.51	0.25	2.15	0.98
Receptor fluid	<0.049	0.040	0.18	0.08
Receptor chamber wash	<0.0016	-	<0.0083	0.0007
Total recovery[1]	101.3	3.2	98.2	1.8
Absorption essentially complete at end of study (>75% absorption within half the study duration) [%Absorption at $t_{0.5}$]	No [0.76 ± 0.32]		No [2.60 ± 0.88]	
If yes: Absorption = receptor fluid + receptor chamber washes + skin sample (excluding all tape strips)	0.76	0.32	2.60	0.88
If no: Absorption = receptor fluid + receptor chamber washes + skin sample (excluding tape strips 1 and 2) [2]	N/A	N/A	N/A	N/A
Absorption estimate normalised[3]	0.76 ± 0.84 × 0.32		2.60 ± 0.84 × 0.88	
Relevant absorption estimate	0.76 ± 0.27		2.60 ± 0.74	
Absorption estimates used for risk assessment[4]	**1.0**		**3.3**	

[1] Values may not calculate exactly due to rounding of figures

[2] In accordance with the EFSA Guidance on Dermal Absorption (EFSA Journal 2017;15(6):4873) the radioactivity in the second tape-strip pool (3rd to nth tape strip) is considered potentially absorbable if less than 75% of the absorption occurred in the first half of the study (see Table 7.6.2-1) Finally, the skin preparation is also considered potentially absorbable.

[3] In accordance with the EFSA Guidance on Dermal Absorption (2017), dermal absorption should be calculated as follows: Absorption (mean value) + ks, where s is the sample standard deviation. The multiplication factor required depends on the number of replicates and is given in Table 1 of EFSA Guidance.

[4] Relevant absorption estimate was rounded to the required number of significant figures.

N/A: not applicable

Conclusion/endpoint: 1.0 % of dose for undiluted Mesotrione 10%SC (concentrate)

3.3 % of dose for actual spray strength used in the field dilution

Comments of zRMS:	The dermal penetration of mesotrione formulated as Mesotrione 10%SC through dermatomed human skin was determined *in vitro*. Based on the EFSA guidance criteria, the amount of applied penetrating within 24 hours was determined to be 1.0% (0.76 ± 0.27) for the concentrate and 3.3% (2.60 ± 0.74) for the spray dilution.

A 2.11 Other/Special Studies

Not relevant.

Appendix 3 Exposure calculations

A 3.1 Operator exposure calculations (KCP 7.2.1.1)

A 3.1.1 Calculations for Mesotrione

Table A 10: Input parameters considered for the estimation of operator exposure

Formulation type	SC		Crop type	Maize
Application rate (AR)	0.15	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	50	ha	Application equipment	Vehicle-mounted
Dermal absorption (DA)	1.0	% (concentr.)	Indoor/outdoor	Outdoor
	3.3	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.005	mg/kg bw/d	Water soluble bag	No
AAOEL	0.005	mg/kg bw/d		

Table A 11: Estimation of longer operator exposure towards Mesotrione according to EFSA guidance

	Potential		**With work wear + PPE/RPE**	
Mixing and loading				
Hands				
Specific exposure value	229,0912028	µg/person	229,0912028	µg/person
Systemic exposure	**3,8181867**	**µg/kg bw/d**	**3,8181867**	**µg/kg bw/d**
Body			Work wear	
Specific exposure value	147,0404469	µg/person	1,4178101	µg/person
Systemic exposure	**2,4506741**	**µg/kg bw/d**	**0,0236302**	**µg/kg bw/d**
Head				
Specific exposure value	3,8912691	µg/person	3,8912691	µg/person
Systemic exposure	**0,0648545**	**µg/kg bw/d**	**0,0648545**	**µg/kg bw/d**
Inhalation				
Specific exposure value	6,7424577	µg/person	6,7424577	µg/person
Systemic exposure	**0,1123743**	**µg/kg bw/d**	**0,1123743**	**µg/kg bw/d**
Application				
Hands				
Specific exposure value	36,7100365	µg/person	36,7100365	µg/person
Systemic exposure	**0,6118339**	**µg/kg bw/d**	**0,6118339**	**µg/kg bw/d**
Body			Work wear	
Specific exposure value	20,5258362	µg/person	0,5630583	µg/person
Systemic exposure	**0,3420973**	**µg/kg bw/d**	**0,0093843**	**µg/kg bw/d**
Head				
Specific exposure value	0,9701213	µg/person	0,9701213	µg/person
Systemic exposure	**0,0161687**	**µg/kg bw/d**	**0,0161687**	**µg/kg bw/d**
Inhalation				
Specific exposure value	30,1266340	µg/person	30,1266340	µg/person

