

REGISTRATION REPORT

Part B

Section 6

Mammalian Toxicology

Detailed summary of the risk assessment

Product code: CA3301

Product name(s): JOUST

Chemical active substance:
Prothioconazole, 250 g/L

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

New Authorisation (Art.33)

Applicant: Polska Sp. z o. o.

Submission date: 23/12/2021

MS Finalisation date: September 2022 (initial Core Assessment)

January 2023 (final Core Assessment)

Version history

When	What
December 2021	First submission
September 2022	Initial ZRMS assessment The report in the dRR format has been prepared by the Applicant, therefore all comments, additional evaluations and conclusions of the zRMS are presented in grey commenting boxes. Minor changes are introduced directly in the text and highlighted in grey. Not agreed or not relevant information are struck through and shaded for transparency.
January 2023	Final report (Core Assessment updated following the commenting period). Additional information/assessments included by the zRMS in the report in response to comments received from the cMS and the Applicant are highlighted in yellow. Information no longer relevant is struck through and shaded.

Table of Contents

6	Mammalian Toxicology (KCP 7).....	4
6.1	Summary.....	4
6.2	Toxicological Information on Active Substance(s).....	6
6.3	Toxicological Evaluation of Plant Protection Product	7
6.4	Toxicological Evaluation of Groundwater Metabolites	8
6.5	Dermal Absorption (KCP 7.3).....	8
6.5.1	Justification for proposed values - Prothioconazole	8
6.5.2	Justification for proposed values – Prothioconazole-desthio (metabolite).....	9
6.6	Exposure Assessment of Plant Protection Product (KCP 7.2)	9
6.6.1	Selection of critical use(s) and justification.....	9
6.6.2	Operator exposure (KCP 7.2.1)	10
6.6.2.1	Estimation of operator exposure.....	10
6.6.2.2	Measurement of operator exposure	12
6.6.3	Worker exposure (KCP 7.2.3)	12
6.6.3.1	Estimation of worker exposure.....	12
6.6.3.2	Refinement of generic DFR value (KCP 7.2).....	15
6.6.3.3	Measurement of worker exposure	15
6.6.4	Resident and bystander exposure (KCP 7.2.2)	16
6.6.4.1	Estimation of resident and bystander exposure	16
6.6.4.2	Measurement of resident and/or bystander exposure	19
6.6.5	Combined exposure	21
Appendix 1	Lists of data considered in support of the evaluation.....	26
Appendix 2	Detailed evaluation of the studies relied upon	27
A 2.1	Statement on bridging possibilities.....	27
A 2.2	Acute oral toxicity (KCP 7.1.1).....	27
A 2.3	Acute percutaneous (dermal) toxicity (KCP 7.1.2)	27
A 2.4	Acute inhalation toxicity (KCP 7.1.3)	27
A 2.5	Skin irritation (KCP 7.1.4)	28
A 2.6	Eye irritation (KCP 7.1.5).....	28
A 2.7	Skin sensitisation (KCP 7.1.6).....	28
A 2.8	Supplementary studies for combinations of plant protection products (KCP 7.1.7).....	28
A 2.9	Data on co-formulants (KCP 7.4).....	29
A 2.10	Studies on dermal absorption (KCP 7.3)	29
A 2.11	Other/Special Studies	33
Appendix 3	Exposure calculations.....	34
A 3.1	Operator exposure calculations (KCP 7.2.1.1)	34
A 3.2	Worker exposure calculations (KCP 7.2.3.1)	43
A 3.3	Resident and bystander exposure calculations (KCP 7.2.2.1)	47
A 3.4	Combined exposure calculations for active substance 1 and active substance 2.....	58
Appendix 4	Detailed Exposure 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)	59

Reviewer comments:

This dossier has been prepared to support registration of CA3301/JOUST in Poland and zonal registration for which PL was designated zRMS.

This application has been submitted for the approval under Art.33 of EU Regulation 1107/2009 of the product with commercial name Joust (developmental code CA3301), an emulsifiable concentration (EC) formulation containing prothioconazole 250 g/L. CA3301 is a fungicide with protective and curative mode of action that it is intended to be used on Cereals and Oilseed rape against a number of foliar and ear diseases (GAP details see dRR B0).

Product was not a representative formulation reviewed during the Annex I inclusion/active substance renewal and has not previously been evaluated in any EU countries according to the Uniform Principles, thus it is not possible to refer to the DRAR conclusion on PTZ with regard to the formulation studies. Therefore, relevant data on the plant protection product CA3301 had to be generated for authorisation purposes.

For the current product registration, APPL provided an assessment of the toxicological potential based on calculation method (ATEmix; for details refer Part C). ZRMS PL, in accordance with the EC recommendations to avoid tests on animals, for the purposes of hazard classification use the data obtained using the calculation method and do not request for *in vivo* data.

Considering ATEmix/additivity formula and components content CA3301 is of low acute oral, dermal and inhalation toxicity and is non sensitising. It is a skin (Skin Irritant 2) and eye irritant (Eye Irritant 2) and causes Respiratory tract irritation (STOT Cat.3).

NDE assessment for operator, workers and B&R exposure to the PTZ and PTZ-desthio considering all critical use(s) and all tasks, identify safe use of the product CA3301/JOUST.

In case of exposure to PTZ-desthio step wise approach has been considered into the assessment assuming 100% and as refinement 60% and 50% conversion factors has been accepted by the zRMS. Buffer zones accepted for NDE calculations are 2-3m and 5m.

Based on the results of the acute toxicity and non-dietary risk assessments conducted for CA3301, the following personal protective equipment (PPE)/risk management measures (RMM) are recommended:

Operator: Operators must wear adequate work wear clothing during mixing/loading.

Worker: Worker should use adequate work wear when entering in a treated area.

Note: All changes regarding NDS assessment which reflects comments made by cMS countries has been included in this revised RR. Additional calculations for each exposed group are placed in separate boxes highlighted in yellow colour.

6 Mammalian Toxicology (KCP 7)

6.1 Summary

Table 6.1-1: Information on CA3301*

Product name and code	CA3301
Formulation type	Emulsifiable concentrate [EC]
Active substance(s) (incl. content)	prothioconazole; 250 g/L
Function	fungicide
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 CA3301 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 CA3301 according to Regulation (EC) No 1272/2008

Hazard class(es), categories	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3
Hazard pictograms or Code(s) for hazard pictogram(s)	GHS07
Signal word	Warning
Hazard statement(s)	H315 H319 H335
Precautionary statement(s)	P261 Avoid breathing spray, mist P264 Wash hands, forearms and face thoroughly after handling P280 Wear protective gloves, protective clothing face protection, eye protection P271 Use only outdoors or in a well-ventilated area P302+P352 IF ON SKIN: Wash with plenty of soap and water. P332+P313 If skin irritation occurs: Get medical advice/attention P362+P364 Take off contaminated clothing and wash it before reuse. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313 If eye irritation persists: Get medical advice/attention P310 Immediately call a POISON CENTER or doctor. P312 Call a doctor, a POISON CENTER if you feel unwell
Additional labelling phrases	To avoid risks to man and the environment, comply with the instructions for use. [EUH401] Operators must wear adequate work clothing - Operator must wear a work wear, protective gloves and face/eye protection when mixing, loading and handling and work wear during application.* - Treated areas should not be re-entered before spray deposits on leaf surfaces have completely dried. In case workers enter in the treated area, adequate work wear clothing shall be used. - Respect a buffer zone of 5 m from residential areas

*this additional information has been adjusted to reflects cMS DE and SI comments

Table 6.1-3: Summary of risk assessment for operators, workers, residents and bystanders for CA3301

	Result	PPE / Risk mitigation measures
Operators	Acceptable	Operators must wear adequate work wear clothing during mixing/loading following hazard classification it is recommended to use by the operators work wear, protective gloves and face/eye protection when mixing, loading and handling and work wear during application*
Workers	Acceptable	Worker should use adequate work wear when entering in a treated area
Residents	Acceptable	2-3m buffer zone# 5 m buffer zone, plus DRT* 2-3m buffer zone plus DRT*
Bystanders	Acceptable	None

*this RRM has been included to reflects cMS DE comment; details of the calculation see Table 6.6 11/01

**this RRM has been included to reflects cMS NL comment; details of the calculation see Table 6.6 11/02

this RRM has been included to reflects cMS SI comment; details of the calculation see Table 6.6 11/03

DRT – drift reduction technique

No unacceptable risk for operators, workers, residents and bystanders 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 residents/bystanders 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. safen- er/synergist (L/ha)) critical gap for operator, worker, resident or by- stander exposure based on [Expo- sure model]	Acceptability of exposure as- sessment			
			Method / Kind (incl. applica- tion technique ***	Max. number (min. interval between applications) a) per use b) per crop/ season	Max. applica- tion rate kg as/ha a) a.s. 1 b) a.s. 2	Water L/ha min / max			Operator	Worker	Residents	Bystander
1- 112	Barley, oat (BBCH 30-61), wheat, triticale, rye (BBCH 30- 69), oilseed rape (BBCH 14-18, 20-69), Flax (BBCH 33-51), Mustard (14-18, 20-69)	F	Spraying, LCTM	a) 2 b) 2 (14)	a) 0.200	100 - 400	35 - 56	Guidance on the assessment of exposure of opera- tors, 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

Data gaps

No data gaps were identified.

6.2 Toxicological Information on Active Substance(s)

Information regarding classification of the active substance Prothioconazole and Prothioconazole-desthio (metabolite)* 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)

	Prothioconazole	Prothioconazole-desthio (metabolite)*
Common Name	Prothioconazole	Prothioconazole-desthio
CAS-No.	178928-70-6	120983-64-4
Classification and proposed labelling		
With regard to toxicological endpoints (according to the criteria in Reg. 1272/2008, as amended)	Hazard classes (s), categories: None Code(s) for hazard pictogram(s): None Signal word: None Hazard statement(s): None	Hazard classes (s), categories: None Code(s) for hazard pictogram(s): None Signal word: None Hazard statement(s): None
Additional C&L proposal	None	None
Agreed EU endpoints		

	Prothioconazole	Prothioconazole-desthio (metabolite)*
AOEL systemic	0.2 mg/kg bw/d	0.01 mg/kg bw/d
Reference	EFSA Scientific Report (2007) 106, 1-98, Conclusion regarding the peer review of the pesticide risk assessment of the active substance prothioconazole	
Conditions to take into account/critical areas of concern with regard to toxicology		
According to Review Report for active substance	The operator safety in spray applications. Conditions of use should include adequate protective measures.	
* Prothioconazole-desthio is a relevant metabolite of prothioconazole with a lower AOEL. As such it was considered appropriate to include this metabolite as part of the human non-dietary risk assessments		

6.3 Toxicological Evaluation of Plant Protection Product

No acute toxicity data is available for CA3301. However, reliable data on the active substance prothioconazole and the co-formulants are available and used for the classification of the product according to the mixture rules calculation of Regulation (EC) No 1272/2008 (CLP).

A summary of the toxicological information for CA3301 is given in the following tables.

Table 6.3-1: Summary of evaluation of the studies on acute toxicity including irritancy and skin sensitisation for CA3301

Type of test, species, model system (Guideline)	Result	Acceptability	Classification (acc. to the criteria in Reg. 1272/2008)	Reference
LD ₅₀ oral (calculation method)	> 2000 mg/kg bw	Yes	None	Registration Report - Part C
LD ₅₀ dermal (calculation method)	> 2000 mg/kg bw	Yes	None	Registration Report - Part C
LC ₅₀ inhalation (calculation method)	> 5 mg/L air	Yes	None	Registration Report - Part C
Skin irritation (calculation method)	Irritant	Yes	Skin Irrit. 2, H315	Registration Report - Part C
Eye irritation (calculation method)	Irritant	Yes	Eye Irrit. 2, H319	Registration Report - Part C
Skin sensitisation (calculation method)	Non-sensitising	Yes	None	Registration Report - Part C
Supplementary studies for combinations of plant protection products	No data – not required	--	--	--

Table 6.3-2: Additional toxicological information relevant for classification/labelling of CA3301

	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)	Prothioconazole (25.13% (w/w))	None	COMMISSION DELEGATED REGULATION (EU) 2021/849 MSDS** (2021)	None
Toxicological properties of non-active substance(s)	N,N Dimethyl 9-dodecenamide (CAS No. 1374570-57-6, 60-70% (w/w))*	H315 H319 H335	MSDS**	H315 H319 H335

	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)
(relevant for classification of product)	Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt (CAS No. 1335202-81-7) (1-2% (w/w))*	H315 H318	MSDS**	
	2-ethylhexanol (CAS No. 104-76-7, 1-2% (w/w))*	H332 H315 H319 H335	MSDS**	
Further toxicological information	No data – not required			

* Please use concentration range or concentration limit (e.g. 1-10% or > 1%) as provided in MSDS.

** Material safety data sheet by the applicant

6.4 Toxicological Evaluation of Groundwater Metabolites

All metabolite concentrations are predicted to stay below 0.1 µg/L – no groundwater assessment is required.

6.5 Dermal Absorption (KCP 7.3)

A summary of the dermal absorption rates for the active substance in CA3301 and Prothioconazole-desthio (metabolite) are presented in the following table.

Table 6.5-1: Dermal absorption rates for active substance and metabolite in CA3301

	Prothioconazole		Prothioconazole-desthio (metabolite)*	
	Value	Reference	Value	Reference
Concentrate	25%	EFSA Guidance 2017, 4873 default value for concentrate	0.70%	xxxxxxx 2021
Dilution (0.1 – 1.0%)	70%	EFSA Guidance 2017, 4873 default value for dilution	25%	xxxxxxx 2021

* Prothioconazole-desthio is a relevant metabolite with toxicity effects which is formed after foliar spray application of prothioconazole containing products. Diluted prothioconazole can degrade to prothioconazole-desthio on plant surfaces, clothing or skin. Although prothioconazole-desthio is not part of the formulation, non-dietary risk assessments were performed for prothioconazole-desthio due to a lower AOEL compared to prothioconazole.

6.5.1 Justification for proposed values - Prothioconazole

No data on dermal absorption for prothioconazole in CA3301 is available. Justifications for default values according to Guidance on Dermal Absorption (EFSA Journal 2017; 15(6):4873) are presented in the following table.

