

# FINAL REGISTRATION REPORT

## Part B

### Section 6

#### Mammalian Toxicology

Detailed summary of the risk assessment

Product code: MIEDZIAN 50 WP

Product name: **MIEDZIAN 50 WP**

Chemical active substance:

**Copper as copper oxychloride**, g/L (copper, 500 g/L)

Central Zone

Zonal Rapporteur Member State: **Poland**

#### CORE ASSESSMENT

(re-authorization according art. 43, and art.51 Reg.  
1107/2009)

Applicant: **Synthos Agro Sp. z o.o.**

Submission date: **07/2020; 08/2022**

MS Finalisation date: **03/2021; 08/2022**

## Version history

When	What
07/2020	Renewal of registration of plant protection product according art. 43, Reg. 1107/2009
03/2021	Assessment by expert
08/2022	Estimation of operator exposure (additional calculation acc. OPEX model v.0.3.22)
08/2022	Assessment by the expert

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## 6 Mammalian Toxicology (KCP 7)

### 6.1 Summary

**Table 6.1-1: Information on MIEDZIAN 50 WP \***

Product name and code	MIEDZIAN 50 WP
Formulation type	Wettable Powders [WP]
Active substance(s) (incl. content)	copper; 350 g/L (copper oxychloride)
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 MIEDZIAN 50 WP 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 MIEDZIAN 50 WP according to Regulation (EC) No 1272/2008**

Hazard classes, categories	Acute Tox. 4
Hazard pictograms or Codes for hazard pictograms	GHS07
Signal word	Warning
Hazard statements	H302 - Harmful if swallowed.
Precautionary statements	P264 - Wash skin and eyes thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P301+P312 - IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. P330- Rinse mouth P501 - Dispose of contents/container to plant with appropriate permissions.
Additional labelling phrases	To avoid risks to man and the environment, comply with the instructions for use. [EUH401]

**Table 6.1-3: Summary of risk assessment for operators, workers, residents and bystanders for MIEDZIAN 50 WP**

	Result	PPE / Risk mitigation measures
Operators	Acceptable	<b>Professional user:</b> AOEM: Work wear (arms, body and legs covered) and Gloves - M/L and A. Head and respiratory PPE (FP1, P1 and similar): M/L and A (in the case knapsack sprayer). <b>Non-professional user:</b> UK POEM: None
Workers	Acceptable	EUROPOEM II: Work wear (arms, body and legs covered) and Gloves.
Residents	Acceptable	None
Bystanders	Acceptable	None

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

No unacceptable risk for professional operators and workers was identified when the product is used as intended and provided that the PPE/ risk mitigation measures stated in Table 6.1-3 are applied.

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 according art .43 and art 51 Reg. 1107/2009)**

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, work- er, resident or bystander expo- sure based on [Guidance on the assessment of exposure of operators, work- ers, residents and bystanders in risk assess- ment for plant protection prod- ucts; EFSA Journal 2014;12(10):3874	Acceptability of exposure assessment			
			Method / Kind (incl. ap- plication technique ***	Max. number (min. interval between appli- cations) 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	Apple, pear BBCH 00-07 BBCH 60-71	Fpn	Spraying, HCTM	2; 4	0,75kg Cu/ha	500-750	7					
2	Quince BBCH 00-07 BBCH 60-71	Fpn	Spraying, HCTM	2; 4	0,75kg Cu/ha	500-750	7					
3	Medlar BBCH 00-07 BBCH 60-71	Fpn	Spraying, HCTM	2; 4	0,75kg Cu/ha	500-750	7					
4	Cherry, sweet cherry BBCH 51-61 BBCH 65-73	Fpn	Spraying, HCTM	1 2	1,5 kg Cu/ha 0,75kg Cu/ha	500-750	14					
5	Apricot BBCH 51-61	Fpn	Spraying, HCTM	1	1,5 kg Cu/ha	500-750	n.a.					
6	Plum BBCH 51-61	Fpn	Spraying, HCTM	1	1,5 kg Cu/ha	500-750	n.a.					
7	Peach BBCH 00-03	Fpn	Spraying, HCTM	1	1,5 kg Cu/ha	700	n.a.					
8	Walnut Before flower- ing	Fpn	Spraying, HCTM	2	1,5 kg Cu/ha	800- 1000	n.a.					
9	Hazelnut Before flower- ing	Fpn	Spraying, HCTM	2	1,5 kg Cu/ha	800- 1000	n.a.					
10	Tomato (outdoor) BBCH 51-85	Fpn	Spraying	3	1,25 kg Cu/ha	700	7					
11	Tomato (in-	I	Spraying	3	1,25 kg Cu/ha	1500-	3					

1	2	3	4	5	6	7	8	9	10			
	door) BBCH 56-88					2000						
12	Aubergines (bakłazan) (outdoor) BBCH 51-85	Fpn	Spraying	3	1,25 kg Cu/ha	700	7					
13	Aubergines (indoor) BBCH 56-88	I	Spraying	3	1,25 kg Cu/ha	1500- 2000	3					
14	Cucumber (outdoor) BBCH 62-78	Fpn	Spraying	3	1,25 kg Cu/ha	700	7					
15	Cucumber (indoor) BBCH 10-89	I	Spraying	4	0,8 kg Cu/ha	500	3					
16	Gherkins (korniszony) BBCH 62-78	Fpn	Spraying	3	1,25 kg Cu/ha	700	7					
17	Courgette (cukinia) BBCH 62-78	Fpn	Spraying	3	1,25 kg Cu/ha	700	7					
18	Melon (in- door) BBCH 10-89	I	Spraying	3	1,25 kg Cu/ha	200- 1500	7					
19	Pumpkins (indoor) BBCH 10-89	I	Spraying	3	1,25 kg Cu/ha	200- 1500	7					
20	Watermelon (indoor) BBCH 10-89	I	Spraying	3	1,25 kg Cu/ha	200- 1500	7					
21	French bean BBCH 65-69	Fpn	Spraying	2	1,5 kg Cu/ha	600-800	7					
22	Peas with pods	Fpn	Spraying,	2	1,5 kg Cu/ha	600-800	7					
23	Grape (table, wine) BBCH 13-17 BBCH 17-73 BBCH 73-77	Fpn	Spraying	3	1,25 kg Cu/ha	500-900	21					
24	Currant BBCH 59-65 BBCH 59 -81	Fpn	Spraying	2	1,2 kg Cu/ha	700	7					

\* 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"

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



## Data gaps

Data gaps should be listed in the summary to give an overview (especially for cMS).

Noticed data gaps are:

- Toxicological information on the stabilisers used in the technical concentrates by some manufacturers of copper hydroxide, copper oxychloride, tribasic copper sulfate and copper I oxide, relevant for all representative uses evaluated.

(EFSA Journal 2018;16(1):5152)

## 6.2 Toxicological Information on Active Substance(s)

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

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

	Copper as Copper oxychloride
Common Name	Coppes oxychloride; Dicopper chloride trihydroxide
CAS-No.	1332-65-6 or 1332-40-7
<b>Classification and proposed labelling</b>	
With regard to toxicological endpoints (according to the criteria in Reg. 1272/2008, as amended)	<p>Hazard classess, categories:            Acute Tox. 3            Acute Tox. 4            Codes for hazard pictograms: GHS06            Signal word: Danger            Hazard statements:            H301 - Toxic if swallowed            H332 – Harmful if inhaled.            Precautionary statements:            P261 – Avoid breathing dust/fume/gas/mist/vapours/ spray.            P264 – Wash skin and eyes thoroughly after handling.            P270- Do not eat, drink or smoke when using this product.            P271- Use only outdoors or in a well-ventilated area            P301+P310-IF SWALLOWED: Immediately call a POISON CENTER/doctor.            P321 - Specific treatment (see ... on this label).            P330 - Rinse mouth.            P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.            P312 - Call a POISON CENTER/doctor if you feel unwell.</p>
Additional C&L proposal	-
<b>Agreed EU endpoints</b>	
AOEL systemic	0.08 mg/kg bw/d (corrected for 50% oral absorption/ bioavailability)
Reference	Peer review of the pesticide risk assessment of the active substance copper compounds, <i>EFSA Journal</i> 2018;16(1):5152
<b>Conditions to take into account/critical areas of concern with regard to toxicology</b>	

	Copper as Copper oxychloride
According to Peer review for active substance- copper compounds	None.

### 6.3 Toxicological Evaluation of Plant Protection Product

A summary of the toxicological evaluation for MIEDZIAN 50 WP is given in the following tables. Full summaries of studies on the product that have not been previously considered within an EU peer review process and have been previously considered within an national level are described in detail in Appendix 2.

**Table 6.3-1: Summary of evaluation of the studies on acute toxicity including irritancy and skin sensitisation for MIEDZIAN 50 WP**

Type of test, species, model system (Guideline)	Result	Acceptability	Classification (acc. to the criteria in Reg. 1272/2008)	Reference
LD <sub>50</sub> oral, rat (OECD 420)	300<LD <sub>50</sub> < 2000 mg/kg bw	Yes	Acute Tox. 4 (H302)	xxx 2011
LD <sub>50</sub> dermal, rat (OECD 402)	> 2000 mg/kg bw	Yes	None	xxxx 2011
LC <sub>50</sub> inhalation, rat (OECD 403)	4 hr LC <sub>50</sub> > 5.22 mg/L	Yes	None	xxx, 2007
Skin irritation, rabbit (OECD 404)	Non-irritant	Yes	None	xxx 2011
Eye irritation, rabbit (OECD 405)	Non-irritant	Yes	None	xxx 2011
Skin sensitisation, guinea pig (OECD 406)	Weak Sensitizer	Yes	None	xxx, 2004
Supplementary studies for combinations of plant protection products	No data – not required			

Formulation does not contain any substances classified as:

- acute dermal toxicity,
- skin irritant,
- eye irritant,
- skin or respiratory sensitizer,
- germ cell mutagenic,
- cancerogenic,
- toxic on reproduction,
- toxic on specific target organs (single or repeat exposure),
- aspiration hazard.