Systemic exposure	**0,5021106**	**µg/kg bw/d**	**0,5021106**	**µg/kg bw/d**
Total				
Total systemic exposure	**0,0074636**	**mg/kg bw/d**	**0,0047038**	**mg/kg bw/d**
% of AOEL	**149.27**	**%**	**94.08**	**%**

A 3.1 Worker exposure calculations (KCP 7.2.3.1)

A 3.1.1 Calculations for Mesotrione

Table A 12: Input parameters considered for the estimation of worker exposure

Intended use(s)	Maize		Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	0.15	kg a.s./ha	Dermal absorption (DA)	3.3	% (worst case)
Number of applications (NA)	1		Inhalation absorption (IA)	100	%
Interval between applications	365	days	Work rate per day (WR)	2	h/d
Half-life of active substance	30	days	TC dermal (potential)	12500	cm²/h
Multiple application factor (MAF)	1		TC dermal (work wear)	1400	cm²/h
Body weight (BW)	60	kg/person	TC dermal (work wear, gloves)	-	cm²/h
AOEL	0.005	mg/kg bw/d	Task specific factor inhalation	-	ha/h x 10^{-3}
AAOEL	-	mg/kg bw/d			

Table A 13: Estimation of longer term worker exposure towards Mesotrione according to EFSA guidance

	Potential		**With work wear**		**With work wear and gloves**	
Worker (re-entry): Dermal exposure after application						
(DFR x TC x WR x AR x MAF x DA) / BW						
Systemic exposure	**0,0061875**	**mg/kg bw/d**	**0,0006930**	**mg/kg bw/d**	**-**	**mg/kg bw/d**
% of AOEL	**123.75**	**%**	**13.86**	**%**	**-**	**%**

A 3.1 Bystander and resident exposure calculations (KCP 7.2.2.1)

A 3.1.1 Calculations for Mesotrione

Table A 14: Input parameters considered for the estimation of longer term resident exposure

Intended use(s)	Maize		Drift reduction (DR)		%
Application rate (AR)	0.15	kg a.s./ha	Transfer coefficient surface deposits (TC)	7300	cm²/h (adult)
				2600	cm²/h (child)
Minimum water volume (V)	200	L/ha	Drift on surface (D) - 75th perc.	5.60	%
Buffer strip	2-3	m	Drift on surface (D) - mean	4.10	%
7Number of applications (NA)	1		Turf Transferable Residues (TTR)	5	%
Interval between applications	365	days	Exposure duration dermal (H_D)	2	h
Half-life of active substance	30	days	Exposure duration inhal. (H_I)	24	h
Multiple application factor (MAF)	1		Exposure duration entry into treated crops (H_E)	0.25	h
Body weight (BW)	60	kg/person (adults)	Airborne Concentration of Vapour (VC)	0.001	mg/m³
	10	kg/person (children)			
Dermal absorption (DA)	3.3	% ('worst case')	Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s.
Inhalation absorption (IA)	100	%	Light clothing adjustment factor (CF)	18	%