Table 6.5-2: Default dermal absorption rates for prothioconazole

	Value	Justification for value	Acceptability of justification
Concentrate	25%	CA3301 is an emulsifiable concentrate and the EFSA guidance on dermal absorption indicates a default value of 25% for	Justification accepted. Endpoint can be used for current product

	Value	Justification for value	Acceptability of justification
		concentrate for organic solvent based formulations.	
Dilution	70%	CA3301 is an emulsifiable concentrate and the EFSA guidance on dermal absorption indicates a default value of 70% for diluted product for organic solvent based formulations.	Justification accepted. Endpoint can be used for current product

6.5.2 Justification for proposed values – Prothioconazole-desthio (metabolite)

Proposed dermal absorption rates for prothioconazole-desthio are based on a dermal absorption study on a formulation identical to CA3301. The study results are summarised in the following table. A full summary of the study on the dermal absorption of prothioconazole-desthio that has not previously been evaluated within an EU peer review process is described in detail in Appendix 2.

Table 6.5-3: Summary of the results of submitted dermal absorption studies for prothioconazole-desthio

Test	Concentrate	Spray dilution (1: 100 - 1000)	Formulation in study	Acceptability of study	Justification provided on representativity of study formulation for current product	Acceptability of justification	Reference
In vitro (human)	0.70%	25%	CA3301	Yes	Not required	Justification accepted. Endpoint can be used for current product (see Appendix A 2.10)	xxxxxxxxxx 2021

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	CA3301	
Formulation type	EC	
Category	Fungicide	
Active substance(s) (incl. content)	Prothioconazole 250 g/L	Prothioconazole-desthio (a) 227 g/L
AOEL systemic	0.2 mg/kg bw/d	0.01 mg/kg bw/d
Inhalation absorption	100%	100%
Oral absorption	100%	100%
Dermal absorption	Concentrate: 25% Dilution: 70% (Default)	Concentrate: 0.70% Dilution: 25% (2.27 - 0.227 g/L) (Based on formulation)

(a) Calculated assuming 100% conversion of prothioconazole to prothioconazole-desthio. When calculating the amount of prothioconazole-desthio a conversion factor of 0.907 was applied (based on a molecular weight of 344.254 g/mol for prothioconazole and 312.194 g/mol for prothioconazole-desthio).

6.6.1 Selection of critical use(s) and justification

The critical GAPs used for the exposure assessment of the plant protection product are shown in Ta-

ble 6.1-4. A list of all intended uses within the zone is given in Part B, Section 0.

Justification

The cGAPs have been based upon a consideration of the maximum use rate and the minimum water volume (i.e., spray volume). Also, for consideration of the cGAPs for re-entry worker, the minimum spray interval has also been considered.

Prothioconazole-desthio is a relevant metabolite with toxicity effects which is formed during and following foliar spray application of prothioconazole containing products. Diluted prothioconazole can degrade to prothioconazole-desthio in solution, on plant surfaces, clothing or skin. Although prothioconazole-desthio is not part of the formulation, non-dietary risk assessments were included for prothioconazole-desthio due to a lower AOEL compared to prothioconazole.

6.6.2 Operator exposure (KCP 7.2.1)

Comments of zRMS:	NDE calculations performed by the applicant are acceptable and zRMS agrees to the conclusions. The risk for operators is acceptable under conditions of intended uses and considering below mentioned risk mitigation measures such as Work wear (arms, body and legs covered) during M, L and A. During commenting period it was discussed that available experimental data (exposure studies by Maasfeld, one of them was cited in the dRR; study Maasfeld, 2002 (<i>Determination of exposure to JAU 6476 and JAU 6476-desthio (SXX 0665) during mixing/loading and application of JAU 6476 in cereals</i>)) indicate that conversion rates between 1% and 70% may be observed. cMS Reviewers recommend the use of a conversion factor of 50%, which corresponds to the 90 th percentile derived from the abovementioned complete data set from the studies by Maasfeld, therefore zRMS include in the revised RR additional NDE assessment taking into account conversion factor 50%.
--------------------------	--

6.6.2.1 Estimation of operator exposure

A summary of the exposure models used for estimation of operator exposure to the active substance and metabolite during application of CA3301 according to the critical use(s) is presented in Table 6.6-2. (longer term exposure). Detailed calculations are in Appendix 3. No acute exposure assessment is provided as no AAOEL value has been determined for the active substance.

Table 6.6-2: Exposure models for intended uses

Critical use(s)	Wheat (max. 2 x 0.2 kg a.s./ha) Application rate: 0.8 L of product/ha (equivalent to 0.200 kg prothioconazole/ha; equivalent to 0.181 kg prothioconazole-desthio/ha, assuming 100% conversion) Water volume: 100 - 400 L/ha
Model(s)	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

To account for the potential conversion of prothioconazole to prothioconazole-desthio, a conservative approach was used and the following assumptions were made in the exposure calculations:

For the exposure assessment to prothioconazole-desthio a 100% conversion of prothioconazole to prothioconazole-desthio was assumed. When calculating the amount of prothioconazole-desthio a conversion factor of 0.907 was applied (based on a molecular weight of 344.254 g/mol for prothioconazole and 312.194 g/mol for prothioconazole-desthio). Formation of prothioconazole –desthio is not expected in the concentrate, thus during the M/L task dermal absorption of prothioconazole-desthio was not considered and a dermal absorption value of 0% was applied to remove this from the calculation (for details refer phis-chem section).

No conversion from prothioconazole to prothioconazole-desthio was considered for the exposure assessment of prothioconazole.

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

		Prothioconazole		Prothioconazole-desthio	
Model data	Level of PPE	Total absorbed dose (mg/kg/day)	% of systemic AOEL	Total absorbed dose (mg/kg/day)	% of systemic AOEL
Wheat (2 x 0.200 kg as/ha, 100 L/ha, application equipment: vehicle mounted, downward spraying)					
Application rate		0.200 kg a.s./ha		0.181 kg equivalent/ha	
Spray application (EFSA Calc; 75 th percentile) Body weight: 60 kg	Potential exposure	0.224	112	0.00904	90.4
	Work wear (arms, body and legs covered) M/L and A	0.140	70.1	0.00600	60.0

For prothioconazole the risk assessment indicates that operator exposure is below the AOEL value when standard workwear is worn.

For prothioconazole-desthio the risk assessment indicates that operator exposure is below the AOEL value for potential exposure even if no work clothing is used.

1) Additional calculations provided below assuming a 50% conversion rate for the combined exposure assessment reflecting cMS DE comment:

Table 6.6-4: Estimated operator exposure (longer term), assuming 50% conversion to metabolite during application phase (for combined exposure assessment)

during application phase (for combined exposure assessment)					
		Prothioconazole		Prothioconazole-desthio	
Model data	Level of PPE	Total absorbed dose (mg/kg/day)	% of systemic AOEL	Total absorbed dose (mg/kg/day)	% of systemic AOEL
Wheat (2 x 0.200 kg as/ha, 100 L/ha, application equipment: vehicle mounted, downward spraying)					
Application rate		0.200 kg a.s./ha M/L; 0.1 kg a.s./ha A ¹		0.091 kg equivalent/ha A ²	
Spray application (EFSA Calc; 75 th percentile) Body weight: 60 kg	Potential exposure	0.210	105.2	0.004	45.9
	Work wear (arms, body and legs covered) M/L and A	0.131	65.7	0.003	30.6

¹ Exposure to PTZ only during M/L, and 50% PTZ during application

² No exposure during M/L, exposure to 50% PTZ-desthio during application

2) Additional calculations provided below assuming a 45% conversion rate for the combined exposure assessment reflecting cMS SI comment:

Table 6.6-5: Estimated operator exposure (longer term), assuming 45% conversion to metabolite during application phase (for combined exposure assessment)

		Prothioconazole		Prothioconazole-desthio	
Model data	Level of PPE	Total absorbed dose (mg/kg/day)	% of systemic AOEL	Total absorbed dose (mg/kg/day)	% of systemic AOEL
Wheat (2 x 0.200 kg as/ha, 100 L/ha, application equipment: vehicle mounted, downward spraying)					
Application rate		0.200 kg a.s./ha M/L; 0.11 kg a.s./ha A ¹		0.081 kg equivalent/ha A ²	
Spray application (EFSA Calc; 75 th percentile) Body weight: 60 kg	Potential exposure	0.212	105.9	0.004	41.0
	Work wear (arms, body and legs covered) M/L and A	0.132	66.1	0.003	27.4

¹ Exposure to PTZ only during M/L, and 55% PTZ during application
² No exposure during M/L, exposure to 45% PTZ-desthio during application

6.6.2.2 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 consideration of the above mentioned personal protective equipment (PPE), a study to provide measurements of operator exposure was not necessary and was therefore not performed.

6.6.3 Worker exposure (KCP 7.2.3)

Comments of zRMS:	<p>NDE calculations performed by the applicant are acceptable and zRMS agrees to the conclusions. Proposed step wise approach which considers two conversion factors of PTZ to PTZ-desthio 100% and as a refinement 60% is acceptable</p> <p>In the study Maasfeld, 2002 (<i>Determination of exposure to JAU 6476 and JAU 6476-desthio (SXX 0665) during mixing/loading and application of JAU 6476 in cereals</i>) observed conversion of prothioconazole to prothioconazole-desthio allow to consider as acceptable proposed conversion factor 60% PTZ to PTZ-desthio. (Note: mentioned study has been also accepted by the RMS PL/UK for the risk assessment.)</p> <p>Thus, exposure for workers (entry into a previously treated area or handling a crop according to the critical uses) is acceptable under conditions of intended uses considering below mentioned risk mitigation measures such as Work wear, (arms, body and legs covered) but no PPE is used.</p>
--------------------------	---

6.6.3.1 Estimation of worker exposure

Table 6.6-6 shows the exposure model(s) used for estimation of worker exposure after entry into a previously treated area or handling a crop treated with CA3301 according to the critical use(s). Outcome of the estimation is presented in To account for the potential conversion of prothioconazole to prothioconazole-desthio, in the first instance a conservative approach was used and the following assumptions were made in the exposure calculations:

For the exposure assessment to prothioconazole-desthio a 100% conversion of prothioconazole to prothioconazole-desthio was assumed. When calculating the amount of prothioconazole-desthio a conversion factor of 0.907 was applied (based on a molecular weight of 344.254 g/mol for prothioconazole and 312.194 g/mol for prothioconazole-desthio).

No conversion from prothioconazole to prothioconazole-desthio was considered for the initial exposure assessment of prothioconazole.

Table 6.6-7 (longer term exposure). Detailed calculations are in Appendix 3.

Table 6.6-6: Exposure models for intended uses

Critical use(s)	<p>Wheat (max. 2 x 0.2 kg a.s./ha)</p> <p>Application rate: 0.8 L of product/ha (equivalent to 0.200 kg prothioconazole/ha; equivalent to 0.181 kg prothioconazole-desthio/ha, assuming 100% conversion)</p> <p>Water volume: 100 L/ha</p>
Model	<p>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</p> <p>calculator version: 30/03/2015</p>

To account for the potential conversion of prothioconazole to prothioconazole-desthio, in the first instance a conservative approach was used and the following assumptions were made in the exposure calculations:

For the exposure assessment to prothioconazole-desthio a 100% conversion of prothioconazole to prothioconazole-desthio was assumed. When calculating the amount of prothioconazole-desthio a conversion

factor of 0.907 was applied (based on a molecular weight of 344.254 g/mol for prothioconazole and 312.194 g/mol for prothioconazole-desthio).

No conversion from prothioconazole to prothioconazole-desthio was considered for the initial exposure assessment of prothioconazole.

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

		Prothioconazole		Prothioconazole-desthio	
Model data	Level of PPE	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereal – Inspection, Irrigation - Outdoor Work rate: 2 hours/day DT50: 30 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: 14 days					
Number of applications and application rate		2 x 0.200 kg a.s./ha		2 x 0.181 kg equivalent/ha	
Body weight: 60 kg	Potential TC: 12500 cm ² /person/h	0.302	151	0.0975	975
	Work wear (arms, body and legs covered) TC: 1400 cm ² /person/h	0.0338	16.9	0.0109	109

For prothioconazole the estimate of worker exposure is below the AOEL value for workers wearing standard workwear (this is not considered to be PPE) such that the arms, body and legs are covered.

For prothioconazole-desthio the risk assessment indicates that the estimated worker exposure is slightly above the AOEL when workers are wearing standard workwear. However, as noted above, when calculating the equivalent application rate of prothioconazole-desthio a 100% conversion rate from prothioconazole was assumed. The calculation therefore also assumes that the 100% conversion happens immediately after spraying. This was chosen as a worst-case and is likely to be a considerable overestimate; in reality, the conversion to prothioconazole-desthio will be lower and therefore worker exposure will also be lower.

The worker exposure assessment also relies on the dermal absorption value for the spray dilution; however, workers do not enter the crop before spray deposits have dried and will therefore not be exposed to wet foliar residues. Workers will actually be exposed to dried foliar residues, and therefore the dermal absorption value of 25% is likely to be an overestimate of the true absorption from dried residues. Therefore, assuming a 100% immediate conversion rate and dermal contact with wet spray adds a significant level of conservatism to the exposure estimate, and exposure to prothioconazole-desthio will be lower than predicted using these worst-case assumptions.

In the DAR B7 (2005) several plant metabolism studies were reported which provided information about the proportion of the metabolite, prothioconazole-desthio in plants. In all of these studies the maximum level of the metabolite was 35.4% (Haas and Bornatsch, 2000, DAR IIA 6.1.1/01). In the DAR B6 (2005) a worst case conversion value of 60% was used, based on the maximum conversion observed in a hand wash solution following exposure to prothioconazole spray liquid (Maasfeld, 2002, DAR IIA 7.2.1.2/01). Using this more realistic approach, if a conversion value of 60% is used instead of the worst case 100% conversion then the estimate of worker exposure is below the AOEL value for workers wearing standard workwear.

Table 6.6-8: Estimated worker exposure (longer term exposure) – 60% conversion

		Prothioconazole-desthio	
Model data	Level of PPE	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereal – Inspection, Irrigation - Outdoor Work rate: 2 hours/day DT50: 30 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: 14 days			
Number of applications and application rate		2 x 0.109 kg equivalent/ha (equivalent to 60% maximum conversion to the metabolite)	
Body weight: 60 kg	Potential TC: 12500 cm ² /person/h	0.0587	587
	Work wear (arms, body and legs covered) TC: 1400 cm ² /person/h	0.00658	65.8

A brief summary of the study, Maasfeld, 2002 [Determination of exposure to JAU 6476 and JAU 6476-desthio (SXX 0665) during mixing/loading and application of JAU 6476 in cereals. Bayer report No. MR-036/02.] is provided below based on the summary provided in the DAR.