Thus according to points 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10 of Regulation (EC) 1272/2008 product MIEDZIAN 50 WP does not need to be classified in above mentioned categories.

## 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 substances in MIEDZIAN 50 WP are presented in the following table.

**Table 6.5-1: Dermal absorption rates for active substances in MIEDZIAN 50 WP**

	Copper	
	Value	Reference
Concentrate	1 %	1. Peer review of the pesticide risk assessment of the active substance copper compounds, <i>EFSA Journal</i> 2018;16(1):5152. 2. RAR, Copper compounds, Vol.3, B.6 (PPP).
Dilution	9 %	

### 6.5.2 Justification for proposed values - copper

No data on dermal absorption for copper in MIEDZIAN 50 WP is available.

Justifications for values according to studies presented in the RAR for copper compounds are presented below.

Two new dermal absorption studies on different form of copper have been submitted by the EU Copper Task Force since the first approval of the substance. The first one (xxx 2012) analysed the *in vitro* dermal absorption of copper from 8 formulations through human skin using non-radioactive analytical methods. The second one (xxx, 2015) analysed the *in vitro* absorption of copper from 2 different formulations (a liquid and a solid formulation) through human skin using radiolabelled copper (copper isotope 65).

The first study (Maas 2012) tested the *in vitro* percutaneous absorption of copper through human skin membranes from eight different agrochemical formulations. After adjustment regarding variability between replicates and formulation, and low recovery, RMS (France) proposed dermal absorption values of **0.3% for the concentrate and 8.4% for the field dilution** applicable all copper formulations. This study presenting some limitations regarding the validation of the analytical methods, this result can be used only as supportive information for the second study.

The second study (Maas 2015) assessed the percutaneous absorption of copper, formulated as Copper hydroxide 50 WP or Copper oxychloride, *in vitro* through human skin using a radio-labelled method. No limitations were detected for this study. Taking into account the variability between replicates, dermal absorption values for both copper formulations ranged from **0.1% to 0.6% for the concentrate and 3.5% to 8.9% for the field dilution** (1.5g Cu/L).

It can be concluded that both studies gave the same range of dermal absorption values. No influence of the chemical form of Cu or the type of formulation was highlighted. Based on the xxx study from 2015 supported by the first xxx study from 2012, RMS (France) proposed copper dermal absorption values of **1% and 9%** (rounded values), **for the concentrate and the field dilution** (0.33g Cu/L), respectively. These dermal absorption values cover all the formulations tested and thus can be applicable for all chemical form of copper and all type of copper formula-

tions.

The variants supported as copper fungicides are barely soluble inorganic salts, formulated as WP, WG or SC. Particles are not absorbed through skin. It has been demonstrated that dermal absorption of copper is furthermore affected by the individual differences in metal oxidation, which has a great impact on the ability of copper to permeate the skin.

It is obvious that copper ion absorption through the skin does not follow the diffusion law applied for hydrophobic compounds. Copper ions from the inorganic fungicidal salts will have to enter the natural pathways for absorption and be controlled by the same processes. This is the reason why studies Maas, W.J.M. (2012) and Maas, W.J.M. and Kunne, C. (2015) do not show significant differences between the *in vitro* absorption of the five copper variants, the three different formulation types, and the different spray dilution concentrations. In none of the products tested did copper reach the receptor fluid in significant amount, and the only difference might be the speed and depth of penetration into the skin layers.

It can be concluded that the copper transport through the skin will be independent of the nature of the inorganic salt, its formulation type (as long as the co-formulants do not include chelating agents similar to the naturally present copper complexing agents), and the spray dilution. In all cases the *in vitro* studies show a very low absorption, if any, within the limit of quantification of the analytical method used.

**Table 6.5-2: Default dermal absorption rates for Copper**

	Value	Justification for value	Acceptability of justification
Concentrate	1 %	Based on study presented in the RAR (Maas, W.J.M. (2012) and Maas, W.J.M. and Kunne, C. (2015)), it is proposed copper dermal absorption values of 1% and 9%, for the concentrate and the field dilution (0.33g Cu/L), respectively. These dermal absorption values cover all the formulations tested and thus can be applicable for all chemical form of copper and all type of copper formulations.	Acceptable
Dilution	9 %		Acceptable

Proposed dermal absorption rates for copper are based on dermal absorption studies on a 8 copper formulations. An *in vitro* absorption study using human and rat skin was conducted to determine the rates of penetration and distribution of metallic copper from eight copper formulations. The study results are summarised in the following table. Full summaries of studies on the dermal absorption of copper and 8 copper formulations that have been evaluated within an EU peer review process (RAR, Copper compounds, Vol.3, B.6 (PPP)).

The results of the experiments with copper and 8 of copper formulations are applicable for the risk assessment of the present application.

Based on above, Applicant has proposed for MIEDZIAN 50 WP a default dermal absorption value of 1% for the concentrate and 9% for the spray solution.

**Table 6.5-3: Summary of the results of submitted dermal absorption studies for copper**

Test	Concen- trate	Spray dilution (dilution factor)	Formulation in study	Acceptability of study	Justification provided on representativity of study formu- lation for cur- rent product	Acceptability of justifica- tion	Reference*
<i>In vitro</i> (human)	0.09%	5.68%	Copper hy- droxide 250 g Cu/L, SC	Yes	Not required	Justification accepted. Endpoint can be used for current product / Justification not accepted. Endpoint cannot be used for current product.	xxx., 2012
	0.17%	5.95%	Copper hy- droxide 50 WP				
	0.33%	3.39%	H1B10 Copper hydroxide 25% WG				
	0.13%	10.44%	Flowbrix (cop- per oxychloride 380 g Cu/L SC)				
	0.2%	2.66%	Copper Oxychloride 37.5 NC WG				
	0.29%	4.60%	Bordeaux mix- ture 20% Cu WP				
	0.12%	8.66%	BBC/Bouillie Bordelaise (Bordeaux mixture 20% Cu WG)				
	0.21%	4.74%	Nordox 75 WG (copper oxide 75\$ WG)				
<i>In vitro</i> (human and rat)	0.6%	8.9%	Copper hydroxide 50 WP;	Yes	Not required	Justification accepted. Endpoint can be used for current product / Justification not accepted. Endpoint cannot be used for current product.	xxx. 2015
	0.1%	3.5%	Flowbrix SC				

\* indicates that a study was reviewed at EU level

## 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	MIEDZIAN 50 WP
Formulation type	WP
Category	Fungicide, bacteriocide
Active substance(s) (incl. content)	<b>Copper oxychloride (copper)</b> 877 g/L (500 g/l)
AOEL systemic	0.08 mg/kg bw/d
Inhalation absorption	100%
Oral absorption	50 %
Dermal absorption	Concentrate: 10 % (default) Dilution: 50 % (default)

### 6.6.1 Selection of critical use(s) and justification

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

### 6.6.2 Operator exposure (KCP 7.2.1)

#### 6.6.2.1 Estimation of operator exposure

A summary of the exposure models used for estimation of operator exposure to the active substances during application of MIEDZIAN 50 WP according to the critical uses is presented in Table 6.6-2. The outcome of the estimation is presented in Professional users Table 6.6-3 and Table 6.6-4. Detailed calculations are in Appendix 3.

To reduce operator exposure to product MIEDZIAN 50 WP is available in water-soluble bags. Below calculations present worst case scenario without use of water-soluble bags of MIEDZIAN 50 WP and with use of water-soluble bags.

**Table 6.6-2: Exposure models for intended uses according art .43 and art 51 Reg. 1107/2009**

Critical uses	<p><b>Pome frutis:</b> Apple, pear, Quince, Medlar (max. 1.5 kg PPP/ha)</p> <p><b>Stone fruits:</b> Cherry, sweet cherry (max. 3 kg PPP/ha) Apricot, Plum (max. 3 kg PPP/ha) Peach (max. 3 kg PPP/ha)</p> <p><b>Tree nuts</b> Walnut, Hazelnut (max. 3 kg PPP/ha)</p>
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	<p><b>Fruiting vegetables (outdoor):</b> Tomato (max. 2.5 kg PPP/ha) Aubergines (max. 2.5 kg PPP/ha) Cucumber (max. 2.5 kg PPP/ha) Gherkins (max. 2.5 kg PPP/ha) Courgette (max. 2.5 kg PPP/ha)</p> <p><b>Fruiting vegetables (indoor):</b> Tomato (max. 2.5 kg PPP/ha) Aubergines (max. 2.5 kg PPP/ha) Cucumber ((max. 1.6 kg PPP/ha) Melon (max. 2.5 kg PPP/ha) Pumpkins (max. 2.5 kg PPP/ha) Watermelon (max. 2.5 kg PPP/ha)</p> <p><b>Legume vegetables</b> French bean (max. 3 kg PPP/ha) Peas with pods (max. 3 kg PPP/ha)</p> <p><b>Table and wine grapes:</b> Grape (max. 2.5 kg PPP/ha)</p> <p><b>Berries and small fruits:</b> Currant (max. 2.4 kg PPP/ha)</p>
Models	<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 calculator version: 30/03/2015</p> <p>UK Predictive Operator Exposure Model (UK POEM)</p> <p>OPEX model v. 0.3.22</p> <p>Non-professional use in home gardeens - exposure assessment (version 1.3;22.03.2022)</p>