Oral absorption (OA)	100	%	Saliva Extraction Factor (SE)	50	%
AOEL	0.05	mg/kg bw/d	Surface Area of Hands (SA)	20	cm^2
Spray drift dermal (SD) - 75th perc.	0.47	mL spray dilution (adult)	Frequency of Hand to Mouth (Freq)	20	events/h
	0.327	mL spray dilution (child)			
Spray drift inhal. (SI) - 75th perc.	0.00010	mL spray dilution (adult)	Dislodgeable residues object to mouth (DR_{OM})	20	%
	0.00022	mL spray dilution (child)			
Spray drift dermal (SD) - mean	0.22318	mL spray dilution (adult)	Ingestion Rate for Mouthing of Grass (IgR)	25	cm^2/d
	0.18	mL spray dilution (child)			
Spray drift inhal. (SD) - mean	0.00009	mL spray dilution (adult)	TC entry into treated crops - 75th perc.	7500	cm^2/h (adult)
	0.00017	mL spray dilution (child)		2250	cm^2/h (child)
Inhalation rate (IR)	0.23	m^3/d (adult)	TC entry into treated crops - mean:	5980	cm^2/h (adult)
	1.07	m^3/d (child)		1794	cm^2/h (child)

Table A 15: Estimation of longer term resident exposure towards Mesotrione according to EFSA guidance

Adult			**Child**		
Spray drift (75th perc.)					
(SD x DA x (1- CF) + SI) x AR x MAF x V x DR/ BW					
Systemic exposure	**0,0001602**	**mg/kg bw/d**	**Systemic exposure**	**0,0006801**	**mg/kg bw/d**
% of AOEL:	**3.20**	**%**	**% of AOEL:**	**13.60**	**%**
Vapour (75th perc.)					
(VC x IR x IA) / BW					
Systemic exposure	**0.0002300**	**mg/kg bw/d**	**Systemic exposure**	**0.0010700**	**mg/kg bw/d**
% of AOEL:	**4.60**	**%**	**% of AOEL:**	**21.40**	**%**
Surface deposits (75th perc.)					
Dermal					
AR x MAF x D x TTR x TC x H_D x DA / BW					
Systemic exposure	**0,0000337**	**mg/kg bw/d**	**Systemic exposure**	**0,0000721**	**mg/kg bw/d**
Hand to mouth					
AR x MAF x D x TTR x SE x SA x Freq x H_D x OA / BW					
			Systemic exposure	**0,0000798**	**mg/kg bw/d**
Object to mouth					
AR x MAF x D x DR_{OM} x IgR x OA / BW					
			Systemic exposure	**0,0000420**	**mg/kg bw/d**
Total					
Systemic exposure	**0,0000337**	**mg/kg bw/d**	**Systemic exposure**	**0,0001939**	**mg/kg bw/d**
% of AOEL:	**0.67**	**%**	**% of AOEL:**	**3.88**	**%**
Entry into treated crops (75th perc.)					
Dermal					
AR x MAF x TC x H_D x DFR x DA / BW					
Systemic exposure	**0,0004641**	**mg/kg bw/d**	**Systemic exposure**	**0,0008353**	**mg/kg bw/d**
Hand to mouth					
AR x MAF x 100% x TTR x x SE x SA x Freq x H_D x OA / BW					
			Systemic exposure	**-**	**mg/kg bw/d**

Object to mouth					
AR x MAF x 100% x DR_{OM} x IgR x OA / BW					
			Systemic exposure	-	**mg/kg bw/d**
Total					
Systemic exposure	**0,0004641**	**mg/kg bw/d**	**Systemic exposure**	**0,0008353**	**mg/kg bw/d**
% of AOEL:	**9.28**	**%**	**% of AOEL:**	**16.71**	**%**
All pathways (mean)					
Systemic exposure	**0,0007013**	**mg/kg bw/d**	**Systemic exposure**	**0,0022433**	**mg/kg bw/d**
% of AOEL:	**14.03**	**%**	**% of AOEL:**	**44.87**	**%**

Table A 16: Input parameters considered for the estimation of acute bystander exposure