This study has been previously evaluated for Annex I inclusion of prothioconazole in 2005 and found to be acceptable.

The purpose of the study was twofold: first, to determine the dermal and inhalation exposure to prothioconazole when applying this fungicide to cereals with appropriate spray equipment; second, to determine the proportion of conversion and the resulting exposure to prothioconazole-desthio to enable a realistic risk assessment.

The study was GLP compliant and was designed as a mixer/loader/applicator study. Eight applications at three different spray timings involving three different male operators were monitored. The operators were employees of Bayer AG and were familiar with the practice of mixing/loading and application of plant protection products. All applications were performed during the actual use season on a field belonging to an agricultural test site of Bayer AG. With each application approximately 20 ha were treated using tractor drawn/carried boom sprayer fitted with induction hoppers. During the first two spray timings equipment for larger field sizes was used (28 m boom, 2500 L water tank volume) whereas during the third spray timing equipment for smaller field sizes was chosen (15 m boom, 800 L water tank volume). The tractors used were all equipped with a closed cab. During the study, some foaming was observed which could contribute to higher exposure therefore an anti-foaming agent was used.

Dermal exposure of the body was determined via whole body underwear (long sleeved T-shirt and long johns) as well as by analysing a cotton shirt and a pair of trousers (cotton/polyester) as outer garments. Exposure to the head was determined by a cap. Hand exposure was determined via glove rinsing and hand washing. Gloves were always worn during mixing/loading whereas during application gloves were only worn if the operator had to handle contaminated surfaces (e.g. when correcting a machine malfunction). Different gloves were used during mixing/loading and application tasks.

The spraying lasted between 2.5 h and 3.5 h. On completion of spraying, the cap and the gloves were collected and a hand wash was performed. The operators continued to wear the other dosimeter clothing for some further time to give a total of approximately 7 hours (with one exception: ca. 5.2 hours) to provide information on the conversion of prothioconazole to prothioconazole-desthio during a full working day. Inhalation exposure was measured via IOM-samplers equipped with glass fibre filters which were fixed to the garments at the breathing zone of the operator and connected to a personal powered air pump.

Quantification of residues on dosimeters was performed using an LC-MS/MS analytical method adapted to the matrices of this study. Field fortifications were used to demonstrate the stability of prothioconazole and its metabolite prothioconazole-desthio. Undergarments, outer garments (both cotton/polyester and cotton), protective gloves, air samplers and hand wash samples were spiked with a known amount of

‘JAU 6476 EC 250’ formulation diluted with water or a standard in solvent at the first and/or second and/or third spray timing. In addition field recoveries for prothioconazole-desthio were set up at the second and third spray timings using a standard in solvent. When the diluted formulation in water was used, the field recoveries for prothioconazole showed lower recovery than when the sampling matrixes were spiked with standard in solvent. As such, the recoveries performed using the diluted formulation have been used, as opposed to the field recoveries performed using the standard in solvent when this data is available. Field recoveries were not performed for the cap, however prothioconazole and prothioconazole-desthio residues measured on cap were below the <LOQ, thus the lack of field recoveries for caps is expected to have a minor contribution to the measured exposure levels.

Conversion of prothioconazole to prothioconazole-desthio was observed. Field recoveries for prothioconazole were calculated as prothioconazole equivalents by summing together prothioconazole and prothioconazole-desthio residues. For prothioconazole the LOQs per sample were 50 µg for the outer garments, 10 µg for the undergarments, 5 µg for the hand wash, 400 µg for the gloves and 0.1 µg for the air filters. For prothioconazole-desthio the LOQs per sample were 20 µg for the outer garments, 2 µg for the undergarments, 2 µg for the hand wash and 0.1 µg for the air filters. An LOQ was not reported for protective gloves for prothioconazole-desthio and no explanation was given for this omission in the study report, probably because prothioconazole-desthio residues measured in all glove washings samples was above the LOQ.

One of the main aims in the study was to provide information about the formation and exposure to prothioconazole-desthio. On nine samples of the outer clothing measurable amounts of prothioconazole were found; in five of these nine samples prothioconazole-desthio was quantified. The percentage conversion with respect to total prothioconazole equivalents (PTZ + PTZ-desthio) was found to be variable, ranging from 3 to nearly 50%. On gloves and in some of the hand wash solutions prothioconazole and metabolite were also found. The corresponding percentages of metabolite to prothioconazole ranged from 1 to 60%.

Spray tank samples which were also analysed showed that prothioconazole-desthio accounted for 0.1% to a maximum of 1% of total prothioconazole equivalents. The mean was 0.22%. This data supports the hypothesis that the formation of prothioconazole-desthio is related to the drying process, the concentration in the solution and the nature of the surface on which the prothioconazole dries. Based on these findings it would seem to be more realistic to use a conversion factor (experimental worst case) for prothioconazole to prothioconazole-desthio of 60%, and even this is still likely to be a considerable overestimate.

6.6.3.2 Refinement of generic DFR value (KCP 7.2)

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 mentioned PPE, a study to provide measurements of worker exposure was not necessary and was therefore not performed.

6.6.3.3 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 mentioned PPE, a study to provide measurements of worker exposure was not necessary and was therefore not performed.

6.6.4 Resident and bystander exposure (KCP 7.2.2)

Comments of zRMS:	<p>NDE calculations performed by the applicant are acceptable and zRMS agrees to the conclusions. Proposed step wise approach which considers two conversion factors of PTZ to PTZ-desthio 100% and as a refinement 60% is acceptable</p> <p>In the study Maasfeld, 2002 (<i>Determination of exposure to JAU 6476 and JAU 6476-desthio (SXX 0665) during mixing/loading and application of JAU 6476 in cereals</i>) observed conversion of prothioconazole to prothioconazole-desthio allow to consider as acceptable proposed conversion factor 60% PTZ to PTZ-desthio. (Note: mentioned study has been also accepted by the RMS PL/UK for the risk assessment.) Thus, considering conversion factor 60% PTZ to PTZ-desthio as a refinement, estimated resident (child) exposure is acceptable under conditions of intended uses.</p> <p>During commenting period it was discussed that available experimental data (exposure studies by Maasfeld, cited above Maasfeld, 2002) indicate that conversion rates between 1% and 70% may be observed. cMS Reviewers recommend the use of a conversion factor of 50%, which corresponds to the 90th percentile derived from the abovementioned complete data set from the studies by Maasfeld, therefore zRMS include in the revised RR additional NDE assessment taking into account conversion factor 50%.</p>
--------------------------	--

6.6.4.1 Estimation of resident and bystander exposure

No bystander risk assessment is required for PPPs that do not have significant acute toxicity or the potential to exert toxic effects after a single exposure. Exposure in this case will be determined by average exposure over a longer duration, and higher exposures on one day will tend to be offset by lower exposures on other days. Therefore, exposure assessment for residents also covers bystander exposure.

Table 6.6-9 shows the exposure model(s) used for estimation of resident (and bystander) exposure to prothioconazole and prothioconazole-desthio. The outcome of the estimation is presented in Table 6.6-10 (longer term resident exposure). Detailed calculations are in Appendix 3.

Table 6.6-9: Exposure models for intended uses

Critical use(s)	<p>Wheat (max. 2 x 0.2 kg a.s./ha)</p> <p>Application rate: 0.8 L of product/ha (equivalent to 0.200 kg prothioconazole/ha; equivalent to 0.181 kg prothioconazole-desthio/ha, assuming 100% conversion)</p> <p>Water volume: 100 L/ha</p>
Model	<p>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</p> <p>calculator version: 30/03/2015</p>

To account for the potential conversion of prothioconazole to prothioconazole-desthio the following assumptions were made in the exposure calculations.

For the exposure assessment to prothioconazole-desthio initially a 100% conversion of prothioconazole to prothioconazole-desthio was assumed. When calculating the amount of prothioconazole-desthio a conversion factor of 0.907 was applied (based on a molecular weight of 344.254 g/mol for prothioconazole and 312.194 g/mol for prothioconazole-desthio).

No conversion from prothioconazole to prothioconazole-desthio was considered for the exposure assessment of prothioconazole.

Table 6.6-10: Estimated resident exposure (longer term exposure)

Model data	Prothioconazole		Prothioconazole-desthio	
	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals - Tractor mounted downward spray application, outdoors Buffer zone: 2-3 m				

Drift reduction technology: no DT50: 30 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: 14 days					
Application rate:		2 x 0.200 kg a.s./ha		2 x 0.181 kg equivalent/ha	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.0376	18.8	0.0122	122
	Vapour (75 th perc.)	0.00107	0.54	0.00107	10.7
	Deposits (75 th perc.)	0.00379	1.9	0.00139	13.9
	Re-entry (75 th perc.)	0.0407	20.4	0.0132	132
	Sum (mean)	0.0570	28.5	0.0193	193
Resident adult Body weight: 60 kg	Drift (75 th perc.)	0.00900	4.5	0.00291	29.1
	Vapour (75 th perc.)	0.000230	0.1	0.000230	2.3
	Deposits (75 th perc.)	0.00164	0.8	0.000531	5.3
	Re-entry (75 th perc.)	0.0226	11.3	0.00731	73.1
	Sum (mean)	0.0237	11.9	0.00783	78.3

For prothioconazole the estimate of resident (and bystander) exposure is below the AOEL value.

For prothioconazole-desthio the estimate of resident exposure is acceptable for adults but is unacceptable for children, due to high exposure through spray drift and re-entry into treated crops. However, as noted above, when calculating the equivalent application rate of prothioconazole-desthio a 100% conversion rate from prothioconazole has been assumed. The calculation therefore also assumes that the 100% conversion happens immediately after spraying. This was chosen as a worst-case and is likely to be a considerable overestimate; in reality, the conversion to prothioconazole-desthio will be much lower and therefore resident exposure will also be lower.

The resident exposure assessment also relies on the dermal absorption value for the spray dilution; however, residents do not enter the crop before spray deposits have dried and will therefore not be exposed to wet foliar residues. Residents will actually be exposed to dried foliar residues, and therefore the dermal absorption value of 25% is likely to be an overestimate of the true absorption from dried residues. Therefore, assuming a 100% immediate conversion rate and dermal contact with wet spray adds a significant level of conservatism to the exposure estimate, and exposure to prothioconazole-desthio will be lower than predicted using these worst-case assumptions.

In the DAR B7 (2005) several plant metabolism studies were reported which provided information about the proportion of the metabolite, prothioconazole-desthio, in plants. In all of these studies the maximum level of the metabolite was 35.4% (Haas and Bornatsch, 2000). In the DAR a worst case conversion value of 60% (Maasfeld 2002), was used, based on the maximum conversion observed in a hand wash solution following exposure to prothioconazole spray liquid. If a conversion value of 60% is used instead of the worst case 100% conversion (see section 6.6.3.1) then the risk assessment value for resident child, for all pathways (mean), is 120% of AOEL.

Table 6.6-11: Estimated resident exposure (longer term exposure), prothioconazole-desthio (60% conversion)

		Prothioconazole-desthio	
Model data		Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals - Tractor mounted downward spray application, outdoors Buffer zone: 2-3 Drift reduction technology: no DT50: 30 days DFR: 3 µg/cm²/kg a.s./ha Interval between treatments: 14 days			

Application rate:		2 x 0.109 kg equivalent/ha (equivalent to 60% maximum conversion to the metabolite)	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.00733	73
	Vapour (75 th perc.)	0.00107	11
	Deposits (75 th perc.)	0.000836	8.4
	Re-entry (75 th perc.)	0.00793	79
	Sum (mean)	0.0120	120

In the DAR B6 (2005) a justification was presented to account for the decrease in foliar residues between applications. Based on residue decline data it was proposed that the reduction in levels of prothioconazole-desthio between applications, due to weathering and growth, was equivalent to 50%. With an application interval of 14 days this is equivalent to a DT₅₀ of 14 days.

Residue decline studies reported in the DAR B7 (2005) and accepted in EFSA conclusion (2007) were conducted with JAU 6476 250 EC. These were conducted using spray intervals of 14 – 21 days with levels of prothioconazole and prothioconazole-desthio determined and indicated typical losses of 70% of the metabolite. As a conservative approach a decline in DFR for the metabolite of 50% between applications was proposed for the risk assessment. The results of the trials are summarised in Table 6.6-10.

Table 6.6-12: Results from residue decline trials for prothioconazole and metabolite conducted on cereals in UK (data from the DAR)

Trial country (year)	Crop variety	Formulation	Application		Sample analysed	DALA	Prothioconazole-desthio residue (mg/kg)
			Number	kg/ha prothioconazole			
UK (2000) ¹	Spring Wheat Chablis	250 EC	3	0.200	Ear	0 ^a	<0.01
						0	0.80
						7	0.26
						14	0.07
						35	0.02
					Rest of plant	0 ^a	0.74
						0	2.4
						7	1.0
						14	0.5
						35	0.32
					Grain Straw	56	<0.01
						56	0.27
UK (1999) ²	Winter Wheat Abbot	250 EC	3	0.200	Ear	0 ^a	<0.01
						0	1.2
						21	0.07
						28	0.02
						35	0.02
					Rest of plant	0 ^a	0.19
						0	1.8
						21	0.21
						28	0.14
						35	0.14
					Grain Straw	54	<0.01
						54	0.19
UK (2000) ³	Spring Barley Abbot	250 EC	2	0.200	Ear	0 ^a	0.02
						0	2.0
						7	0.74
						15	0.17
						35	0.02
					Rest of plant	0 ^a	0.66
						0	2.5
						7	2.0
						15	0.75
						35	0.26
					Grain Straw	57	<0.01
						57	0.30

¹ Heinemann, 2001. Determination of residues of JAU 6476-desthio on spring wheat after spray application of JAU 6476 250 EC

in Sweden, Germany, Northern France and Great Britain. Bayer report No. RA-2104/00, DAR IIA 6.3.2.1.2/02.
2 Heinemann, 2001. Determination of residues of JAU 6476-desthio on spring wheat and winter wheat after spray application of JAU 6476 200 FS and spray application of JAU 6476 250 EC in Germany, Northern France and Great Britain. Bayer report No. RA-2003/99, DAR IIA 6.3.2.1.2/01.
3 Heinemann, 2001. Determination of residues of JAU 6476-desthio on spring barley after spray application of JAU 6476 250 EC in Sweden, Germany, Northern France and Great Britain. Bayer report No. RA-2101/00, DAR IIA 6.3.2.1.3/03.
a Sample taken prior to last application (DALA days after last application).