#### A. Professional users

**Table 6.6-3: Estimated operator exposure (longer term exposure) – professional use**

Copper oxychloride			
Model data	Level of PPE	Total absorbed dose (mg/kg/day)	% of systemic AOEL
<p><b>Pome frutis</b> Apple, pear, Quince, Medlar</p>			
Tractor mounted boom spray application outdoors to high crops			
Application rate		0.75 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg	No PPE	0.188	234.4 %
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.070	<b>86.9 %</b>
	<b>Water souluble bag:</b> Gloves: M/L and A	0.046	<b>58.1 %</b>

<b>OPEX model v 0.3.22</b>	No PPE	0.2968	<b>371 %</b>
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) A: Work wear (arms, body and legs covered)	0.0621	<b>77.6 %</b>
Manual Knaosack application to high crops			
Application rate		0.75 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg  <b>BBCH 00-07</b> <b>Early season</b>	No PPE	0.0947	118.4 %
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.00327	<b>4.1 %</b>
	<b>Water souluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0288	<b>3.6 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.0952	119 %
	Work wear (arms, body and legs covered): M/L and A	0.0082	<b>10.2 %</b>
<b>Stone frutis</b> Cherry, sweet cherry, apricot, plum, peach			
Tractor mounted boom spray application outdoors to high crops			
Application rate		1.5 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg  <b>BBCH 51-61</b> <b>Late season</b> 1 application	No PPE	0.477	396.2%
	Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L	0.0268	<b>33.5 %</b>
	<b>Water souluble bag:</b> Gloves; Work wear (arms, body and legs covered): ML nad A	0.0118	<b>14.8 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.5048	631 %
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar)	0.0632	<b>79 %</b>



	A: Gloves; Work wear (arms, body and legs covered)		
Manual Knapsack application to high crops			
Application rate		1.5 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg  <b>BBCH 51-61</b> <b>Late season</b>  1 application	No PPE	1.977	2471.8 %
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.0749	<b>93.6 %</b>
	Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L and A	0.0713	<b>89.2 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0713	<b>93.1 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.1088	136 %
	Work wear (arms, body and legs covered): M/L and A	0.0115	<b>14.4 %</b>
<b>Stone frutis</b> Cherry, sweet cherry			
Tractor mounted boom spray application outdoors to high crops			
Application rate		0.75 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg  <b>BBCH 65-73</b> <b>Late season</b>  2 applications	No PPE	0.1875	234.4 %
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.0695	<b>86.9 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0086	<b>10.8 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.2968	371 %
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) A: Work wear (arms, body and legs covered)	0.0621	<b>77.6 %</b>

Manual Knapsack application to high crops			
Application rate		0.75 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg  <b>BBCH 65-73</b> <b>Late season</b>  2 applications	No PPE	1.76	2199.9 %
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.0725	<b>90.7 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L and A	0.072	<b>90.2 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.0952	119 %
	Work wear (arms, body and legs covered): M/L and A	0.0082	<b>10.2 %</b>
<b>Tree nuts</b> Walnut, Hazelnut			
Tractor mounted boom spray application outdoors to high crops			
Application rate		1.5 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg	No PPE	0.295	369.2 %
	Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L	0.0667	<b>33.5 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0118	<b>14.8 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.5048	631 %
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) A: Gloves; Work wear (arms, body and legs covered)	0.0632	<b>79 %</b>
Manual Knapsack application to high crops			
<b>Spray application</b>	No PPE	1.977	2471.8 %

(AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg	Gloves; Work wear (arms, body and legs covered): M/L and A	0.0749	93.6 %
	Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L and A	0.0713	89.2 %
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L and A	0.0712	<b>89.0 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.1088	136 %
	Work wear (arms, body and legs covered): M/L and A	0.0115	<b>14.4 %</b>
<b>Fruiting vegetables (outdoor)</b> Tomato, Aubergines, Cucumber, Gherkins, Courgette			
Tractor mounted boom spray application outdoors to low crops			
Application rate		1.25 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg	No PPE	0.4971	621.4 %
	Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L	0.0425	53.1 %
	<b>Water soluble bag;</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0147	<b>18.4 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.5584	698 %
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) A: Work wear (arms, body and legs covered)	0.0668	<b>83.5 %</b>
Manual- Knapsack application to low crops			

<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg	No PPE	0.138	172.8%
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.0142	<b>17.8 %</b>
	<b>Water soluble bag;</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0139	<b>17.3 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.1384	173 %
	Work wear (arms, body and legs covered): M/L and A	0.018375,8*0,08	<b>22.9 %</b>
<b>Fruiting vegetables (indoor)</b> Tomato, Aubergines, Melon, Pumpkins, Watermelon			
Hand held sparyer/ Manual- Knapsack			
Application rate		1.25 kg a.s./ha	
<b>Dutch Greenhouse Model</b> Treated area: 1 ha Body weight: 70 kg	No PPE	0.3393	424.2 %
	Work wear (arms, body and legs covered) M/L and A + non-powered mask filtr type 2	0.03393	<b>42.4 %</b>
<b>OPEX model v 0.3.22</b> Manual- Knapsack	No PPE	0.0606	<b>75.8 %</b>
	Work wear (arms, body and legs covered): M/L and A	0.0084	<b>10.5 %</b>
<b>Fruiting vegetables (indoor)</b> Cucumber			
Hand held sparyer/ Manual- Knapsack			
Application rate		0.8 kg a.s./ha	
<b>Dutch Greenhouse Model</b> Treated area: 1 ha Body weight: 70 kg	No PPE	0.2171	271.4 %
	Work wear (arms, body and legs covered) M/L and A + non-powered mask filtr type 2	0.0217	<b>27.1 %</b>
<b>OPEX model v 0.3.22</b> Manual- Knapsack	No PPE	0.0396	<b>49.5 %</b>
	Work wear (arms, body and legs covered): M/L and A	0.0062	<b>7.7 %</b>

Legume vegetables French bean, Peas with pods			
Tractor mounted boom spray application outdoors to low crops			
Application rate		1.5 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percent- tile) Body weight: 60 kg	No PPE	0.5578	697.3 %
	Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP2, P2 and similar): M/L	0.0461	<b>57.7 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0158	<b>19.8 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.5048	631 %
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) A: Gloves, Work wear (arms, body and legs covered)	0.0632	<b>79 %</b>
Manual- Knapsack application to low crops			
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percent- tile) Body weight: 60 kg	No PPE	0.138	172.8 %
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.0142	<b>17.8 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0139	<b>17.3 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.1088	136 %
	Work wear (arms, body and legs covered): M/L and A	0.0115	<b>14.4 %</b>
Table and wine grapes Grape			
Tractor mounted boom spray application outdoors to high crops			
Application rate		1.25 kg a.s./ha	

<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg  <b>Upward spraying</b>	No PPE	0.261	326.6 %
	Gloves; Work wear (arms, body and legs covered): M/L and A ++ head and respiratory PPE (FP2, P2 and similar): M/L	0.0247	<b>30.9 %</b>
	<b>Water soluble bag:</b> loves; Work wear (arms, body and legs covered): M/L and A	0.0108	<b>13.6 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.4376	547 %
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) A: Work wear (arms, body and legs covered)	0.0765	<b>95.6 %</b>
Manual- Knapsack application to high crops			
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg  <b>Upward spraying</b>	No PPE	0.104	130.5 %
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.00389	<b>4.9 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0035	<b>4.4 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.1048	<b>131 %</b>
	Work wear (arms, body and legs covered): M/L and A	0.0105	<b>13.1 %</b>
<b>Berries and small fruits</b> Currant			
Tractor mounted boom spray application outdoors to low crops			
Application rate		1.2 kg a.s./ha	
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percentile) Body weight: 60 kg	No PPE	0.4845	605.6 %
	Gloves; Work wear (arms, body and legs covered): M/L and A + head and respiratory PPE (FP1, P1 and similar): M/L	0.0418	52.2 %

	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0145	<b>18.2 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.424	<b>530 %</b>
	M/L: Gloves; Work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) A: Work wear (arms, body and legs covered)	0.0739	<b>92.4 %</b>
Manual- Knapsack application to low crops			
<b>Spray application</b> (AOEM; 75 <sup>th</sup> percent- tile) Body weight: 60 kg	No PPE	0.138	<b>172.8 %</b>
	Gloves; Work wear (arms, body and legs covered): M/L and A	0.0142	<b>17.8 %</b>
	<b>Water soluble bag:</b> Gloves; Work wear (arms, body and legs covered): M/L and A	0.0139	<b>17.3 %</b>
<b>OPEX model v 0.3.22</b>	No PPE	0.104	<b>130 %</b>
	Work wear (arms, body and legs covered): M/L and A	0.0102	<b>12.8 %</b>

In the case of the application of MIEDZIAN 50 WP using tractor mounted sprayer, according to the **models calculations**, it can be concluded that the risk for the operator using MIEDZIAN 50 WP is acceptable when personal protective equipment:

- gloves and work wear (arms, body and legs covered) during mixing/loading and application is used in the case of pome and stone fruits (apple, pear, quince, medlar, cherry, sweet cherry, apricot, plum, peach);
- gloves and work wear (arms, body and legs covered) during mixing/loading and application, head and respiratory PPE (FP1, P1 and similar) during mixing/loading is used, in the case of walnut, hazelnut, tomato, aubergines, cucumber, gherkins, courgette, aubergines, melon, pumpkins, watermelon, french bean, peas with pods, grape, currant.

In the case of application of MIEDZIAN 50 WP using manual knapsack sprayer, operator exposure is acceptable when personal protective equipment gloves, work wear (arms, body and legs covered), head and respiratory PPE (FP1, P1 and similar) during mixing/loading and application is used.