Intended use(s)	Maize		Drift on surface (D) - 95th perc.	8.50	%
Application rate (AR)	0.15	kg a.s./ha	Turf transferable residues (TTR)	5	%
Minimum water volume (V)	200	L/ha	Exposure duration dermal (H_D	2	h
Buffer strip	2-3	m	Exposure duration inhal. (H_I)	24	h
Body weight (BW)	60	kg/person (adults)	Exposure duration entry into treated crops (H_E)	0.25	h
	10	kg/person (children)			
Dermal absorption (DA)	3.3	% ('worst case')	Airborne concentration of vapour (VC)	0.001	mg/m^3
Inhalation absorption (IA)	100	%	Dislodgeable foliar residue (DFR)	3	$\mu g/cm^2$/kg a.s.
Oral absorption (OA)	100	%	Light clothing adjustment factor (CF)	18	%
AAOEL	0.005	mg/kg bw/d	Saliva extraction factor (SE)	50	%
Spray drift dermal (SD) - 95th perc.	1.21	mL spray dilution (adult)	Surface area of hands (SA)	20	cm^2
	0.74	mL spray dilution (child)			
Spray drift inhal. (SI) - 95th perc.	0.00050	mL spray dilution (adult)	Frequency of hand to mouth (freq)	20	events/h
	0.00112	mL spray dilution (child)			
Inhalation rate (IR)	0.23	m^3/d (adult)	Dislodgeable residues object to mouth (DR_{OM})	20	%
	1.07	m^3/d (child)			
Drift reduction (DR)	-	%	Ingestion Rate for Mouthing of Grass (IgR)	25	cm^2/d
Transfer coefficient surface deposits (TC)	14500	cm^2/h (adult)	TC entry into treated crops - 95th perc.	7500	cm^2/h (adult)
	5200	cm^2/h (child)		2250	cm^2/h (child)

Table A 17: Estimation of acute bystander exposure towards Mesotrione according to EFSA guidance

Adult			**Child**		
Spray drift (95th perc.)					
(SD x DA x (1- CF) + SI) x AR x MAF x V x DR/ BW					
Systemic exposure	**0,0004155**	**mg/kg bw/d**	**Systemic exposure**	**0,0015858**	**mg/kg bw/d**
% of AAOEL	**8.31**	**%**	**% of AAOEL**	**131.72**	**%**
Vapour (95th perc.)					
(VC x IR x IA) / BW					
Systemic exposure	**0.0002300**	**mg/kg bw/d**	**Systemic exposure**	**0.0010700**	**mg/kg bw/d**
% of AAOEL	**4.60**	**%**	**% of AAOEL**	**21.40**	**%**

Surface deposits (95th perc.)					
Dermal					
AR x MAF x D x TTR x TC x H_D x DA / BW					
Systemic exposure	**0,0001017**	**mg/kg bw/d**	**Systemic exposure**	**0,0002188**	**mg/kg bw/d**
Hand to mouth					
AR x MAF x D x TTR x SE x SA x Freq x H_D x OA / BW					
			Systemic exposure	**0,0002550**	**mg/kg bw/d**
Object to mouth					
AR x MAF x D x DR_{OM} x IgR x OA / BW					
			Systemic exposure	**0,0000638**	**mg/kg bw/d**
Total					
Systemic exposure	**0,0001017**	**mg/kg bw/d**	**Systemic exposure**	**0,0005375**	**mg/kg bw/d**
% of AAOEL	**2.03**	**%**	**% of AAOEL**	**10.75**	**%**
Entry into treated crops (95th perc.)					
Dermal					
AR x MAF x TC x H_D x DFR x DA / BW					
Systemic exposure	**0,0004641**	**mg/kg bw/d**	**Systemic exposure**	**0,0008353**	**mg/kg bw/d**
Hand to mouth					
AR x MAF x 100% x TTR x x SE x SA x Freq x H_D x OA / BW					
			Systemic exposure		**mg/kg bw/d**
Object to mouth					
AR x MAF x 100% x DR_{OM} x IgR x OA / BW					
			Systemic exposure		**mg/kg bw/d**
Total					
Systemic exposure	**0,0004641**	**mg/kg bw/d**	**Systemic exposure**	**0,0008353**	**mg/kg bw/d**
% of AAOEL	**9.28**	**%**	**% of AAOEL**	**16.71**	**%**

Appendix 4 Detailed evaluation of exposure and/or DFR studies relied upon (KCP 7.2, KCP 7.2.1.1, KCP 7.2.2.1, KCP 7.2.3.1)

Not relevant.