If a DT₅₀ of 14 days is used then an acceptable risk is demonstrated for resident child (95% of AOEL value) provided a buffer zone of 5 m is applied.

Table 6.6-13: Estimated resident exposure (longer term exposure)

		Prothioconazole-desthio	
Model data		Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals - Tractor mounted downward spray application, outdoors Buffer zone: 5 m Drift reduction technology: no DT50: 14 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: 14 days			
Application rate:		2 x 0.109 kg equivalent/ha (equivalent to 60% maximum conversion to the metabolite)	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.00488	48.8
	Vapour (75 th perc.)	0.00107	10.7
	Deposits (75 th perc.)	0.000299	3.0
	Re-entry (75 th perc.)	0.00690	69.0
	Sum (mean)	0.00950	95.0

1) Additional resident exposure calculations assuming a conversion rate of 50% rate reflecting cMS DE comment are shown in the table below:

Table 6.6-14/01: Estimated resident exposure (longer term exposure), prothioconazole-desthio (50% conversion)

		Prothioconazole		Prothioconazole-desthio	
Model data		Total absorbed dose (mg/kg bw/day)	% of systemic AOEL	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals - Tractor mounted downward spray application, outdoors Buffer zone: 5 m Drift reduction technology: yes DT50: 30 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: 14 days					
Application rate:		2 x 0.100 kg a.s./ha		2 x 0.091 kg equivalent/ha	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.0094	4.7	0.0021	20.36
	Vapour (75 th perc.)	0.00107	0.54	0.00107	10.7
	Deposits (75 th perc.)	0.001	0.47	0.0001	1.43
	Re-entry (75 th perc.)	0.02	10.2	0.0066	66.17
	Sum (mean)	0.023	11.6	0.0076	75.84
Resident adult Body weight: 60 kg	Drift (75 th perc.)	0.002	1.12	0.0004	3.71
	Vapour (75 th perc.)	0.000230	0.12	0.000230	2.3

	Deposits (75 th perc.)	0.0004	0.21	0.000055	0.55
	Re-entry (75 th perc.)	0.0113	5.66	0.0037	36.76
	Sum (mean)	0.0011	5.31	0.0034	33.96

2) Additional resident exposure calculations assuming buffer zone 2-3 m and drift reduction technology reflecting cMS NL comment are shown in the table below:

Table 6.6-11/02: Estimated resident exposure (longer term exposure)

		Prothioconazole-desthio	
Model data		Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals - Tractor mounted downward spray application, outdoors Buffer zone: 2 – 3 m Drift reduction technology: yes DT50: 14 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: 14 days			
Application rate:		2 x 0.109 kg equivalent/ha (equivalent to 60% maximum conversion to the metabolite)	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.00367	36.7
	Vapour (75 th perc.)	0.00107	10.7
	Deposits (75 th perc.)	0.000364	3.6
	Re-entry (75 th perc.)	0.00690	69.0
	Sum (mean)	0.00886	88.6

3) Additional resident exposure calculations assuming a conversion rate of 45% and a DT₅₀ of 3.2 days are shown in the table below, in response to comments received from cMS SI:

Table 6.6-11/03: Estimated resident exposure (longer term exposure), assuming 45% conversion, buffer zone 2-3m without drift reduction

		Prothioconazole		Prothioconazole-desthio	
Model data		Total absorbed dose (mg/kg bw/day)	% of systemic AOEL	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Cereals - Tractor mounted downward spray application, outdoors Buffer zone: 2-3 m Drift reduction technology: no DT50 PTZ: 30 days DT50 PTZ-desthio: 3.2 days DFR: 3 µg/cm ² /kg a.s./ha Interval between treatments: 14 days					
Application rate:		2 x 0.11 kg a.s./ha		2 x 0.081 kg equivalent/ha	
Resident child Body weight: 10 kg	Drift (75 th perc.)	0.0207	10.34	0.0054	54.48
	Vapour (75 th perc.)	0.00107	0.54	0.00107	10.70
	Deposits (75 th perc.)	0.0021	1.04	0.00038	3.78
	Re-entry (75 th perc.)	0.0224	11.2	0.0036	35.82
	Sum (mean)	0.0318	15.92	0.0072	72.05
Resident adult Body weight: 60 kg	Drift (75 th perc.)	0.005	2.47	0.0013	13.02
	Vapour (75 th perc.)	0.000230	0.12	0.00023	2.30
	Deposits (75 th perc.)	0.0009	0.45	0.0001	1.45

	Re-entry (75 th perc.)	0.0124	6.22	0.0020	19.9
	Sum (mean)	0.0132	6.58	0.0025	25.41

6.6.4.2 Measurement of resident and/or bystander exposure

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

6.6.5 Combined exposure

~~Not relevant. The product contains only one active substance.~~

From a scientific point of view it is regarded necessary to take into account potential combination effects to prothioconazole and prothioconazole-desthio, based on a conversion rate of 50% for operators and residents (as specified in comments from cMS DE), or 60% for workers.

6.6.5.1 Exposure assessment of prothioconazole (parent) and prothioconazole-desthio (metabolite) in CA3301

Note: The combined toxicological effect of these active substances has not been investigated with regard to repeated dose toxicity.

At the first tier, combined exposure is calculated as the sum of the component exposures without regard to the mode of action or mechanism/target of toxicity. Initially, the individual Hazard Quotients (HQ) are calculated for the active substance and metabolite in the PPP by assessing the exposure according to appropriate models and dividing the individual exposure levels by the respective systemic AOEL. This is equivalent to the predicted exposure as % of systemic AOEL converted to decimal. The Hazard Index (HI) is the sum of the individual HQs.

1) Additional Combined exposure calculations assuming a conversion rate of 50% rate reflecting cMS DE comment are shown in the table below:

Table 6.6.5.1-01: Risk assessment from combined exposure (longer term exposure)

Application scenario	Active ingredient	Estimated exposure / AOEL (HQ)
Operators	Prothioconazole (50%)	0.66
	Prothioconazole-desthio (50%)	0.31
	Cumulative risk operators (HI)	0.97
Workers	Prothioconazole (40%)	0.07
	Prothioconazole-desthio (60%)	0.66
	Cumulative risk workers (HI)	0.73
Resident - child	Prothioconazole (50%)	
	Drift	0.05
	Vapour	0.01
	Deposits	<0.01
	Re-entry	0.10
	Sum of all pathways	0.12
	Prothioconazole-desthio (50%)	

Application scenario	Active ingredient	Estimated exposure / AOEL (HQ)
	Drift	0.20
	Vapour	0.11
	Deposits	0.01
	Re-entry	0.66
	Sum of all pathways	0.76
	Cumulative risk resident – child (HI)	
	Drift	0.25
	Vapour	0.12
	Deposits	0.01
	Re-entry	0.76
	Sum of all pathways	0.88
Resident - adult	Prothioconazole (50%)	
	Drift	0.01
	Vapour	<0.01
	Deposits	<0.01
	Re-entry	0.06
	Sum of all pathways	0.05
	Prothioconazole-desthio (50%)	
	Drift	0.04
	Vapour	0.02
	Deposits	0.01
	Re-entry	0.37
	Sum of all pathways	0.34
	Cumulative risk resident – adult (HI)	
	Drift	0.05
	Vapour	0.02
	Deposits	0.01
	Re-entry	0.42
	Sum of all pathways	0.39

The Hazard Index is < 1. Thus, combined exposure to all the active substance and metabolite in CA3301 is not expected to present a risk for operators, workers, residents and bystanders. No further refinement of the assessment is required.

2) Additional Combined exposure calculations assuming buffer zone 2-3 m and drift reduction technology reflecting cMS NL comment are shown in the table below:

Table 6.6.5.1-02 Risk assessment from combined exposure (longer term exposure)

Application scenario	Active ingredient	Estimated exposure / AOEL (HQ)
Operators – vehicle mounted out-doors to low crop Standard workwear	Prothioconazole (40%)	0.34
	Prothioconazole-desthio (60%)	0.37
	Cumulative risk operators (HI)	0.71
Workers – Cereal, inspection, irrigation Standard Workwear	Prothioconazole (40%)	0.07
	Prothioconazole-desthio (60%)	0.66
	Cumulative risk workers (HI)	0.73
Resident – child Prothioconazole drift reduction refinement Prothioconazole-desthio DT ₅₀ = 14 days and drift reduction refinements	Prothioconazole (40%)	
	Drift	0.04
	Vapour	0.01
	Deposits	<0.01
	Re-entry	0.08
	Sum of all pathways	0.09
	Prothioconazole-desthio (60%)	
	Drift	0.37
	Vapour	0.11
	Deposits	0.04
	Re-entry	0.69
	Sum of all pathways	0.89
	Cumulative risk resident – child (HI)	
	Drift	0.41
	Vapour	0.12
	Deposits	0.04
	Re-entry	0.77
	Sum of all pathways	0.98
Resident – adult Prothioconazole drift reduction refinement Prothioconazole-desthio DT ₅₀ = 14 days and drift reduction refinements	Prothioconazole (40%)	
	Drift	0.01
	Vapour	<0.01
	Deposits	<0.01
	Re-entry	0.05
	Sum of all pathways	0.04
	Prothioconazole-desthio (60%)	
	Drift	0.09
	Vapour	0.02
	Deposits	0.01
	Re-entry	0.38
	Sum of all pathways	0.38
	Cumulative risk resident – adult (HI)	
	Drift	0.10

Application scenario	Active ingredient	Estimated exposure / AOEL (HQ)
	Vapour	0.02
	Deposits	0.01
	Re-entry	0.43
	Sum of all pathways	0.42

The Hazard Index is < 1 for operators, workers and resident adult, thus, combined exposure to all active substances in CA3301 is not expected to present a risk for these groups. The combined exposure Hazard Quotient for resident child, assuming 60% conversion, is also < 1 using DT₅₀ and drift reduction refinements, so further refinement is not necessary.

3) Additional Combined exposure calculations assuming buffer zone 2-3m without drift reduction technique, relevant converting ratio of PTZ to PTZ-desthio has been indicated in the table. Assessment reflecting cMS SI comment are shown in the table below:

Table 6.6.5.1-03: Risk assessment from combined exposure (longer term exposure)

Application scenario	Active ingredient / metabolite	Estimated exposure / AOEL (HQ)
Operators	Prothioconazole (40%)	0.66
	Prothioconazole-desthio (60%)	0.27
	Cumulative risk operators (HI)	0.93
Workers	Prothioconazole (40%)	0.07
	Prothioconazole-desthio (60%)	0.66
	Cumulative risk workers (HI)	0.73
Resident - child	Prothioconazole (55%)	
	Drift	0.10
	Vapour	0.01
	Deposits	0.01
	Re-entry	0.11
	Sum of all pathways	0.16
	Prothioconazole-desthio (45%)	
	Drift	0.54
	Vapour	0.11
	Deposits	0.04
	Re-entry	0.36
	Sum of all pathways	0.72
	Cumulative risk resident – child (HI)	
	Drift	0.65
	Vapour	0.11
	Deposits	0.05
	Re-entry	0.47
	Sum of all pathways	0.89
Resident - adult	Prothioconazole (55%)	
	Drift	0.02

Application scenario	Active ingredient / metabolite	Estimated exposure / AOEL (HQ)
	Vapour	<0.01
	Deposits	<0.01
	Re-entry	0.06
	Sum of all pathways	0.07
	Prothioconazole-desthio (45%)	
	Drift	0.13
	Vapour	0.02
	Deposits	0.01
	Re-entry	0.20
	Sum of all pathways	0.25
	Cumulative risk resident – adult (HI)	
	Drift	0.15
	Vapour	0.02
	Deposits	0.02
	Re-entry	0.26
	Sum of all pathways	0.32

The Hazard Index is < 1. Thus, combined exposure to the active substance and metabolite in CA3301 is not expected to present a risk for operators, workers, residents and bystanders. No further refinement of the assessment is required.

Appendix 1 Lists of data considered in support of the evaluation

List of data submitted by the applicant and relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 7.3	Maxxxxxxxxxx	2021	Distribution and penetration study of one concentrated CA3301 formulation and 3 dilutions containing ¹⁴ C-prothioconazole-desthio xxxxxxxxxxxxxx Nufarm Crop Product UK Report No.: 20-915 GLP Unpublished	N	Nufarm

List of data submitted by the applicant and not relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
-	-	-	-	-	-

List of data relied on not submitted by the applicant but necessary for evaluation

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
-	-	-	-	-	-

Appendix 2 Detailed evaluation of the studies relied upon

A 2.1 Statement on bridging possibilities

CA3301 is a fungicide containing the active substance prothioconazole. CA3301 is composed of 250.0 g/L (25.13% w/w) prothioconazole. No study was performed on the product CA3301. Data on the active substance prothioconazole and co-formulants were used according to the mixture rules calculation of Regulation (EC) No 1272/2008, and an *in vitro* comparative dermal absorption study of prothioconazole-desithio was performed on CA3301, therefore, no bridging statement is necessary.

Comments of zRMS:	Not applicable.
-------------------	-----------------

A 2.2 Acute oral toxicity (KCP 7.1.1)

Comments of zRMS:	Hazard assessment and proposed classification of the product is based on content ingredients of the mixture (Additivity formula) (for details see Part C). Calculation accepted.
-------------------	--

No study has been performed on the product CA3301.
Reliable data on the components of the product CA3301 from studies and MSDSs are available.
None of the active substance or co-formulants is classified for acute oral toxicity.

Conclusion

According to the classification rules laid down in Regulation (EC) No 1272/2008 (CLP), the product CA3301 is not classified for acute oral toxicity.

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

Comments of zRMS:	Hazard assessment and proposed classification of the product is based on content ingredients of the mixture (Additivity formula) (for details see Part C). Calculation accepted.
-------------------	--

No study has been performed on the product CA3301.
Reliable data on the components of the product CA3301 from studies and MSDSs are available.
None of the active substance or co-formulants is classified for acute dermal toxicity.

Conclusion

According to the classification rules laid down in Regulation (EC) No 1272/2008 (CLP), the product CA3301 is not classified for acute dermal toxicity.

A 2.4 Acute inhalation toxicity (KCP 7.1.3)

Comments of zRMS:	Hazard assessment and proposed classification of the product is based on content ingredients of the mixture (Additivity formula) (for details see Part C). Calculation accepted.
-------------------	--

No study has been performed on the product CA3301 as reliable data on the components of the product CA3301 from studies and MSDSs are available.
The product CA3301 contains one co-formulant classified for acute toxicity by inhalation in Category 4, H332, but at a concentration that does not trigger its classification (see details in Registration Report - Part C).