**The risk for operator can be reduced by the use of water soluble bags of MIEDZIAN 50 WP. Water soluble bags reduce the risk of exposure especially during mixing/loading.**

**Applied OPEX model v 0.3.22 is accepted**

#### A. Non- professional users

**Table 6.6-4: Estimated operator exposure (longer term exposure) – non- professional use – Home garden sprayer**

		Copper oxychloride	
Model data	Level of PPE	Total absorbed dose (mg/kg/day)	% of systemic AOEL
<b>Home garden sprayer (5 L tank; outdoor application to high crops)/ Manual-Knapsack</b>			
<b>Pome frutis</b> Apple, pear, Quince, Medlar <b>Stone frutis</b> Cherry, sweet cherry			
Application rate		0.75 kg a.s./ha	
<b>UK POEM</b> Application volume 500 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.03705	<b>46.3 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack Application volume 500 L/ha Treated area: 0.05 ha	No PPE	0.0952	<b>119 %</b>
	No PPE Reduction factor: 20 *	0.0048	<b>6 %</b>
<b>Stone frutis</b> Cherry, sweet cherry, apricot, plum			
Application rate		1.5 kg a.s./ha	
<b>UK POEM</b> Application volume 500 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.0741	<b>92.6 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack Application volume 500 L/ha Treated area: 0.05 ha	No PPE	0.1088	<b>136 %</b>
	No PPE Reduction factor: 20*	0.0054	<b>6.8 %</b>
<b>Stone frutis</b> peach			



Application rate		1.5 kg a.s./ha	
<b>UK POEM</b> Application volume 700 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.05316	<b>66.5 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack Application volume 700 L/ha Treated area: 0.05 ha	No PPE	0.1088	<b>136 %</b>
	No PPE Reduction factor: 20*	0.0054	<b>6.8 %</b>
<b>Tree nuts</b> Walnut, Hazelnut			
Application rate		1.5 kg a.s./ha	
<b>UK POEM</b> Application volume 800 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.04662	<b>58.3 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack Application volume 800 L/ha Treated area: 0.05 ha	No PPE	0.1088	<b>136 %</b>
	No PPE Reduction factor: 20*	0.0054	<b>6.8 %</b>
<b>Fruiting vegetables (outdoor)</b> Tomato, Aubergines, Cucumber, Gherkins, Courgette			
Application rate		1.25 kg a.s./ha	
<b>UK POEM</b> Application volume 700 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.0443	<b>55.4 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack Application volume 700 L/ha Treated area: 0.05 ha	No PPE	0.1384	<b>173 %</b>
	No PPE Reduction factor: 20*	0.00696	<b>8.7 %</b>
<b>Fruiting vegetables (indoor)</b> Tomato, Aubergines, Melon, Pumpkins, Watermelon			
Application rate		1.25 kg a.s./ha	
<b>UK POEM</b> Application volume 500 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.01696	<b>21.2 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack Application volume 200 L/ha Treated area: 0.05 ha	No PPE	0.0606	<b>75.8 %</b>
	No PPE Reduction factor: 20*	0.0303	<b>37.9 %</b>
<b>Fruiting vegetables (indoor)</b>			

Cucumber			
Application rate		0.8 kg a.s./ha	
<b>UK POEM</b> Application volume 500 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.01086	<b>13.6 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack	No PPE	0.0396	<b>49.5 %</b>
Application volume 500 L/ha Treated area: 0.05 ha	No PPE Reduction factor: 20*	0.002	<b>2.5 %</b>
Legume vegetables/ High vegetables French bean, Peas with pods			
Application rate		1.5 kg a.s./ha	
<b>UK POEM</b> Application volume 600 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.06188	<b>77.4 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack	No PPE	0.1088	<b>136 %</b>
Application volume 600 L/ha Treated area: 0.05 ha	No PPE Reduction factor: 20*	0.0054	<b>6.8 %</b>
Table and wine grapes/ Viticulture Grape			
Application rate		1.25 kg a.s./ha	
<b>UK POEM</b> Application volume 500 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.06175	<b>77.2 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack	No PPE	0.1048	<b>131 %</b>
Application volume 500 L/ha Treated area: 0.05 ha	No PPE Reduction factor: 20*	0.00528	<b>6.6 %</b>
Berries and small fruits/ High berries Currant			
<b>UK POEM</b> Application volume 700 L/ha Treated area: 0.01 ha Time: 0.5 h Body weight: 60 kg	No PPE	0.0425	<b>53.2 %</b>
<b>OPEX model v 0.3.22</b> Manual-Knapsack	No PPE	0.104	<b>130 %</b>
Application volume 700 L/ha Treated area: 0.05 ha	No PPE Reduction factor: 20*	0.0052	<b>6.5 %</b>

\*- Reduction factor for smaller area: estimated garden area[ ha]/ 1 ha (according to *Non-professional use*)

*in home gardens - exposure assessment* (version 1.3 (22.03.2022)). In Poland estimated garden area = 0.05 ha.

**In the case of application of MIEDZIAN 50 WP using home garden sprayer (5L), according to the models calculations, it can be concluded that the risk for the operator using MIEDZIAN 50 WP is acceptable even personal protective equipment is not used.**

**The risk for non-professional users can be reduced by the use of water soluble bags of MIEDZIAN 50 WP. Water soluble bags reduce the risk of exposure especially during mixing/loading.**

### 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)

#### 6.6.3.1 Estimation of worker exposure

Table 6.6-5 shows the exposure model used for estimation of worker exposure after entry into a previously treated area or handling a crop treated with MIEDZIAN 50 WP according to the critical use(s). Outcome of the estimation is presented in Table 6.6-6. Detailed calculations are in Appendix 3.

**Table 6.6-5: Exposure models for intended uses according art .43 and art 51 Reg. 1107/2009)**

Critical uses	<p><b>Pome frutis:</b> Apple, pear, Quince, Medlar (max. 1.5 kg PPP/ha)</p> <p><b>Stone fruits:</b> Cherry, sweet cherry (max. 3 kg PPP/ha) Apricot, Plum (max. 3 kg PPP/ha) Peach (max. 3 kg PPP/ha)</p> <p><b>Tree nuts</b> Walnut, Hazelnut (max. 3 kg PPP/ha)</p> <p><b>Fruiting vegetables (outdoor):</b> Tomato (max. 2.5 kg PPP/ha) Aubergines (max. 2.5 kg PPP/ha) Cucumber (max. 2.5 kg PPP/ha) Gherkins (max. 2.5 kg PPP/ha) Courgette (max. 2.5 kg PPP/ha)</p> <p><b>Fruiting vegetables (indoor):</b> Tomato (max. 2.5 kg PPP/ha)</p>
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	<p>Aubergines (max. 2.5 kg PPP/ha) Cucumber ((max. 1.6 kg PPP/ha) Melon (max. 2.5 kg PPP/ha) Pumpkins (max. 2.5 kg PPP/ha) Watermelon (max. 2.5 kg PPP/ha)</p> <p><b>Legume vegetables</b> French bean (max. 3 kg PPP/ha) Peas with pods (max. 3 kg PPP/ha)</p> <p><b>Table and wine grapes:</b> Grape (max. 2.5 kg PPP/ha)</p> <p><b>Berries and small fruits:</b> Currant (max. 2.4 kg PPP/ha)</p>
Models	<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 calculator version: 30/03/2015</p> <p>EUROPOEM II Hemmen et al (2002) Post-application exposure of workers to pesticides in agriculture. Report of the re-entry working group. EUROPOEM II project. FAIR3 CT96-1406</p>

**Table 6.6-6: Estimated worker exposure**

		Copper as Copper oxychloride	
Model data	Level of PPE	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
<p><b>Pome frutis: Apple, pear, Quince, Medlar</b> <b>Stone fruits: Cherry, sweet cherry</b></p>			
Searching, Reaching, picking Outdoor Work rate: 8 hours/day, DT <sub>50</sub> : 30 days		<p>DFR: 3 µg/cm<sup>2</sup>/kg a.s./ha Interval between treatments: 7 days MAF = 1.9 AR<sub>MAF</sub> = 1.9 x 0.75 = 1.425 kg</p>	
Number of applications and application rate		2 x 0.75 kg a.s./ha	
Body weight: 60 kg TC: 4500 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.1484	185.5 %
	With gloves	0.02968	37.1 %
<p><b>Stone fruits: Cherry, sweet cherry, apricot, plum, peach</b></p>			

Searching, Reaching, picking Outdoor Work rate: 6 hours/day,		DT <sub>50</sub> : 30 days DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha	
Number of applications and application rate		1 x 1.5 kg a.s./ha	
Body weight: 60 kg TC: 4500 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.1562	195.3 %
	With gloves	0.0312	<b>39.1 %</b>
<b>Tree nuts: Walnut, Hazelnut</b>			
Searching, Reaching, picking Outdoor Work rate: 6 hours/day, DT <sub>50</sub> : 30 days		DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha Interval between treatments: 10 days MAF 1.8 AR <sub>MAF</sub> = 1.8 x 1.5 = 2.7 kg/ha	
Number of applications and application rate		2 x 1.5 kg a.s./ha	
Body weight: 60 kg TC: 4500 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.2812	351.5 %
	With gloves	0.0562	<b>70.3 %</b>
<b>Fruiting vegetables (outdoor): Tomato, Aubergines, Cucumber, Gherkins, Courgette</b>			
Reaching, picking Outdoor Work rate: 6 hours/day, DT <sub>50</sub> : 30 days		DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha Interval between treatments: 7 days MAF 2.6 AR <sub>MAF</sub> = 2.6 x 1.25 = 3.25 kg/ha	
Number of applications and application rate		3 x 1.25 kg a.s./ha	
Body weight: 60 kg TC: 2500 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.1880	235.1 %
	With gloves	0.0376	<b>47.0 %</b>
<b>Fruiting vegetables (indoor)</b> <b>Tomato, Aubergines, Melon, Pumpkins, Watermelon, Cucumber</b>			
Reaching, picking Outdoor Work rate: 6 hours/day, DT <sub>50</sub> : 30 days		DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha Interval between treatments: 7 days MAF 2.6 AR <sub>MAF</sub> = 2.6 x 1.25 = 3.25 kg/ha	
Number of applications and application rate		3 x 1.25 kg a.s./ha	
Body weight: 60 kg TC: 2500 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.2033	254.2 %
	With gloves	0.0391	<b>48.9 %</b>
<b>Fruiting vegetables (indoor): Cucumber</b>			

Reaching, picking Outdoor Work rate: 6 hours/day, DT <sub>50</sub> : 30 days		DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha Interval between treatments: 7 days MAF 3.2 AR <sub>MAF</sub> = 3.2 x 0.8 = 2.56 kg/ha	
Number of applications and application rate		4 x 0.8 kg a.s./ha	
Body weight: 60 kg TC: 2500 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.1602	200.2 %
	With gloves	0.0308	<b>38.5 %</b>
<b>Legume vegetables: French bean, Peas with pods</b>			
Reaching, picking Outdoor Work rate: 6 hours/day, DT <sub>50</sub> : 30 days		DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha Interval between treatments: 7 days MAF 1.9 AR <sub>MAF</sub> = 1.9 x 1.5 = 2.85 kg/ha	
Number of applications and application rate		2 x 1.5 kg a.s./ha	
Body weight: 60 kg TC: 2500 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.1649	206.1 %
	With gloves	0.0330	<b>41.2 %</b>
<b>Table and wine grapes: Grape</b>			
Harvesting Outdoor Work rate: 2 hours/day, DT <sub>50</sub> : 30 days		DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha Interval between treatments: 10 days MAF 2.4 AR <sub>MAF</sub> = 2.4 x 1.25 = 3 kg/ha	
Number of applications and application rate		3 x 1.25 kg a.s./ha	
Body weight: 60 kg TC: 10100 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.2337	292.2 %
	With gloves	0.0467	<b>58.4 %</b>
<b>Berries and small fruits: Currant</b>			
Reaching, picking Outdoor Work rate: 6 hours/day, DT <sub>50</sub> : 30 days		DFR: 3 µg/cm <sup>2</sup> /kg a.s./ha Interval between treatments: 10 days MAF 1.8 AR <sub>MAF</sub> = 1.8 x 1.2 = 2.16 kg/ha	
Number of applications and application rate		2 x 1.2 kg a.s./ha	
Body weight: 60 kg TC: 3000 cm <sup>2</sup> /person/h PPE: Work wear (arms, body and legs covered)	No gloves	0.1500	187.5 %
	With gloves	0.03	<b>37.5 %</b>

**In the case of the worker exposure, according to the model calculations, it can be concluded that the risk for the worker is acceptable when personal protective equipment (gloves) is used.**

**Based on the above calculation, the label should contain standard phrases:**  
*Ventilate treated areas/greenhouses thoroughly/time to be specified/ until spray has dried before re-entry.*

### 6.6.3.2 Refinement of generic DFR value (KCP 7.2)

Not required.

### 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 mention PPE (work wear and gloves), 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)

#### 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 6.6-7 shows the exposure model used for estimation of resident and bystander exposure to copper. The outcome of the estimation is presented in **Błąd! Nie można odnaleźć źródła odwołania.8**. Detailed calculations are in Appendix 3.

**Table 6.6-7: Exposure models for intended uses according art .43 and art 51 Reg. 1107/2009)**

Critical uses	<p><b>Pome frutis:</b> Apple, pear, Quince, Medlar (max. 1.5 kg PPP/ha)</p> <p><b>Stone frutis:</b> Cherry, sweet cherry (max. 3 kg PPP/ha) Apricot, Plum (max. 3 kg PPP/ha) Peach (max. 3 kg PPP/ha)</p> <p><b>Tree nuts</b> Walnut, Hazelnut (max. 3 kg PPP/ha)</p> <p><b>Fruiting vegetables (outdoor):</b> Tomato (max. 2.5 kg PPP/ha) Aubergines (max. 2.5 kg PPP/ha) Cucumber (max. 2.5 kg PPP/ha) Gherkins (max. 2.5 kg PPP/ha) Courgette (max. 2.5 kg PPP/ha)</p>
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	<p><b>Fruiting vegetables (indoor):</b>  Tomato (max. 2.5 kg PPP/ha)  Aubergines (max. 2.5 kg PPP/ha)  Cucumber ((max. 1.6 kg PPP/ha)  Melon (max. 2.5 kg PPP/ha)  Pumpkins (max. 2.5 kg PPP/ha)  Watermelon (max. 2.5 kg PPP/ha)</p> <p><b>Legume vegetables</b>  French bean (max. 3 kg PPP/ha)  Peas with pods (max. 3 kg PPP/ha)</p> <p><b>Table and wine grapes:</b>  Grape (max. 2.5 kg PPP/ha)</p> <p><b>Berries and small fruits:</b>  Currant (max. 2.4 kg PPP/ha)</p>
Models	<p>Martin S. et al. (2008) [Guidance for Exposure and Risk Evaluation for Bystanders and Residents Exposed to Plant Protection Products During and After Application; J. Verbr. Lebensm. 3 (2008): 272-281 Birkhäuser Verlag Basel] and Bundesanzeiger (BAnz), 06 January 2012, Issue No. 4, pp. 75-76.</p>

**Table 6.6-8: Estimated resident exposure (longer term exposure)**

Model data	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL	Total absorbed dose (mg/kg bw/day)	% of systemic AOEL
Pome frutis Apple, Pear, Quince, Medlar Stone fruits Cherry, Sweet cherry				
	HCTM		HCHH	
Application rate	2 x 0.75 kg a.s./ha Multiple application rate: 1.425 kg a.s./ha			
Bystanders (adult) Drift rate: 19.89 % (5 m) Body weight: 60 kg	0.426	53.2 %	0.426	53.3 %
Bystanders (children) Drift rate: 19.89 % (5 m) Body weight: 16.15 kg	0.0333	41.6 %	0.0334	41.7 %
Residents (adult) Drift rate: 19.89 % (5 m) Body weight: 60 kg	0.0034	4.2 %	0.0034	4.2 %
Residents (children) Drift rate: 19.89 % (5 m) Body weight: 16.15 kg	0.0068	8.5 %	0.0068	8.5 %
Stone fruits Cherry, sweet cherry, apricot, plum (Fruit crops, late stage)				
	HCTM		HCHH	
Application rate	1 x 1.5 kg a.s./ha			
Bystanders (adult)	0.0354	44.3 %	0.0355	44.4 %



Drift rate: 15.73% (2-3 m) Body weight: 60 kg				
Bystanders (children) Drift rate: 15.73% (2-3 m) Body weight: 16.15 kg	0.0277	34.7 %	0.0278	34.8 %
Residents (adult) Drift rate: 15.73% (2-3 m) Body weight: 60 kg	0.00286	3.6 %	0.00286	3.6 %
Residents (children) Drift rate: 15.73% (2-3 m) Body weight: 16.15 kg	0.00576	7.2 %	0.00576	7.2 %
Stone fruits peach (Fruit crops, early stage)				
	HCTM		HCHH	
Application rate	1 x 1.5 kg a.s./ha			
Bystanders (adult) Drift rate: 19.89 % (5 m) Body weight: 60 kg	0.0448	56.0 %	0.0449	56.1 %
Bystanders (children) Drift rate: 19.89 % (5 m) Body weight: 16.15 kg	0.0350	43.8 %	0.0351	43.9 %
Residents (adult) Drift rate: 19.89 % (5 m) Body weight: 60 kg	0.0035	4.4 %	0.00354	4.4 %
Residents (children) Drift rate: 19.89 % (5 m) Body weight: 16.15 kg	0.0071	8.9 %	0.0071	8.9 %
Tree nuts Walnut, Hazelnut (Fruit crops, early stage)				
	HCTM		HCHH	
Application rate	2 x 1.5 kg a.s./ha Multiple application rate: 2.7 kg a.s./ha			
Bystanders (adult) Drift rate: 19.89 % (5 m) Body weight: 60 kg	0.0341	42.7 %	0.0342	42.8 %
Bystanders (children) Drift rate: 19.89 % (5 m) Body weight: 16.15 kg	0.0268	33.5 %	0.0270	33.7 %
Residents (adult) Drift rate: 19.89 % (5 m) Body weight: 60 kg	0.00276	3.5 %	0.00276	3.5 %
Residents (children) Drift rate: 19.89 % (5 m) Body weight: 16.15 kg	0.00556	7 %	0.00556	7 %
Fruiting vegetables (outdoor): Tomato, Aubergines, Cucumber, Gherkins, Courgette (Field crop) Fruiting vegetables (indoor): Tomato, Aubergines, Melon, Pumpkins, Watermelon				