Conclusion

According to the classification rules laid down in Regulation (EC) No 1272/2008 (CLP), the product CA3301 is not classified for acute inhalation toxicity.

A 2.5 Skin irritation (KCP 7.1.4)

Comments of zRMS:	Hazard assessment and proposed classification of the product is based on content ingredients of the mixture (Additivity formula) (for details see Part C). Calculation accepted.
-------------------	--

No study has been performed on the product CA3301.

Reliable data on the components of the product CA3301 from studies and MSDSs are available.

The product CA3301 contains two co-formulants classified for Skin irritation in Category 2, H315 at concentrations that trigger its classification for skin irritation (see details in Registration Report - Part C).

Conclusion

According to the classification rules laid down in Regulation (EC) No 1272/2008 (CLP), the product CA3301 is classified as Skin Irritation Category 2, H315.

A 2.6 Eye irritation (KCP 7.1.5)

Comments of zRMS:	Hazard assessment and proposed classification of the product is based on content ingredients of the mixture (Additivity formula) (for details see Part C). Calculation accepted.
-------------------	--

No study has been performed on the product CA3301.

Reliable data on the components of the product CA3301 from studies and MSDSs are available.

The product CA3301 contains one co-formulant classified as Eye Damage Cat.1, H318 and another co-formulant classified as Eye Irrit. 2, H319, at concentrations that trigger its classification for eye irritation (see details in Registration Report - Part C).

Conclusion

According to the classification rules laid down in Regulation (EC) No 1272/2008 (CLP), the product CA3301 is classified as Eye Irritant Category 2, H319.

A 2.7 Skin sensitisation (KCP 7.1.6)

Comments of zRMS:	Hazard assessment and proposed classification of the product is based on content ingredients of the mixture (Additivity formula) (for details see Part C). Calculation accepted.
-------------------	--

No study has been performed on the product CA3301.

Reliable data on the components of the product CA3301 from studies and MSDSs are available.

None of the active substance or co-formulants is classified for skin sensitisation.

Conclusion

According to the classification rules laid down in Regulation (EC) No 1272/2008 (CLP), the product CA3301 is not classified for skin sensitisation.

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

The product CA3301 is not intended to be used in combination with other plant protection products.

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)

No dermal absorption study was conducted on prothioconazole and default values were used for risk assessment. However, a dermal absorption study was conducted on the main metabolite, prothioconazole-desthio, in which prothioconazole was replaced to mimic a worst case 100% conversion of the active substance to the metabolite.

A 2.10.1 Prothioconazole-desthio in CA3301

Comparative dermal absorption, in vitro using rat and human skin

Comments of zRMS:	Study has been performed according to OECD 428 and is considered acceptable. The dermal absorption values as proposed by the applicant are acceptable. Since lower concentration generally results in higher DA, thus DA values derived from 0.226 g PTZ-destio/L as tested in the <i>in vitro</i> study (Dilution 3) is considered acceptable for spray dilution with concentration of 0.375g PTZ-desthio/ha (refer GAP , B0). Values of the tested doses and proposed ones in the GAP (applications rate, spray dilution) are comparable thus Pro-rata correction is not needed.
-------------------	--

Reference	KCP 7.3/01
Report	Distribution and penetration study of one concentrated CA3301 formulation and 3 dilutions containing ¹⁴ C-prothioconazole-desthio, xxxxxxxxxx., 2021, report No 20-915
Guideline(s)	OECD Guideline 428: Skin Absorption: In Vitro Method (2004), Guidance on dermal Absorption (EFSA Journal 2017; 15(6): 4873)
Deviations	No
GLP	Yes
Acceptability	Yes
Duplication	No

Executive summary

An *in vitro* study was performed to assess the rate and extent of absorption of [¹⁴C]-prothioconazole-desthio through human skin following topical application using the commercial formulation CA3301, an emulsifiable concentrate (EC), and three in-use dilutions, covering the entire intended in-use concentration range. For the purpose of this study, prothioconazole was replaced by prothioconazole-desthio to mimic 100% conversion of the active substance into its metabolite. Replacement was achieved by mixing blank CA3301 with the appropriate amount of prothioconazole-desthio to obtain concentrated (226.8 g/L)

and diluted test items (2.27, 1.13 and 0.226 g/L). Twelve split-thickness human skin samples from 4 donors were used; a tritiated water barrier integrity test was performed prior to the main study.

Percutaneous absorption was assessed by collecting receptor fluid in fractions from 0 to 24 hour post application. Exposure was terminated at 8 hours post application by washing the skin surface and at 24 hours post application the skin was then removed from the flow through diffusion cells. All samples were analysed by liquid scintillation counting.

Following topical application of [¹⁴C]-prothioconazole-desthio in Concentrate (226.8 g/L), Dilution 1 (2.27 g/L), Dilution 2 (1.13 g/L) and Dilution 3 (0.226 g/L) to human skin *in vitro*, the absorbable dose was 0.50% (not complete), 18.92% (not complete), 15.99% (not complete) and 20.80% (complete) of the applied dose, respectively.

The mean total recovery for each condition was within the acceptance criteria (95-110%) validating the results obtained. Based on the EFSA guidance criteria, amount of applied dose penetrating within 24 hours (mean + k * SD) was determined to be:

- 0.70% for Concentrated test item
- 24% for Dilution 1 at 1.0% v/v
- 20% for Dilution 2 at 0.5% v/v
- 25% for Dilution 3 at 0.1% v/v

The amount of applied dose penetrating within 24 hours is similar for the 3 diluted test items between 20 and 25% and about thirty times higher than the concentrated test item (0.70% applied dose). The dermal penetration estimates for prothioconazole-desthio to be used for risk assessment were set at 0.70% and 25% (worst case) for the formulation concentrate and the spray dilutions based on the EFSA guidance criteria.

Materials and methods

Test material

- Non-radiolabelled test item

Name (as used in the report):	Prothioconazole-desthio
Supplier:	LGC Standards, Germany
Lot No(s):	G1043839
Purity:	99.55%
Expiry date:	21 November 2025

- Radiolabelled test item

Name (as used in the report):	[triazole-U- ¹⁴ C]-Prothioconazole-desthio
Supplier:	Selcia, UK
Lot No(s):	11990JYC001-1
Purity:	99.5%
Specific activity:	6.201 MBq/mg (undiluted)
Expiry date:	Not applicable. The test item was stable over the course of the experiment

- Blank product

Name (as used in the report):	CA3301 blank
Supplier:	Nufarm Crop Product UK
Batch No.:	11990JYC001-1
Expiry date:	07 September 2022

Test system

Four samples of full-thickness human female skin (abdomen) were obtained from donors aged 39 to 57 years old. Split-thickness membranes were prepared equivalent to 300-400 µm depth.

An automated flow-through diffusion cell apparatus (Permegear), none occluded, was used. The flow-through diffusion cells were placed in a static water bath calibrated to maintain the skin surface temperature at $32^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The receptor fluid was collected continuously passing through the dynamic system at a flow rate of 1.5 mL/h. The surface area of exposed skin within the cells was 1.0 cm^2 . The receptor fluid (phosphate buffered saline 0.01M, pH7.4 + 3% polyoxyethylene 20 oleyl ether) was chosen based on solubility and compatibility with the test substance and test system.

Application

The test items were prepared by isotopic dilution of ^{14}C -prothioconazole-desthio with prothioconazole-desthio and incorporation into the blank product. The test concentrations are summarised in Table A 11.

Table A 1: Summary of prothioconazole-desthio concentrations and application rates in test preparations

Tested doses	Concentrate	Spray dilution 1 (1%)	Spray dilution 2 (0.5%)	Spray dilution 3 (0.1%)
Target concentration [mg/ml]	226.77	2.27	1.13	0.226
Area dose [$\mu\text{g}/\text{cm}^2$]	2333	22.45	11.21	2.23
Total dose [$\mu\text{g}/\text{cell}$]	2333	22.45	11.21	2.23
No. of donors	4	4	4	4
No of cells used/valid cells*	12/12	12/12	12/12	12/12

Study Design and Methods

The experimental work was conducted between 15 January 2021 and 09 February 2021.

The dermal penetration and absorption of prothioconazole-desthio was measured *in vitro* in human donor skin exposed to the formulation CA3301 (226.8 g a.i./L) and to three in-use dilutions (2.27, 1.13 and 0.226 g/L).

Samples of the prepared split-thickness skin were mounted on to an automated flow-through diffusion cell apparatus calibrated to maintain the skin surface temperature at $32^{\circ}\text{C} \pm 1^{\circ}\text{C}$. Measurement of Trans Epidermal Water Loss (TEWL) was used to assess the barrier integrity of the skin in the individual cells prior to the initiation of the study. The human skin samples were included in the study if the TEWL was between 0.5 and $13 \text{ g}/\text{m}^2/\text{h}$.

Each test preparation was applied to 12 individual cells and left open to the atmosphere. Test preparation were applied at $10.2 \text{ uL}/\text{cm}^2$ ($10 \text{ uL}/\text{cell}$). Aliquots of each test preparation were collected and analysed to determine accuracy of dosing. Receptor fluid was collected after 1, 2, 4, 8, 12 and 24 hours post dose. All the receptor fluid samples were mixed with scintillation fluid and analysed by liquid scintillation counting.

At 8 h post dose, the exposure period was terminated by rinsing with commercial hand-wash soap (1 mL 10% Sanex®). The skin was then rinsed with nine aliquots (1 mL) of water and the skin was dried with 3 half cotton swabs. At 24 h post dose, i.e. after a 16 h monitoring period, each flow-through cell was disconnected from the receptor fluid lines. The donor and receptor compartments were separately washed with acetonitrile. Each skin sample was taken using tweezers and placed on aluminium foil. A seal was put on the skin and tape strips was taken from the skin sample using tape. Stripped samples were placed separately in vials. Using a scalpel blade, the skin corresponding to the application area was separated from the remaining (surrounding) skin and placed in vials. The donor and receptor chambers, tissue swabs, rinses and skin were retained. All samples were analysed for total radioactivity by liquid scintillation counting.

Results and discussions

Application

The mean recoveries for each formulation dilution were within the acceptance criteria (95-110%) there-

fore validating the experimental findings.

Dermal absorption

The results of the dermal absorption are shown in Table A 12. The majority of the applied doses was recovered in the 8 hour wash with little remaining in or on the skin or on the tape strips at 24 hours.

Absorption was calculated as: receptor fluid + receptor chamber washes + skin sample + tape strips (where absorption was considered to be complete). The first two tape strips were considered to represent material that would not be bioavailable, due to desquamation. As such the first two individual strips from all cells was included as non-absorbed material. If absorption was essentially complete at the end of the study (>75% of total absorption occurring within half of the sampling period), all other tape strips were excluded from the calculation of the absorbable fraction. If absorption was not complete, tape strips, after strips 1 and 2, were considered as part of the absorbable fraction.

The mean relative absorption is shown in Table A 12 and was complete only for Dilution 3. Based on the EFSA guidance criteria, the amount of applied dose penetrating within 24 hours (mean + k * SD) was determined to be:

- 0.70% for Concentrated test item
- 24% for Dilution 1 at 1.0% v/v
- 20% for Dilution 2 at 0.5% v/v
- 25% for Dilution 3 at 0.1% v/v.

Table A 2: In-vitro dermal penetration of prothioconazole-desthio formulated as CA3301 through human skin - Recovery data

Dose group	High dose		Mid dose		Mid dose		Low dose	
	Formulation concentrate		Dilution 1, 1.0%		Dilution 2, 0.5%		Dilution 3, 0.1%	
Target concentration [mg/mL]	226.77		2.27		1.13		0.226	
Target dose [$\mu\text{g}/\text{cm}^2$]	2267.7		22.7		11.3		2.26	
Mean actual applied dose [$\mu\text{g}/\text{cm}^2$]	2333		22.45		11.21		2.23	
	Recovery [%]		Recovery [%]		Recovery [%]		Recovery [%]	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dislodgeable dose								
Skin excess ^a	97.58	2.08	76.07	10.11	76.09	8.30	64.29	7.06
Dose associated to skin								
Tape strips: 1 st sample, strips 1 + 2	0.22	0.14	5.21	3.72	7.84	3.61	8.90	3.34
Tape strips: 2 nd sample; strips 3 - n	0.16	0.12	7.42	4.59	5.47	3.78	5.21	3.34
Skin preparation	0.15	0.12	4.61	3.48	3.40	2.40	2.93	2.04
Absorbed dose								
Receptor fluid + chamber wash	0.17	0.10	8.37	6.55	6.82	2.16	17.87	5.71
Total recovery¹	98.24	2.11	99.20	1.79	98.25	1.84	98.33	3.03
Absorption essentially complete at end of study (>75% absorption within half the study duration) [% Absorption at $t_{0.5}$]	No [39.6 \pm 21.6%]		No [71.9 \pm 12.2%]		No [78.9 \pm 8.6%] ^b		Yes [87.9 \pm 4.6%]	
If no: Absorption estimates = absorbed dose + skin preparation + tape strips sample 2) ²	0.50	0.31	18.92	7.99	15.99	5.66	NA	NA
If yes: Absorption estimates = absorbed dose + skin preparation	NA	NA	NA	NA	NA	NA	20.80	7.26
Absorption estimate normalised ³	-	-	-	-	-	-	-	-
Relevant absorption estimate ⁴	0.698 [0.50 + (0.64 x 0.31)]		24.03 [18.92 + (0.64 x 7.99)]		19.61 (15.99 + 0.64 x 5.66)		25.45 (20.80 + 0.64 x 7.26)	
Absorption estimates used for risk assessment⁵	0.70		24		20		25	

- ^a Skin excess corresponds to: washings + donor compartment rinsing + remaining skin
- ^b Mean $t_{0.5} - (k \times SD) = 78.9 - (0.64 \times 8.6) = 73.4$, so absorption not considered complete
- ¹ Values may not calculate exactly due to rounding of figures
- ² In accordance with the EFSA Guidance on Dermal Absorption (~~EFSA Journal 2012;10(4):2665~~ 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 According to the EFSA Guidance on Dermal Absorption, cells with insufficient recovery (< 95%) can be corrected by normalisation of absorption estimate to 100% recovery; explanation should be included.
- ⁴ In accordance with the EFSA Guidance on Dermal Absorption, a multiplication factor k of the standard deviation is added to the mean. In this case there were 12 replicates therefore the k factor is 0.64.
- ⁵ Relevant absorption estimate was rounded to the required number of significant figures.
- NA: not applicable

Remarks

Absorption was considered to be incomplete for the Concentrate, Dilution 1 and Dilution 2. Absorption was considered to be complete for Dilution 3.