	FCTM		HCHH	
Application rate	3 x 1.25 kg a.s./ha Multiple application rate: 3.25 kg a.s./ha			
Bystanders (adult) Drift rate: 8.5 % (2-3 m) Body weight: 60 kg	0.04145	51.8 %	0.0417	52.1 %
Bystanders (children) Drift rate: 8.5 % (2-3 m) Body weight: 16.15 kg	0.03236	40.5 %	0.0328	41.0 %
Residents (adult) Drift rate: 8.5 % (2-3 m) Body weight: 60 kg	0.0033	4.1 %	0.0033	4.1 %
Residents (children) Drift rate: 8.5 % (2-3 m) Body weight: 16.15 kg	0.00665	8.3 %	0.00665	8.3 %
Legume vegetables: French bean, Peas with pods (Field crops)				
	FCTM		HCHH	
Application rate	3 x 1.5 kg a.s./ha Multiple application rate: 2.85 kg a.s./ha			
Bystanders (adult) Drift rate: 8.5 % (2-3 m) Body weight: 60 kg	0.0363	45.4 %	0.0365	45.7 %
Bystanders (children) Drift rate: 8.5 % (2-3 m) Body weight: 16.15 kg	0.0284	35.5 %	0.0288	36 %
Residents (adult) Drift rate: 8.5 % (2-3 m) Body weight: 60 kg	0.00293	3.7 %	0.00293	3.7 %
Residents (children) Drift rate: 8.5 % (2-3 m) Body weight: 16.15 kg	0.00590	7.4 %	0.00590	7.4 %
Table and wine grapes: Grape				
	HCTM		HCHH	
Application rate	3 x 1.25 kg a.s./ha Multiple application rate: 3 kg a.s./ha			
Bystanders (adult) Drift rate: 8.02% (2-3 m) Body weight: 60 kg	0.0362	45.2 %	0.0363	45.4 %
Bystanders (children) Drift rate: 8.02% (2-3 m) Body weight: 16.15 kg	0.0284	35.5 %	0.0286	35.8 %
Residents (adult) Drift rate: 8.02% (2-3 m) Body weight: 60 kg	0.00291	3.6 %	0.00291	3.6 %
Residents (children) Drift rate: 8.02% (2-3 m) Body weight: 16.15 kg	0.00586	7.3 %	0.00586	7.3 %

Berries and small fruits: Currant				
	HCTM		HCHH	
Application rate	2 x 1.2 kg a.s./ha Multiple application rate: 2.16 kg a.s./ha			
Bystanders (adult) Drift rate: 15.73% (2-3 m) Body weight: 60 kg	0.051	63.8 %	0.051	63.9 %
Bystanders (children) Drift rate: 15.73% (2-3 m) Body weight: 16.15 kg	0.040	49.9 %	0.04001	50.1 %
Residents (adult) Drift rate: 15.73% (2-3 m) Body weight: 60 kg	0.0040	5 %	0.0040	5 %
Residents (children) Drift rate: 15.73% (2-3 m) Body weight: 16.15 kg	0.0081	10.1 %	0.0081	10.1 %

In the case of indoor applications it was assumed worst case scenario – data for outdoor application.

**The bystander / resident exposure estimation shows an acceptable exposure risk for this population group when using a 2-3 m buffer zone.**

#### 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 copper 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.

## Appendix 1 Lists of data considered in support of the evaluation

Tables considered not relevant can be deleted as appropriate.

MS to blacken authors of vertebrate studies in the version made available to third parties/public.

### List of data submitted by the applicant and relied on, already evaluated at national level

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 7.1.1	xxx	2011	Badanie toksyczności ostrej doustnej–metoda ustalonej dawki na szczurach. Study code: PO-6/11 xxx GLP Unpublished	Y	Synthos Agro Sp z o.o.
KCP 7.1.2	xxx	2011	MIEDZIAN 50 WP: Acute dermal toxicity study on rats. Study code: DER-7/11 xxx GLP Unpublished	Y	Synthos Agro Sp z o.o.
KCP 7.1.3	xxx	2006	MIEDZIAN 50 WP: ACUTE INHALATION TOXICITY STUDY (NOSE ONLY) IN THE RAT, xxx Study code: 06/236-004P GLP Unpublished	Y	Synthos Agro Sp z o.o.
KCP	xxx	2011	MIEDZIAN 50 WP: Acute skin irritation/corrosion study on rabbits	Y	Synthos

<b>Data point</b>	<b>Author(s)</b>	<b>Year</b>	<b>Title Company Report No. Source (where different from company) GLP or GEP status Published or not</b>	<b>Vertebrate study Y/N</b>	<b>Owner</b>
7.1.4			Study code: DDR-6/11 xxx GLP Unpublished		Agro Sp z o.o.
KCP 7.1.5	xxx	2011	MIEDZIAN 50 WP: Acute eye irritation/corrosion study on rabbits. Study code: ODR-8/11 xxx GLP Unpublished	Y	Synthos Agro Sp z o.o.
KCP 7.1.6	xxx	2004	Miedzian 50 WP. - Testing of sensitizing reacting of skin. Study code: AI-25-05. xxx GLP Unpublished	Y	Synthos Agro Sp z o.o.

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

<b>Data point</b>	<b>Author(s)</b>	<b>Year</b>	<b>Title Company Report No. Source (where different from company) GLP or GEP status Published or not</b>	<b>Vertebrate study Y/N</b>	<b>Owner</b>
KCP 7.3	xxx	2012	In vitro dermal absorption of copper (Cu) from 8 formulations through human skin V9062	N	EUCuTF

<b>Data point</b>	<b>Author(s)</b>	<b>Year</b>	<b>Title Company Report No. Source (where different from company) GLP or GEP status Published or not</b>	<b>Vertebrate study Y/N</b>	<b>Owner</b>
			xxx OECD 428, April 2004 Yes No		
KCP 7.3	xxx	2015	In vitro percutaneous absorption of copper, formulated as Copper hydroxide 50 WP or Copper oxychloride SC, through human and rat skin V20600/19 xxx OECD 428, April 2004 Yes No	N	EUCuTF

The following tables are to be completed by MS

**List of data submitted by the applicant and not relied on**

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

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

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

## Appendix 2 Detailed evaluation of the studies relied upon

### A 2.1 Statement on bridging possibilities

Comments zRMS:	of N/A
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### A 2.2 Acute oral toxicity (KCP 7.1.1)

Comments zRMS:	of <b>Under the experimental conditions, the oral LD<sub>50</sub> of MIEDZIAN 50 WP is higher than 300 mg/kg bw and lower than 2000 mg/kg bw in rats. Thus, classification is required according to Regulation (EC) No. 1272/2008. MIEDZIAN 50 WP can be classified as Acute Tox. 4/ H302.</b>
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Reference	KCP 7.1.1
Report	MIEDZIAN 50 WP Acute oral toxicity study – fixed dose method on rats. xxx, 2011. Study code: PO-6/11.
Guideline(s)	OECD No. 420 (2001)/ Method B. 1 .BIS
Deviations	No
GLP	Yes
Acceptability	Yes
Duplication (if vertebrate study)	No
Previously evaluated:	Yes, in 2014.

#### Materials and methods

<b>Test material (Lot/Batch No.)</b>	MIEDZIAN 50 WP (Batch No 23/W)
<b>Species</b>	Rat
<b>No. of animals (group size)</b>	6 rats/female
<b>Doses</b>	300, 2000 [mg/kg bw]
<b>Exposure</b>	Once by aid of ball ended feeding needle
<b>Vehicle/Dilution</b>	Suspension in 0.5% aqueous solution of carboxymethylcellulose
<b>Post exposure observation period</b>	14 days



Remarks	None
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## Results and discussions

**Table A 1: Results of acute oral toxicity study in rats of MIEDZIAN 50 WP**

Dose (mg/kg bw)	Toxicological results *	Duration of signs	Time of death	LD <sub>50</sub> (mg/kg bw) (14 days)
Female rats				
2000	1/1/1	4 <sup>th</sup> – 6 <sup>th</sup> day	6 <sup>th</sup> day	< 2000
300	0/0/5	-	-	>300

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

**Table A 2: Summary of findings of acute oral toxicity study in rats of MIEDZIAN 50 WP**

<b>Mortality</b>	Yes.
<b>Clinical signs</b>	Yes, in dose 2000 mg/kg bw: rounded back, wavering gait, slight and distinct decrease in locomotor activity, decreased reaction to sound stimuli, pallor, bristled coat, diarrhea
<b>Body weight</b>	Body weight gain was considered to be normal. In dose 2000 mg/kg bw: body weight decrease (1 animal).
<b>Macroscopic examination</b>	In dose 2000 mg/kg bw: area of anus dirty with faeces, alimentary canal filled in with greenblue contents and enlargement of adrenals. Area of anus dirty with faeces was connected with diarrhea in this animal. Animal canal filled in with green-blue contents was result of testitem colour. Enlargement of adrenals observed in spontaneously dead animal could be caused by test item influence. In dose 300 mg/kg bw: any pathological changes.

## Conclusion

Under the experimental conditions, the oral LD<sub>50</sub> of MIEDZIAN 50 WP is higher than 300 mg/kg bw and lower than 2000 mg/kg bw in rats. Thus, classification is required according to Regulation (EC) No. 1272/2008. MIEDZIAN 50 WP can be classified as category 4 – **Acute Tox. 4 (H302)**.

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

Comments of zRMS:	Under the experimental conditions, the dermal LD <sub>50</sub> of MIEDZIAN 50 WP is higher than 2000 mg/kg bw in rats.  Thus, no classification is required according to Regulation (EC) No. 1272/2008
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### A 2.3.1 Study 1

Reference	KCPA 7.1.2
Report	MIEDZIAN 50 WP Acute dermal toxicity on rats. xxx, 2011. Study code: DER-7/11.
Guideline(s)	OECD 402 (1987), EU method B.3
Deviations	No
GLP	Yes
Acceptability	Yes
Duplication (if vertebrate study)	No
Previously evaluated:	Yes, in 2010

#### Materials and methods

Test material (Lot/Batch No.)	Miedzian 50 WP (Batch No 23/W)
Species	Rat
No. of animals (group size)	10 rats (5 males and 5 female)
Dose(s)	2000 mg/kg bw
Exposure	24 hours (dermal)
Vehicle/Dilution	None
Post exposure observation period	14 days
Remarks	None

#### Results and discussions

**Table A 3: Results of acute dermal toxicity study in rats of MIEDZIAN 50 WP**

Dose (mg/kg bw)	Toxicological results *	Duration of signs	Time of death	LD <sub>50</sub> (mg/kg bw) (14 days)
Male rats				
2000	0/0/5	-	-	> 2000
Female rats				
2000	0/3/5	-	-	> 2000

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

**Table A 4: Summary of findings of acute dermal toxicity study in rats of MIEDZIAN 50 WP**

Mortality	No mortality occurred.
Clinical signs	No clinical signs of toxicity were observed. In the case of female: pathological changes on skin in the site of test item application: erythema, dryness of epidermis, desquamation of epidermis.