Conclusion/endpoint:

The dermal penetration of prothioconazole-desthio, formulated in product CA3301 in place of prothioconazole, through human dermatomed skin was determined *in vitro*. The amount of applied dose penetrating within 24 hours was determined to be 0.50 ± 0.31 for the formulation concentrate and 18.92 ± 0.31 , 15.99 ± 5.66 , 20.80 ± 7.26 for the 1.0%, 0.5% and 0.1% spray dilution respectively. The dermal penetration estimates to be used for risk assessment were set at 0.70% and 25% (worst case) for the formulation concentrate and the spray dilutions based on the EFSA guidance criteria.

A 2.11 Other/Special Studies

None.

Appendix 3 Exposure calculations

A 3.1 Operator exposure calculations (KCP 7.2.1.1)

A 3.1.1 Calculations for prothioconazole

Estimation of longer term operator exposure towards prothioconazole according to EFSA guidance

Operator exposure for CA3301 outdoor spray applications				
Application rate of active substance	0.2 kg a.s./ha	<i>i_AppRate</i>		
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>		
Amount of active substance applied	10 kg a.s./day	<i>i_AmountAS</i>		
Dermal absorption of the product	25.00%	<i>i_AbsorpProduct</i>		
Dermal absorption of in-use dilution	70.00%	<i>i_AbsorInuse</i>		
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.			
Indoor or Outdoor application	Outdoor			
Application method	Downward spraying			
Application equipment	Vehicle-mounted			
Season	not relevant			

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	28588	106902	AOEM	
	Body	17999	140606	AOEM	
	Head	519	2846	AOEM	
	Protected hands (gloves)	154	1981	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	183	1463	AOEM	
	Protected head (hood and face shield)	8	161	AOEM	
	Inhalation	7	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	

Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	1483	12376	AOEM	
	Body	829	4275	AOEM	
	Head	39	118	AOEM	
	Protected hands (gloves)	148	4360	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	23	56	AOEM	
	Inhalation	3	11	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	13.4335395	8.4148057
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.2238923	0.1402468
% of RVNAS	111.95%	70.12%

Estimation of longer term operator exposure towards 100% prothioconazole during M/L according to EFSA guidance (reflecting CMS DE comment)

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.2 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	10 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	25.00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	0.00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

OutdoorSoluble concentrates, emulsifiable concentrate, etc. Downward sprayingVehicle-mounted

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	28588	106902	AOEM	
	Body	17999	140606	AOEM	
	Head	519	2846	AOEM	
	Protected hands (gloves)	154	1981	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	183	1463	AOEM	
	Protected head (hood and face shield)	8	161	AOEM	
	Inhalation	7	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	

Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	1483	12376	AOEM	
	Body	829	4275	AOEM	
	Head	39	118	AOEM	
	Protected hands (gloves)	148	4360	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	23	56	AOEM	
	Inhalation	3	11	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE	
Longer term			
Total systemic exposure from mixing, loading and application (mg a.s./day)	11.7873094	7.3331794	
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.1964552	0.1222197	
% of RVNAS	98.23%	61.11%	

Estimation of longer term operator exposure towards 50% prothioconazole during Application according to EFSA guidance (reflecting CMS DE comment)

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.1 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	0.00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	70.00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	16767	62314	AOEM	
	Body	11058	114960	AOEM	
	Head	259	1423	AOEM	
	Protected hands (gloves)	98	990	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	99	731	AOEM	
	Protected head (hood and face shield)	4	81	AOEM	
	Inhalation	6	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	742	7449	AOEM	
	Body	415	2138	AOEM	
	Head	20	59	AOEM	
	Protected hands (gloves)	102	4021	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	11	28	AOEM	
	Inhalation	2	7	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	0.8314105	0.5491086
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.0138568	0.0091518
% of RVNAS	6.93%	4.58%

Estimation of longer term operator exposure towards prothioconazole according to EFSA guidance (60% conversion to metabolite, combined exposure) reflecting CMS NL comment(2-3m buffer zone plus drift reduction technique).

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.08 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	4 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	25.00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	70.00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
Mixing and loading	Hands	14120	52375	AOEM	
	Body	9452	107744	AOEM	
	Head	208	1138	AOEM	
	Protected hands (gloves)	85	792	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	81	585	AOEM	
	Protected head (hood and face shield)	3	64	AOEM	
	Inhalation	6	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	593	6326	AOEM	
	Body	332	1710	AOEM	
	Head	16	47	AOEM	
	Protected hands (gloves)	90	3918	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	9	22	AOEM	
	Inhalation	2	6	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	6.611831	4.0425784
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.1101864	0.0673763
% of RVNAS	55.09%	33.69%

Estimation of longer term operator exposure towards 100% prothioconazole during M/L according to EFSA guidance reflecting cMS SI comment:

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.2 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	10 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	25.00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	0.00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	
OutdoorSoluble concentrates, emulsifiable concentrate, etc. Downward sprayingVehicle-mounted		

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	28588	106902	AOEM	
	Body	17999	140606	AOEM	
	Head	519	2846	AOEM	
	Protected hands (gloves)	154	1981	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	183	1463	AOEM	
	Protected head (hood and face shield)	8	161	AOEM	
	Inhalation	7	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	1483	12376	AOEM	
	Body	829	4275	AOEM	
	Head	39	118	AOEM	
	Protected hands (gloves)	148	4360	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	23	56	AOEM	
	Inhalation	3	11	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	11.7873094	7.3331794
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.1964552	0.1222197
% of RVNAS	98.23%	61.11%

Estimation of longer term operator exposure towards 45% prothioconazole during Application according to EFSA guidance reflecting CMS SI comment

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.11 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	5.5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	0.00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	70.00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	18043	67115	AOEM	
	Body	11824	118188	AOEM	
	Head	285	1565	AOEM	
	Protected hands (gloves)	104	1089	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	108	804	AOEM	
	Protected head (hood and face shield)	5	89	AOEM	
	Inhalation	6	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	816	7987	AOEM	
	Body	456	2351	AOEM	
	Head	22	65	AOEM	
	Protected hands (gloves)	107	4066	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	13	31	AOEM	
	Inhalation	2	8	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	0.9140074	0.6034753
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.0152335	0.0100579
% of RVNAS	7.62%	5.03%

A 3.1.2 Calculations for prothioconazole-desthio

Estimation of longer term operator exposure towards prothioconazole-desthio according to EFSA guidance

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.181 kg a.s./ha	<i>i_AppRate</i>			
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>			
Amount of active substance applied	9.05 kg a.s./day	<i>i_AmountAS</i>			
Dermal absorption of the product	0.00%	<i>i_AbsorpProduct</i>			
Dermal absorption of in-use dilution	25.00%	<i>i_AbsorInuse</i>			
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.				
Indoor or Outdoor application	Outdoor				
Application method	Downward spraying				
Application equipment	Vehicle-mounted				
Season	not relevant				
OutdoorSoluble concentrates, emulsifiable concentrate, etc. Downward sprayingVehicle-mounted					
Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	26474	98908	AOEM	
	Body	16780	136587	AOEM	
	Head	470	2575	AOEM	
	Protected hands (gloves)	144	1793	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	167	1324	AOEM	
	Protected head (hood and face shield)	8	146	AOEM	
	Inhalation	7	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	1342	11503	AOEM	
	Body	751	3869	AOEM	
	Head	35	107	AOEM	
	Protected hands (gloves)	140	4309	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	21	50	AOEM	
	Inhalation	3	10	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	0.5423375	0.3598495
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.0090390	0.0059975
% of RVNAS	90.39%	59.97%

Estimation of longer term operator exposure towards 50% prothioconazole-desithio during Application according to EFSA guidance

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.091 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	4.55 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	0.00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	25.00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	15593	57902	AOEM	
	Body	10348	111853	AOEM	
	Head	236	1295	AOEM	
	Protected hands (gloves)	92	901	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	91	665	AOEM	
	Protected head (hood and face shield)	4	73	AOEM	
	Inhalation	6	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	675	6952	AOEM	
	Body	377	1945	AOEM	
	Head	18	54	AOEM	
	Protected hands (gloves)	96	3977	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	10	25	AOEM	
	Inhalation	2	7	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	0.2755354	0.1837873
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.0045923	0.0030631
% of RVNAS	45.92%	30.63%

Estimation of longer term operator exposure towards prothioconazole-desthio according to EFSA guidance (60% conversion to metabolite, combined exposure) reflecting cMS NL comment (2-3m buffer zone plus drift reduction technique).

Operator exposure for CA3301 outdoor spray applications

Application rate of active substance	0.109 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	5.45 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	0.00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	25.00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 th centile	95 th centile		
	Hands	17917	66639	AOEM	
	Body	11748	117875	AOEM	
	Head	283	1551	AOEM	
	Protected hands (gloves)	104	1079	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	107	797	AOEM	
	Protected head (hood and face shield)	5	88	AOEM	
	Inhalation	6	30	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	No		1	

Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 th centile	95 th centile		
	Hands	808	7934	AOEM	
	Body	452	2330	AOEM	
	Head	21	64	AOEM	
	Protected hands (gloves)	106	4062	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	12	30	AOEM	
	Inhalation	2	8	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	No		vehicle mounted upward spraying only	

1. Total

	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	0.3289800	0.2190839
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0.0054830	0.0036514
% of RVNAS	54.83%	36.51%

A 3.2 Worker exposure calculations (KCP 7.2.3.1)

A 3.2.1 Calculations for prothioconazole

Estimation of longer term worker exposure towards prothioconazole according to EFSA guidance

Substance name	Prothioconazole
Product name	CA3301
Reference value non acutely toxic active substance (RVNAS)	0.2 mg/kg bw/day
Reference value acutely toxic active substance (RVAAS)	mg/kg bw/day
Crop type	Cereals
Substance properties	
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.
Minimum volume water for application (liquids)	100 L/ha
Maximum application rate of active substance	0.2 kg a.s. /ha
50% Dissipation Time DT50	30 days
Initial Dislodgeable Foliar Residue	3 µg/cm2 of foliage/kg a.s. applied/ha
Dermal absorption of product	25.00%
Dermal absorption of in-use dilution	70.00%
Oral absorption of active substance	100.00%
Inhalation absorption of active substance	100.00%
Vapour pressure of active substance	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa
Scenario	
Indoor or Outdoor application	Outdoor
Application method	Downward spraying
Application equipment	Vehicle-mounted
Buffer strip	2-3 m
Number of applications	2
Interval between multiple applications	14 days
Season (upward spraying orchards only)	not relevant

Worker exposure from residues on foliage for CA3301

Crop type	Cereals
Indoor or outdoor	Outdoor
Application method	Downward spraying
Application equipment	Vehicle-mounted
Worker's task	Inspection, irrigation
Main body parts in contact with foliage	Hand and body
Application rate of active substance	0.2 kg a.s./ha
Number of applications	2
Interval between multiple applications	14 days
Half-life of active substance	30 days
Multiple application factor	1.7
Dermal absorption of the product	25.00%
Dermal absorption of the in-use dilution	70.00%
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.6 µg a.s./cm ²
Working hours	2 hr
Dermal transfer coefficient - Total potential exposure	12500 cm ² /hr
Dermal transfer coefficient - arms, body and legs covered	1400 cm ² /hr
Dermal transfer coefficient - hands, arms, body and legs covered	no TC available for this assessment cm ² /hr
Inhalation transfer coefficient for automated applications	NA ha/hr*10 ^{^(-3)}
Inhalation transfer coefficient for cutting ornamentals	NA ha/hr*10 ^{^(-3)}
Inhalation transfer coefficient for sorting / bundling ornamentals	NA ha/hr*10 ^{^(-3)}
1. Total	
	</

Estimation of longer term worker exposure towards prothioconazole according to EFSA guidance (60% conversion to metabolite, combined exposure) reflecting cMS NL comment (2-3m buffer zone plus drift reduction technique).

Worker exposure from residues on foliage for CA3301			
Crop type	Cereals		
Indoor or outdoor	Outdoor		
Application method	Downward spraying		
Application equipment	Vehicle-mounted		
Worker's task	Inspection, irrigation		
Main body parts in contact with foliage	Hand and body		
Application rate of active substance	0.08 kg a.s./ha		
Number of applications	2		
Interval between multiple applications	14 days		
Half-life of active substance	30 days		
Multiple application factor	1.7		
Dermal absorption of the product	25.00%		
Dermal absorption of the in-use dilution	70.00%		
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.24 µg a.s./cm ²		
Working hours	2 hr		
Dermal transfer coefficient - Total potential exposure	12500 cm ² /hr		
Dermal transfer coefficient - arms, body and legs covered	1400 cm ² /hr		
Dermal transfer coefficient - hands, arms, body and legs covered	no TC available for this assessment cm ² /hr		
Inhalation transfer coefficient for automated applications	NA ha/hr*10 [^] (-3)		
Inhalation transfer coefficient for cutting ornamentals	NA ha/hr*10 [^] (-3)		
Inhalation transfer coefficient for sorting / bundling ornamentals	NA ha/hr*10 [^] (-3)		
1. Total			
	Potential exposure	Work wear - arms, body and legs covered	Working wear and gloves
Total systemic exposure (mg a.s./day)	7.2392654	0.8107977	no TC available for this assessment
Total systemic exposure per kg body weight (mg/kg bw/day)	0.1206544	0.0135133	
% of RVNAS	60.33%	6.76%	

A 3.2.2 Calculations for prothioconazole-desthio

Estimation of longer term worker exposure towards prothioconazole-desthio according to EFSA guidance (assuming 100% conversion to metabolite)

Substance name	desthioprothio
Product name	CA3301
Reference value non acutely toxic active substance (RVNAS)	0.01 mg/kg bw/day
Reference value acutely toxic active substance (RVAAS)	mg/kg bw/day
Crop type	Cereals
Substance properties	
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.
Minimum volume water for application (liquids)	100 L/ha
Maximum application rate of active substance	0.181 kg a.s. /ha
50% Dissipation Time DT50	30 days
Initial Dislodgeable Foliar Residue	3 µg/cm ² of foliage/kg a.s. applied/ha
Dermal absorption of product	0.70%
Dermal absorption of in-use dilution	25.00%
Oral absorption of active substance	100.00%
Inhalation absorption of active substance	100.00%
Vapour pressure of active substance	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa
Scenario	
Indoor or Outdoor application	Outdoor
Application method	Downward spraying
Application equipment	Vehicle-mounted
Buffer strip	2-3 m
Number of applications	2
Interval between multiple applications	14 days
Season (upward spraying orchards only)	not relevant

Worker exposure from residues on foliage for CA3301

Crop type	Cereals
Indoor or outdoor	Outdoor
Application method	Downward spraying
Application equipment	Vehicle-mounted
Worker's task	Inspection, irrigation
Main body parts in contact with foliage	Hand and body
Application rate of active substance	0.181 kg a.s./ha
Number of applications	2
Interval between multiple applications	14 days
Half-life of active substance	30 days
Multiple application factor	1.7
Dermal absorption of the product	0.70%
Dermal absorption of the in-use dilution	25.00%
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.543 µg a.s./cm ²
Working hours	2 hr
Dermal transfer coefficient - Total potential exposure	12500 cm ² /hr
Dermal transfer coefficient - arms, body and legs covered	1400 cm ² /hr
Dermal transfer coefficient - hands, arms, body and legs covered	no TC available for this assessment cm ² /hr
Inhalation transfer coefficient for automated applications	NA ha/hr*10 ^{^(-3)}
Inhalation transfer coefficient for cutting ornamentals	NA ha/hr*10 ^{^(-3)}
Inhalation transfer coefficient for sorting / bundling ornamentals	NA ha/hr*10 ^{^(-3)}

1. Total

	Potential exposure	Work wear - arms, body and legs covered	Working wear and gloves
Total systemic exposure (mg a.s./day)	5.8495850	0.6551535	no TC available for this assessment
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0974931	0.0109192	
% of RVNAS	974.93%	109.19%	

Estimation of longer term worker exposure towards prothioconazole-desthio according to EFSA guidance (assuming 60% conversion to metabolite)

Worker exposure from residues on foliage for CA3301			
Crop type	Cereals		
Indoor or outdoor	Outdoor		
Application method	Downward spraying		
Application equipment	Vehicle-mounted		
Worker's task	Inspection, irrigation		
Main body parts in contact with foliage	Hand and body		
Application rate of active substance	0.109 kg a.s./ha		
Number of applications	2		
Interval between multiple applications	14 days		
Half-life of active substance	30 days		
Multiple application factor	1.7		
Dermal absorption of the product	0.70%		
Dermal absorption of the in-use dilution	25.00%		
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.327 µg a.s./cm ²		
Working hours	2 hr		
Dermal transfer coefficient - Total potential exposure	12500 cm ² /hr		
Dermal transfer coefficient - arms, body and legs covered	1400 cm ² /hr		
Dermal transfer coefficient - hands, arms, body and legs covered	no TC available for this assessment cm ² /hr		
Inhalation transfer coefficient for automated applications	NA ha/hr*10 ^{^(-3)}		
Inhalation transfer coefficient for cutting ornamentals	NA ha/hr*10 ^{^(-3)}		
Inhalation transfer coefficient for sorting / bundling ornamentals	NA ha/hr*10 ^{^(-3)}		
1. Total			
	Potential exposure	Work wear - arms, body and legs covered	Working wear and gloves
Total systemic exposure (mg a.s./day)	3.5226783	0.3945400	no TC available for this assessment
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0587113	0.0065757	
% of RVNAS	587.11%	65.76%	

A 3.3 Resident and bystander exposure calculations (KCP 7.2.2.1)

A 3.3.1 Calculations for prothioconazole

Estimation of longer term resident exposure towards prothioconazole according to EFSA guidance (input and results)

Resident exposure for CA3301	
Croptype	Cereals
Application method	Downward spraying
Application equipment	Vehicle-mounted
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.
Buffer strip	2-3 m
Application rate of the product	0.2 kg a.s./ha
Concentration of active substance (in-use dilution for liquid applications)	2 g a.s./l
Dermal absorption of product	25.00%
Dermal absorption of in-use dilution	70.00%
Oral absorption	100.00%
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.6 µg a.s./cm ²
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa
Concentration in air	0.001 mg/m ³
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person
Exposure duration dermal	2 hours
Exposure duration inhalation	24 hours
Exposure duration entry into treated crops	0.25 hours
Light clothing adjustment factor	18.0%
Breathing rate adult	0.23 m ³ /day/kg
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg
Drift percentage on surface (75th percentile)	5.60%
Drift percentage on surface (mean)	4.10%
Turf transferable residues percentage	5.00%
Transfer coeff. of surface deposits-adult	7300 cm ² /hour
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour
Saliva extraction percentage	50.00%
Surface area of hands mouthed	20 cm ²
Frequency of hand to mouth activity	9.5 events/hour
Ingestion rate for mouthing of grass per day	25 cm ²
Dislodgeable residues percentage transferability for object to mouth	20.00%
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 cm ² /h
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm ² /h
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.3758360	0.0107000	0.0379338	0.4072087	0.5701340
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0375836	0.0010700	0.0037934	0.0407209	0.0570134
% of RVNAS	18.79%	0.54%	1.90%	20.36%	28.51%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.5397600	0.0138000	0.0986471	1.3573623	1.4246846
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0089960	0.0002300	0.0016441	0.0226227	0.0237447
% of RVNAS	4.50%	0.12%	0.82%	11.31%	11.87%

Estimation of longer term resident exposure towards prothioconazole according to EFSA guidance (assuming 50% conversion, input and results) reflecting cMS DE comment:

Resident exposure for CA3301					
Croptype	Cereals				
Application method	Downward spraying				
Application equipment	Vehicle-mounted-Drift Reduction				i_AppEquip
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.				i_FormVal
Buffer strip	2-3 m				i_Buffer
Application rate of the product	0.1 kg a.s./ha				i_AppRate
Concentration of active substance (in-use dilution for liquid applications)	1 g a.s./l				d_ConcAS
Dermal absorption of product	25.00%				i_AbsorpProduct
Dermal absorption of in-use dilution	70.00%				i_Absorpinuse
Oral absorption	100.00%				i_AbsorpOrallinuse
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.3 µg a.s./cm ²				d_DFR
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa				i_Volat
Concentration in air	0.001 mg/m ³				d_AirCon
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person				
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person				
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person				
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person				
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person				
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person				
Exposure duration dermal	2 hours				d_ReExpDur
Exposure duration inhalation	24 hours				d_ReExpDurinhal
Exposure duration entry into treated crops	0.25 hours				d_ExpDurTreatCrop
Light clothing adjustment factor	18.0%				d_ClothAF
Breathing rate adult	0.23 m ³ /day/kg				d_BreathRAAd
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg				d_BreathRCh
Drift percentage on surface (75th percentile)	5.60%				
Drift percentage on surface (mean)	4.10%				
Turf transferable residues percentage	5.00%				d_Turf
Transfer coeff. of surface deposits-adult	7300 cm ² /hour				d_ReTCAd
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour				d_ReTCCh
Saliva extraction percentage	50.00%				d_SalExt
Surface area of hands mouthed	20 cm ²				d_AreaHM
Frequency of hand to mouth activity	9.5 events/hour				d_ReFreqHM
Ingestion rate for mouthing of grass per day	25 cm ²				d_MouthGrass
Dislodgeable residues percentage transferability for object to mouth	20.00%				d_DRP
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 cm ² /h				d_TcEntryAd
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm ² /h				d_TcEntryCh
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h				d_TcEntryAd
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h				d_TcEntryCh

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0939590	0.0107000	0.0094834	0.2036043	0.2317288
Total systemic exposure per kg body weight (mg a.s./day/kg)	0.0093959	0.0010700	0.0009483	0.0203604	0.0231729
% of RVNAS	4.70%	0.54%	0.47%	10.18%	11.59%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.1349400	0.0138000	0.0246618	0.6786811	0.6370887
Total systemic exposure per kg body weight (mg a.s./day/kg)	0.0022490	0.0002300	0.0004110	0.0113114	0.0106181
% of RVNAS	1.12%	0.12%	0.21%	5.66%	5.31%

Estimation of longer term resident exposure towards prothioconazole according to EFSA guidance, (60% conversion to metabolite, drift reduction, combined exposure) (input and results) reflecting cMS NL comment (2-3m buffer zone plus drift reduction technique):

Resident exposure for CA3301			
Croptype	Cereals		
Application method	Downward spraying		
Application equipment	Vehicle-mounted-Drift Reduction		
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.		
Buffer strip	2-3 m		
Application rate of the product	0.08 kg a.s./ha		
Concentration of active substance (in-use dilution for liquid applications)	0.8 g a.s./l		
Dermal absorption of product	25.00%		
Dermal absorption of in-use dilution	70.00%		
Oral absorption	100.00%		
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.24 µg a.s./cm ²		
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa		
Concentration in air	0.001 mg/m ³		
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person		
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person		
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person		
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person		
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person		
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person		
Exposure duration dermal	2 hours		
Exposure duration inhalation	24 hours		
Exposure duration entry into treated crops	0.25 hours		
Light clothing adjustment factor	18.0%		
Breathing rate adult	0.23 m ³ /day/kg		
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg		
Drift percentage on surface (75th percentile)	5.60%		
Drift percentage on surface (mean)	4.10%		
Turf transferable residues percentage	5.00%		
Transfer coeff. of surface deposits-adult	7300 cm ² /hour		
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour		
Saliva extraction percentage	50.00%		
Surface area of hands mouthed	20 cm ²		
Frequency of hand to mouth activity	9.5 events/hour		
Ingestion rate for mouthing of grass per day	25 cm ²		
Dislodgeable residues percentage transferability for object to mouth	20.00%		
Transfer coefficient for entry into treated crops (75th percentile) - ad	7500 cm ² /h		
Transfer coefficient for entry into treated crops (75th percentile) - chi	2250 cm ² /h		
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h		
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h		

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0751672	0.0107000	0.0075868	0.1628835	0.1875230
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0075167	0.0010700	0.0007587	0.0162883	0.0187523
% of RVNAS	3.76%	0.54%	0.38%	8.14%	9.38%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.1079520	0.0138000	0.0197294	0.5429449	0.5124309
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0017992	0.0002300	0.0003288	0.0090491	0.0085405
% of RVNAS	0.90%	0.12%	0.16%	4.52%	4.27%

Estimation of longer term resident exposure towards prothioconazole according to EFSA guidance (assuming 45% conversion, input and results), reflecting cMS SI comment:

Resident exposure for CA3301					
Croptype	Cereals				
Application method	Downward spraying				
Application equipment	Vehicle-mounted				
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.				
Buffer strip	2-3 m				
Application rate of the product	0.11 kg a.s./ha				
Concentration of active substance (in-use dilution for liquid applications)	1.1 g a.s./l				
Dermal absorption of product	25.00%				
Dermal absorption of in-use dilution	70.00%				
Oral absorption	100.00%				
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.33 µg a.s./cm ²				
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa				
Concentration in air	0.001 mg/m ³				
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person				
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person				
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person				
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person				
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person				
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person				
Exposure duration dermal	2 hours				
Exposure duration inhalation	24 hours				
Exposure duration entry into treated crops	0.25 hours				
Light clothing adjustment factor	18.0%				
Breathing rate adult	0.23 m ³ /day/kg				
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg				
Drift percentage on surface (75th percentile)	5.60%				
Drift percentage on surface (mean)	4.10%				
Turf transferable residues percentage	5.00%				
Transfer coeff. of surface deposits-adult	7300 cm ² /hour				
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour				
Saliva extraction percentage	50.00%				
Surface area of hands mouthed	20 cm ²				
Frequency of hand to mouth activity	9.5 events/hour				
Ingestion rate for mouthing of grass per day	25 cm ²				
Dislodgeable residues percentage transferability for object to mouth	20.00%				
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 cm ² /h				
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm ² /h				
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h				
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h				

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.2067098	0.0107000	0.0208636	0.2239648	0.3183887
Total systemic exposure per kg body weight (mg a.s./kg bw/day)	0.0206710	0.0010700	0.0020864	0.0223965	0.0318389
% of RVNAS	10.34%	0.54%	1.04%	11.20%	15.92%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.2968680	0.0138000	0.0542559	0.7465492	0.7897865
Total systemic exposure per kg body weight (mg a.s./kg bw/day)	0.0049478	0.0002300	0.0009043	0.0124425	0.0131631
% of RVNAS	2.47%	0.12%	0.45%	6.22%	6.58%

A 3.3.2 Calculations for prothioconazole-desthio

Estimation of longer term resident exposure towards prothioconazole-desthio according to EFSA guidance (assuming 100% conversion, input and results)

Resident exposure for CA3301					
Croptype	Cereals				
Application method	Downward spraying				
Application equipment	Vehicle-mounted				
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.				
Buffer strip	2-3 m				
Application rate of the product	0.181 kg a.s./ha				
Concentration of active substance (in-use dilution for liquid applications)	1.81 g a.s./l				
Dermal absorption of product	0.70%				
Dermal absorption of in-use dilution	25.00%				
Oral absorption	100.00%				
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.543 µg a.s./cm ²				
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa				
Concentration in air	0.001 mg/m ³				
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person				
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person				
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person				
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person				
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person				
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person				
Exposure duration dermal	2 hours				
Exposure duration inhalation	24 hours				
Exposure duration entry into treated crops	0.25 hours				
Light clothing adjustment factor	18.0%				
Breathing rate adult	0.23 m ³ /day/kg				
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg				
Drift percentage on surface (75th percentile)	5.60%				
Drift percentage on surface (mean)	4.10%				
Turf transferable residues percentage	5.00%				
Transfer coeff. of surface deposits-adult	7300 cm ² /hour				
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour				
Saliva extraction percentage	50.00%				
Surface area of hands mouthed	20 cm ²				
Frequency of hand to mouth activity	9.5 events/hour				
Ingestion rate for mouthing of grass per day	25 cm ²				
Dislodgeable residues percentage transferability for object to mouth	20.00%				
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 cm ² /h				
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm ² /h				
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h				
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h				
1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.1217316	0.0107000	0.0138893	0.1316157	0.1929072
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0121732	0.0010700	0.0013889	0.0131616	0.0192907
% of RVNAS	121.73%	10.70%	13.89%	131.62%	192.91%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.1745745	0.0138000	0.0318841	0.4387189	0.4699228
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0029096	0.0002300	0.0005314	0.0073120	0.0078320
% of RVNAS	29.10%	2.30%	5.31%	73.12%	78.32%