<b>Body weight</b>	Body weight gain was considered to be normal.
<b>Macroscopic examination</b>	The necropsies performed at the end of the study revealed no apparent findings.

The original acute Dermal Toxicity Guideline TG 402 was adopted in 1987. In 2017 OECD Guideline for the Testing of Chemicals No. 402 was updated, but the methodology of the test was not changed.

## Conclusion

Under the experimental conditions, the dermal LD<sub>50</sub> of MIEDZIAN 50 WP is higher than 2000 mg/kg bw in rats. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

## A 2.4 Acute inhalation toxicity (KCP 7.1.3)

Comments of zRMS:	<b>Under the experimental conditions, the inhalation LC<sub>50</sub> of MIEDZIAN 50 WP is higher than 5.22 mg/L air/4h in rats.</b>  <b>Thus, classification is not required according to Regulation (EC) No. 1272/2008.</b>
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### A 2.4.1 Study 1

Reference	KCP 7.1.3
Report	MIEDZIAN 50 WP: Acute inhalation to study (nose only) in the rat. xxx 2006. Study code: 06/236-004P.
Guideline(s)	OECD 403 (1981), EU method B.2 (92/69/EEC), OPPTS 870.1300.
Deviations	No
GLP	Yes
Acceptability	Yes
Duplication (if vertebrate study)	No
Previously evaluated:	Yes, in 2014.

## Materials and methods

<b>Test material (Lot/Batch No.)</b>	Miedzian 50 WP (Batch No 11)
<b>Species</b>	Wistar CrI: (WI) BR strain Rat
<b>No. of animals (group size)</b>	10 rats (5 male, 5 female)
<b>Concentration(s)</b>	5.22 mg/L air

<b>Exposure</b>	4 hours (nose only)
<b>Vehicle/Dilution</b>	Fresh aerosol from the TSE Rodent Exposure System
<b>Post exposure observation period</b>	14 days
<b>Remarks</b>	None

## Results and discussions

**Table A 5: Concentration(s) and exposure conditions**

Target conc. (mg/L air)	or	Nominal conc. (mg/L air)	Mean Achieved At- mosphere Concentra- tion (mg/L air)	MMAD * (µm)	GSD ** (µm)
5.22		27.9	5.22	6.69	3.95

\* MMAD = Mass Median Aerodynamic Diameter

\*\* GSD = Geometric Standard Deviation

**Table A 6: Results of acute inhalation toxicity study in rats of MIEDZIAN 50 WP**

Concentration (mg/L air)	Toxicological results *	Duration of signs	Time of death	LC <sub>50</sub> (mg/L air) (14 days)
Male rats				
5.22	0/5/5	1 <sup>st</sup> day	-	> 5.22
Female rats				
5.22	0/5/5	xxx	-	>5.22

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

**Table A 7: Summary of findings of acute inhalation toxicity study in rats of MIEDZIAN 50 WP**

<b>Mortality</b>	No mortality occurred.
<b>Clinical signs</b>	<p>Yes. During exposure, laboured respiration and/or increased respiratory rate were commonly noted and there was an isolated instance of tremors. On removal from restraint, on completion of exposure, laboured respiration was observed in all animals, there were frequent instances of increased respiratory rate, and several occurrences of noisy respiration. One hour after exposure, a slight deterioration in the condition of the animals was observed with lethargy and hunched posture now also recorded.</p> <p>One day after exposure, laboured respiration was still prevalent and there were instances of increased respiration and sneezing. By Day 2, a marked improvement in the condition of most animals was observed with all female and three males showing fur staining and/or lack of grooming only. For the two remaining males, observations included laboured respiration, noisy respiration and chromodacryor-rhea – these findings were no longer present from Day 4 or 5.</p>
<b>Body weight</b>	Body weight gain was considered to be normal.
<b>Macroscopic examination</b>	No treatment related macroscopic abnormalities were detected at necropsy.

## Conclusion

Under the experimental conditions, the inhalation LC<sub>50</sub> of MIEDZIAN 50 WP is higher than 5.22 mg/L air/4h in rats. Thus, classification is not required according to Regulation (EC) No. 1272/2008.

## A 2.5 Skin irritation (KCP 7.1.4)

Comments of zRMS:	<b>Under the experimental conditions, MIEDZIAN 50 WP is not a skin irritant. Thus, no classification is required according to Regulation (EC) No. 1272/2008</b>
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### A 2.5.1 Study 1

Reference	KCP 7.1.4
Report	MIEDZIAN 50 WP Acute skin irritating / corrosion study on rabbit. xxx, 2011/ Study code: DDR-6/11.
Guideline(s)	OECD 404 (2002), EU method B.4 (2004/73/EC).
Deviations	No
GLP	Yes
Acceptability	Yes
Duplication (if vertebrate study)	No
Previously evaluated:	Yes, in 2014

### Materials and methods

Test material (Lot/Batch No.)	MIEDZAIN 50 WP (Batch No 23/W)
Species	Rabbit, New Zealand White
No. of animals (group size)	3 (1 females, 2 male)
Initial test using one animal	Yes
Exposure	0.5 g (4 hours, semi-occlusive)
Vehicle/Dilution	Undiluted test material
Post exposure observation period	72 hours
Remarks	None

## Results and discussions

**Table A 8: Skin irritation of MIEDZIAN 50 WP**

Animal No.		Scores after treatment *				Mean scores (24-72 h)	Reversible (day)
		1 h	24 h	48 h	72 h		
<b>1</b>	Erythema	0	0	0	0	0	-
	Oedema	0	0	0	0	0	-
<b>2</b>	Erythema	1	0	0	0	0	-
	Oedema	0	0	0	0	0	-
<b>3</b>	Erythema	0	0	0	0	0	-
	Oedema	0	0	0	0	0	-

\* scores in the range of 0 to 4

<b>Clinical signs:</b>	No clinical signs of toxicity were observed.
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In 2015 OECD Guideline for the Testing of Chemicals No. 404 was updated, but the methodology of the test was not changed. Updated version of Guideline 404 (originally adopted in 1981, revised in 1992, 2002 and 2015) includes reference to the Guidance Document on Integrated Approaches to Testing and Assessment (IATA) for Skin Irritation/Corrosion (1), proposing a modular approach for skin irritation and skin corrosion testing.

## Conclusion

Under the experimental conditions, MIEDZIAN 50 WP is **not a skin irritant**. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

## A 2.6 Eye irritation (KCP 7.1.5)

Comments of zRMS:	<b>Under the experimental conditions, MIEDZIAN 50 WP is not an eye irritant. Thus, no classification is required according to Regulation (EC) No. 1272/2008.</b>
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### A 2.6.1 Study 1

Reference	KCP 7.1.5
Report	MIEDZIAN 50 WP Acute eye irritation/corrosion study on rabbits. xxx, 2011, Study code: ODR-8/11
Guideline(s)	OECD 405 (2002), EU method B.5 (2004/73/EC).
Deviations	No
GLP	Ye
Acceptability	Yes

Duplication (if vertebrate study) No  
Previously evaluated: Yes, in 2014.

## Materials and methods

Test material (Lot/Batch No.)	MIEDZIAN 50 WP (Batch No 23/W)
Species	Rabbit, New Zealand White
No. of animals (group size)	3 males
Initial test using one animal	Yes
Exposure	0.1 mL (single instillation in conjunctival sac)
Vehicle/Dilution	Undiluted test material
Post exposure observation period	14 days
Remarks	None

## Results and discussions

**Table A 9: Eye irritation of MIEDZIAN 50 WP**

Animal No.		Scores after treatment *						Mean scores (24-72 h)
		1 h	24 h	48 h	72 h	7 days	14 days	
1	Corneal opacity	0	0	0	0		0	0
	Iritis	0	0	0	0	0	0	0
	Conjunctiva erythema	2	2	1	1	0	0	1.3
	Conjunctiva swelling	1	1	0	0	1	0	0.7
						0		
2	Corneal opacity	0	0	0	0		-	0
	Iritis	1	1	0	0	0	-	0.3
	Conjunctiva erythema	2	2	1	1	0	-	1.3
	Conjunctiva swelling	3	2	0	0	0	-	0.7
						0		
3	Corneal opacity	0	0	0	0		-	0
	Iritis	0	0	0	0	0	-	0
	Conjunctiva erythema	2	1	1	1	0	-	1.3
	Conjunctiva swelling	1	1	0	0	0	-	0.7
						0		

\* scores in the range of 0 to 4 for cornea opacity and chemosis, 0 to 3 for redness of conjunctivae and 0 to 2 for iritis

<b>Clinical signs:</b>	After 14 days: No clinical signs of toxicity were observed.
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This Test Guideline (adopted in 1981 and updated in 1987, 2002, 2012 and 2017) includes the recommendation that prior to undertaking the described *in vivo* test for acute eye irrita-

tion/corrosion, a weight-of-the-evidence analysis be performed on the existing relevant data. The update in 2012 mainly focused on the use of analgesics and anesthetics without impacting the basic concept and structure of the Test Guideline. In 2017 OECD Guideline for the Testing of Chemicals No. 405 was updated, but the methodology of the test was not changed.

## Conclusion

Under the experimental conditions, MIEDZIAN 50 WP is **not an eye irritant**. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

MIEDZIAN 50 WP does not contain any component which is classified as eye irritant, therefore the product will not be classified as eye irritant. Therefore, no classification is required. No additional studies are required.