Estimation of longer term resident exposure towards prothioconazole-desthio according to EFSA guidance (assuming 60% conversion, input and results)

Resident exposure for CA3301			
Croptype	Cereals		
Application method	Downward spraying		
Application equipment	Vehicle-mounted		
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.		
Buffer strip	2-3 m		
Application rate of the product	0.109 kg a.s./ha		
Concentration of active substance (in-use dilution for liquid applications)	1.09 g a.s./l		
Dermal absorption of product	0.70%		
Dermal absorption of in-use dilution	25.00%		
Oral absorption	100.00%		
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.327 µg a.s./cm ²		
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa		
Concentration in air	0.001 mg/m ³		
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person		
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person		
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person		
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person		
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person		
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person		
Exposure duration dermal	2 hours		
Exposure duration inhalation	24 hours		
Exposure duration entry into treated crops	0.25 hours		
Light clothing adjustment factor	18.0%		
Breathing rate adult	0.23 m ³ /day/kg		
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg		
Drift percentage on surface (75th percentile)	5.60%		
Drift percentage on surface (mean)	4.10%		
Turf transferable residues percentage	5.00%		
Transfer coeff. of surface deposits-adult	7300 cm ² /hour		
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour		
Saliva extraction percentage	50.00%		
Surface area of hands mouthed	20 cm ²		
Frequency of hand to mouth activity	9.5 events/hour		
Ingestion rate for mouthing of grass per day	25 cm ²		
Dislodgeable residues percentage transferability for object to mouth	20.00%		
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 cm ² /h		
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm ² /h		
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h		
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h		

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0733080	0.0107000	0.0083642	0.0792603	0.1204270
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0073308	0.0010700	0.0008364	0.0079260	0.0120427
% of RVNAS	73.31%	10.70%	8.36%	79.26%	120.43%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.1051305	0.0138000	0.0192009	0.2642009	0.2884817
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0017522	0.0002300	0.0003200	0.0044033	0.0048080
% of RVNAS	17.52%	2.30%	3.20%	44.03%	48.08%

Estimation of longer term resident exposure towards prothioconazole-desthio according to EFSA guidance (assuming 50% conversion, input and results)

Resident exposure for CA3301			
Croptype	Cereals		
Application method	Downward spraying		
Application equipment	Vehicle-mounted-Drift Reduction		<i>i_AppEquip</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.		<i>i_FarmVal</i>
Buffer strip	5 m		<i>i_Buffer</i>
Application rate of the product	0.091 kg a.s./ha		<i>i_AppRate</i>
Concentration of active substance (in-use dilution for liquid applications)	0.91 g a.s./l		<i>d_ConcAS</i>
Dermal absorption of product	0.70%		<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	25.00%		<i>i_AbsorpInuse</i>
Oral absorption	100.00%		<i>i_AbsorpOrallnuse</i>
Dislodgeable foliar residue (<i>i_AppRate</i> * <i>i_DFR</i>)	0.273 µg a.s./cm ²		<i>d_DFR</i>
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa		<i>i_Volat</i>
Concentration in air	0.001 mg/m ³		<i>d_AirCon</i>
Resident dermal spray drift exposure 75th percentile - adult	0.23798 ml spray dilution/person		
Resident dermal spray drift exposure 75th percentile - child	0.2175 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - adult	0.00009 ml spray dilution/person		
Resident inhal. spray drift exposure 75th percentile - child	0.00017 ml spray dilution/person		
Resident dermal spray drift exposure mean - adult	0.12278 ml spray dilution/person		
Resident dermal spray drift exposure mean - child	0.12 ml spray dilution/person		
Resident inhal. spray drift exposure mean - adult	0.00008 ml spray dilution/person		
Resident inhal. spray drift exposure mean - child	0.00014 ml spray dilution/person		
Exposure duration dermal	2 hours		<i>d_ReExpDur</i>
Exposure duration inhalation	24 hours		<i>d_ReExpDurInhal</i>
Exposure duration entry into treated crops	0.25 hours		<i>d_ExpDurTreatCrop</i>
Light clothing adjustment factor	18.0%		<i>d_ClothAF</i>
Breathing rate adult	0.23 m ³ /day/kg		<i>d_BreathRAD</i>
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg		<i>d_BreathRCh</i>
Drift percentage on surface (75th percentile)	2.30%		
Drift percentage on surface (mean)	1.80%		
Turf transferable residues percentage	5.00%		<i>d_Turf</i>
Transfer coeff. of surface deposits-adult	7300 cm ² /hour		<i>d_ReTCAd</i>
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour		<i>d_ReTCCh</i>
Saliva extraction percentage	50.00%		<i>d_SalExt</i>
Surface area of hands mouthed	20 cm ²		<i>d_AreaHM</i>
Frequency of hand to mouth activity	9.5 events/hour		<i>d_ReFreqHM</i>
Ingestion rate for mouthing of grass per day	25 cm ²		<i>d_MouthGrass</i>
Dislodgeable residues percentage transferability for object to mouth	20.00%		<i>d_DRP</i>
Transfer coefficient for entry into treated crops (75th percentile) - ad	7500 cm ² /h		<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (75th percentile) - chi	2250 cm ² /h		<i>d_TcEntryCh</i>
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h		<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h		<i>d_TcEntryCh</i>

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0203647	0.0107000	0.0014340	0.0661714	0.0758396
Total systemic exposure per kg body weight (mg a.s./day/kg)	0.0020365	0.0010700	0.0001434	0.0066171	0.0075840
% of RVNAS	20.36%	10.70%	1.43%	66.17%	75.84%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0222385	0.0138000	0.0032919	0.2205714	0.2037339
Total systemic exposure per kg body weight (mg a.s./day/kg)	0.0003706	0.0002300	0.0000549	0.0036762	0.0033956
% of RVNAS	3.71%	2.30%	0.55%	36.76%	33.96%

Estimation of longer term resident exposure towards prothioconazole-desthio according to EFSA guidance (assuming 60% conversion and DT₅₀ 14 days, input and results)

Resident exposure for CA3301	
Croptype	Cereals
Application method	Downward spraying
Application equipment	Vehicle-mounted
Formulation type	le concentrates, emulsifiable concentrate, etc.
Buffer strip	5 m
Application rate of the product	0.109 kg a.s./ha
Concentration of active substance (in-use dilution for liquid applications)	1.09 g a.s./l
Dermal absorption of product	0.70%
Dermal absorption of in-use dilution	25.00%
Oral absorption	100.00%
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.327 µg a.s./cm ²
Vapour pressure of in-use dilution	low volatile substances having a Pa vapour pressure of
Concentration in air	0.001 mg/m ³
Resident dermal spray drift exposure 75th percentile - adult	0.23798 ml spray dilution/person
Resident dermal spray drift exposure 75th percentile - child	0.2175 ml spray dilution/person
Resident inhal. spray drift exposure 75th percentile - adult	0.00009 ml spray dilution/person
Resident inhal. spray drift exposure 75th percentile - child	0.00017 ml spray dilution/person
Resident dermal spray drift exposure mean - adult	0.12278 ml spray dilution/person
Resident dermal spray drift exposure mean - child	0.12 ml spray dilution/person
Resident inhal. spray drift exposure mean - adult	0.00008 ml spray dilution/person
Resident inhal. spray drift exposure mean - child	0.00014 ml spray dilution/person
Exposure duration dermal	2 hours
Exposure duration inhalation	24 hours
Exposure duration entry into treated crops	0.25 hours
Light clothing adjustment factor	18.0%
Breathing rate adult	0.23 m ³ /day/kg
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg
Drift percentage on surface (75th percentile)	2.30%
Drift percentage on surface (mean)	1.80%
Turf transferable residues percentage	5.00%
Transfer coeff. of surface deposits-adult	7300 cm ² /hour
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour
Saliva extraction percentage	50.00%
Surface area of hands mouthed	20 cm ²
Frequency of hand to mouth activity	9.5 events/hour
Ingestion rate for mouthing of grass per day	25 cm ²
Dislodgeable residues percentage transferability for object to mouth	20.00%
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 cm ² /h
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm ² /h
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0487857	0.0107000	0.0029896	0.0689766	0.0950036
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0048786	0.0010700	0.0002990	0.0068977	0.0095004
% of RVNAS	48.79%	10.70%	2.99%	68.98%	95.00%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0532747	0.0138000	0.0068629	0.2299219	0.2300177
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0008879	0.0002300	0.0001144	0.0038320	0.0038336
% of RVNAS	8.88%	2.30%	1.14%	38.32%	38.34%

Estimation of longer term resident exposure towards prothioconazole-desthio according to EFSA guidance (assuming 60% conversion, DT₅₀ 14 days and drift reduction technology, input and results) reflecting CMS NL comment:

Resident exposure for CA3301	
Croptype	Cereals
Application method	Downward spraying
Application equipment	Vehicle-mounted-Drift Reduction
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.
Buffer strip	2-3 m
Application rate of the product	0.109 kg a.s./ha
Concentration of active substance (in-use dilution for liquid applications)	1.09 g a.s./l
Dermal absorption of product	0.70%
Dermal absorption of in-use dilution	25.00%
Oral absorption	100.00%
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.327 µg a.s./cm ²
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa Pa
Concentration in air	0.001 mg/m ³
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person
Exposure duration dermal	2 hours
Exposure duration inhalation	24 hours
Exposure duration entry into treated crops	0.25 hours
Light clothing adjustment factor	18.0%
Breathing rate adult	0.23 m ³ /day/kg
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg
Drift percentage on surface (75th percentile)	5.60%
Drift percentage on surface (mean)	4.10%
Turf transferable residues percentage	5.00%
Transfer coeff. of surface deposits-adult	7300 cm ² /hour
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour
Saliva extraction percentage	50.00%
Surface area of hands mouthed	20 cm ²
Frequency of hand to mouth activity	9.5 events/hour
Ingestion rate for mouthing of grass per day	25 cm ²
Dislodgeable residues percentage transferability for object to mouth	20.00%
Transfer coefficient for entry into treated crops (75th percen	7500 cm ² /h
Transfer coefficient for entry into treated crops (75th percen	2250 cm ² /h
Transfer coefficient for entry into treated crops (mean) - adu	5980 cm ² /h
Transfer coefficient for entry into treated crops (mean) - chil	1794 cm ² /h

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0366540	0.0107000	0.0036395	0.0689766	0.0885651
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0036654	0.0010700	0.0003640	0.0068977	0.0088565
% of RVNAS	36.65%	10.70%	3.64%	68.98%	88.57%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0525653	0.0138000	0.0083549	0.2299219	0.2282252
Total systemic exposure per kg body weight (mg/kg bw/day)	0.0008761	0.0002300	0.0001392	0.0038320	0.0038038
% of RVNAS	8.76%	2.30%	1.39%	38.32%	38.04%

Estimation of longer term resident exposure towards prothioconazole-desthio according to EFSA guidance (assuming 45% conversion and DT₅₀ 3.2 days, input and results) reflecting cMS SI comments

Resident exposure for CA3301					
Croptype	Cereals				
Application method	Downward spraying				
Application equipment	Vehicle-mounted				
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.				
Buffer strip	2-3 m				
Application rate of the product	0.081 kg a.s./ha				
Concentration of active substance (in-use dilution for liquid applications)	0.81 g a.s./l				
Dermal absorption of product	0.70%				
Dermal absorption of in-use dilution	25.00%				
Oral absorption	100.00%				
Dislodgeable foliar residue (i_AppRate*i_DFR)	0.243 µg a.s./cm ²				
Vapour pressure of in-use dilution	low volatile substances having a vapour pressure of <5*10 ⁻³ Pa				
Concentration in air	0.001 mg/m ³				
Resident dermal spray drift exposure 75th percentile - adult	0.47 ml spray dilution/person				
Resident dermal spray drift exposure 75th percentile - child	0.327 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - adult	0.00010 ml spray dilution/person				
Resident inhal. spray drift exposure 75th percentile - child	0.00022 ml spray dilution/person				
Resident dermal spray drift exposure mean - adult	0.22318 ml spray dilution/person				
Resident dermal spray drift exposure mean - child	0.18 ml spray dilution/person				
Resident inhal. spray drift exposure mean - adult	0.00009 ml spray dilution/person				
Resident inhal. spray drift exposure mean - child	0.00017 ml spray dilution/person				
Exposure duration dermal	2 hours				
Exposure duration inhalation	24 hours				
Exposure duration entry into treated crops	0.25 hours				
Light clothing adjustment factor	18.0%				
Breathing rate adult	0.23 m ³ /day/kg				
Breathing rate child (1-3 year old)	1.07 m ³ /day/kg				
Drift percentage on surface (75th percentile)	5.60%				
Drift percentage on surface (mean)	4.10%				
Turf transferable residues percentage	5.00%				
Transfer coeff. of surface deposits-adult	7300 cm ² /hour				
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm ² /hour				
Saliva extraction percentage	50.00%				
Surface area of hands mouthed	20 cm ²				
Frequency of hand to mouth activity	9.5 events/hour				
Ingestion rate for mouthling of grass per day	25 cm ²				
Dislodgeable residues percentage transferability for object to mouth	20.00%				
Transfer coefficient for entry into treated crops (75th percentile) - ad	7500 cm ² /h				
Transfer coefficient for entry into treated crops (75th percentile) - chi	2250 cm ² /h				
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm ² /h				
Transfer coefficient for entry into treated crops (mean) - child	1794 cm ² /h				

1. Total					
1.1 1-3 year old child					
	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0544766	0.0107000	0.0037799	0.0358188	0.0720536
Total systemic exposure per kg body weight (mg a.s./kg bw/day)	0.0054477	0.0010700	0.0003780	0.0035819	0.0072054
% of RVNAS	54.48%	10.70%	3.78%	35.82%	72.05%
1.2 Adult					
	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0.0781245	0.0138000	0.0086772	0.1193959	0.1524832
Total systemic exposure per kg body weight (mg a.s./kg bw/day)	0.0013021	0.0002300	0.0001446	0.0019899	0.0025414
% of RVNAS	13.02%	2.30%	1.45%	19.90%	25.41%

A 3.4 Combined exposure calculations for active substance 1 and active substance 2

Refer to Section 6.6.5. Not required; there is only one active substance in the product

Appendix 4 Detailed Exposure 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)

The studies referred to in this dRR were submitted and evaluated at EU level for the Annex I inclusion of prothioconazole and therefore no further details are provided here. The studies reported in the DAR are no longer protected.