## A 2.7 Skin sensitisation (KCP 7.1.6)

Comments of zRMS:	<b>Under the experimental conditions, MIEDZIAN 50 WP is a weak skin sensitiser. Thus, no classification is required according to Regulation (EC) No. 1272/2008.</b>
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### A 2.7.1 Study 1

Reference	KCP 7.1.6
Report	Miedzian 50 WP. - Testing of sensitizing reacting of skin. xxx 2004. AI-25-05.
Guideline(s)	OECD 406 (1992), EU method B.6 (96/54/EEC)
Deviations	No
GLP	Yes
Acceptability	Yes
Duplication (if vertebrate study)	No
Previously evaluated:	Yes, in 2014

## Materials and methods

Test material (Lot/Batch No.)	Miedzian Extra 350 SC (Batch No 5)
Species	Guinea pig
No. of animals (group size)	Test substance group: 8 male and 8 female guinea pigs Vehicle control group: 5 male and 3 female guinea pigs
Exposure (concentration(s), no. of applications)	Intradermal induction: 0.1 mL of and aqueous suspension formulation. Concentration: 40%



	Topical induction: at concentrations of 50% in a volume of 0.5 mL. Challenging
Vehicle	aqueous suspension (distilled water)
Pretreatment prior to topical application	The animals in the preliminary experiment are given intradermal complete Freund's adjuvant.

## Results and discussions

**Table A 10: Results of skin sensitisation study of product code/name**

	24 hours	48 hours	72 hours	Total number of animals affected
	After challenge			
MIEDZAIN 50 WP	2/16*	2/16*	2/16*	2
Test vehicle control group	0/8*	0/8*	0/8*	0

\* Number of animals with positive dermal response (scores of 1-3) /number of animals in dose group

<b>Clinical signs:</b>	72 hours after exposure: skin was found in 2 animals spotted mild erythema and dry skin. In the remaining 14 animals on the skin, there was no pathological changes. During the observation period after exposure causing skin sensitization, in two animals exposed (13% of animals exposed) had allergic skin reactions. In control animals under observation for excess toxicity, there was no skin lesions.
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## Conclusion

Under the experimental conditions, MIEDZIAN 50 WP is a weak skin sensitiser. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

MIEDZIAN 50 WP does not contain any component which is classified as eye irritant, therefore the product will not be classified as eye irritant. Therefore, no classification is required. No additional studies are required.

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

## 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)**

According requirements from Reg. No. 284/2013/WE the study shall be conducted when dermal exposure is a significant exposure route and no acceptable risk is estimated using default absorption value.

In order to make assessment of exposure, Applicant has proposed for MIEDZIAN 50 WP a default dermal absorption value of 1% for the concentrate and 9% for the spray solution.

Based on study presented in the RAR (Maas, W.J.M. (2012) and Maas, W.J.M. and Kunne, C. (2015)), it is proposed copper dermal absorption values of 1% and 9%, for the concentrate and the field dilution (0.33g Cu/L), respectively. These dermal absorption values cover all the formulations tested and thus can be applicable for all chemical form of copper and all type of copper formulations.

Use of plant protection product MIEDZIAN 50 WP is safe for operator, taking into account proposed dose of product, type of usage, type of personal protective equipment (gloves, protective garment and sturdy footwear, head and ). Using tractor mounted boom sprayer, knapsack sprayer and maintain general rules of safety and hygiene of working with plant protection products and comply with requirements enclosed in label, risk during employ MIEDZIAN 50 WP is acceptable, absorbed dose of copper have safe value, below AOEL for this active ingredient.

According to above there isn't necessity to do tests of dermal absorption for MIEDZAIN 50 WP.

## **A 2.11 Other/Special Studies**

## Appendix 3 Exposure calculations

### A 3.1 Operator exposure calculations (KCP 7.2.1.1)

#### A 3.1.1 Calculations for copper as copper oxychloride

##### A. Professional user

##### Pome frutis Apple, pear, Quince, Medlar

**Table A 11: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Pome fruits
Application rate (AR)	0.75	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	10	ha	Application equipment	Vehicle-mounted
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	Yes
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 12: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	7,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	early (without leaves)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	113962	424887	AOEM	
	Body	341371	513178	AOEM	
	Head	935	1492	AOEM	
	Protected hands (gloves)	3346	15120	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	6383	14924	AOEM	
	Protected head (hood and face shield)	15	84	AOEM	
	Inhalation	3955	5130	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	7889	15567	AOEM	No data available for a drift reduction scenario
	Body	22025	62653	AOEM	
	Head	112	1458	AOEM	
	Protected hands (gloves)	264	5720	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	510	1206	AOEM	
	Inhalation	31	157	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	11,2504715	4,1718209
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1875079	0,0695303
% of RVNAS	234,38%	86,91%

**Table A 13: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	7,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	early (without leaves)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	113962	424887	AOEM	
	Body	341371	513178	AOEM	
	Head	935	1492	AOEM	
	Protected hands (gloves)	3346	15120	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	6383	14924	AOEM	
	Protected head (hood and face shield)	15	84	AOEM	
	Inhalation	3955	5130	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Potential exposure		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	7889	15567	AOEM	No data available for a drift reduction scenario
	Body	22025	62653	AOEM	
	Head	112	1458	AOEM	
	Protected hands (gloves)	264	5720	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	510	1206	AOEM	
	Inhalation	31	157	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Potential exposure		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	11,2504715	2,7877232
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1875079	0,0464621
% of RVNAS	234,38%	58,08%

**Table A 14: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Pome fruits
Application rate (AR)	0.75	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	1	ha	Application equipment	Manual - Knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 15: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

### Operator exposure for MIEDZIAN 50 WP outdoor spray applications

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	0,75 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	early (without leaves)	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	2139	7062	AOEM	No data available for a drift reduction scenario
	Body	58756	178267	AOEM	
	Head	139	748	AOEM	
	Protected hands (gloves)	18	93	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1033	1938	AOEM	
	Inhalation	64	154	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	5,6846206	0,1960786
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,0947437	0,0032680
% of RVNAS	118,43%	4,08%

**Table A 16: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	0,75 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	early (without leaves)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	2139	7062	AOEM	No data available for a drift reduction scenario
	Body	58756	178267	AOEM	
	Head	139	748	AOEM	
	Protected hands (gloves)	18	93	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1033	1938	AOEM	
	Inhalation	64	154	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	5,6846206	0,1731466
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,0947437	0,0028858
% of RVNAS	118,43%	3,61%

**Stone frutis**



## Cherry, sweet cherry, apricot, plum, peach

**Table A 17: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Stone fruits
Application rate (AR)	1.5	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	10	ha	Application equipment	Vehicle-mounted sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 18: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	15 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	194312	728909	AOEM	
	Body	555686	627660	AOEM	
	Head	1871	2984	AOEM	
	Protected hands (gloves)	5253	30241	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	11799	29848	AOEM	
	Protected head (hood and face shield)	30	169	AOEM	
	Inhalation	4861	5216	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	14588	31134	AOEM	No data available for a drift reduction scenario
	Body	44050	125306	AOEM	
	Head	224	2917	AOEM	
	Protected hands (gloves)	528	11440	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1020	2412	AOEM	
	Inhalation	45	314	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	17,7223486	1,6053707
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,2953725	0,0267562
% of RVNAS	369,22%	33,45%

**Table A 19: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	15 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	194312	728909	AOEM	
	Body	555686	627660	AOEM	
	Head	1871	2984	AOEM	
	Protected hands (gloves)	5253	30241	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	11799	29848	AOEM	
	Protected head (hood and face shield)	30	169	AOEM	
	Inhalation	4861	5216	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	14588	31134	AOEM	No data available for a drift reduction scenario
	Body	44050	125306	AOEM	
	Head	224	2917	AOEM	
	Protected hands (gloves)	528	11440	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1020	2412	AOEM	
	Inhalation	45	314	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	17,7223486	0,7096526
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,2953725	0,0118275
% of RVNAS	369,22%	14,78%

**Table A 20: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Stone fruits
Application rate (AR)	1.5	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	1	ha	Application equipment	Manual -Knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 21: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	25586	35393	AOEM	No data available for a drift reduction scenario
	Body	1286832	2197041	AOEM	
	Head	2143	3634	AOEM	
	Protected hands (gloves)	275	609	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	206	425	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	118,6449660	4,4923559
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,9774161	0,0748726
% of RVNAS	2471,77%	93,59%

**Table A 22: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags, with head and respiratory PPE**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance		1,5 kg a.s./ha		<i>i_AppRate</i>	
Assumed area treated		1 ha/day		<i>d_AreaTreated</i>	
Amount of active substance applied		1,5 kg a.s./day		<i>i_AmountAS</i>	
Dermal absorption of the product		1,00%		<i>i_AbsorpProduct</i>	
Dermal absorption of in-use dilution		9,00%		<i>i_AbsorInuse</i>	
Formulation type		Wettable powder, soluble powder			
Indoor or Outdoor application		Outdoor			
Application method		Upward spraying			
Application equipment		Manual-Knapsack			
Season		late (dense foliage)			
		OutdoorWettable powder, soluble powderUpward sprayingManual-Knapsack			
Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Head and respiratory PPE	FP1, P1 and similar		0,8	0,25	
Water soluble bag	No		1		
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	25586	35393	AOEM	No data available for a drift reduction scenario
	Body	1286832	2197041	AOEM	
	Head	2143	3634	AOEM	
	Protected hands (gloves)	275	609	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	206	425	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Closed cab	Yes		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)	118,6449660	4,2801890
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,9774161	0,0713365
% of RVNAS	2471,77%	89,17%

**Table A 23: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	25586	35393	AOEM	No data available for a drift reduction scenario
	Body	1286832	2197041	AOEM	
	Head	2143	3634	AOEM	
	Protected hands (gloves)	275	609	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	206	425	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	118,6449660	4,4694239
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,9774161	0,0744904
% of RVNAS	2471,77%	93,11%

**Stone frutis**

## Cherry, sweet cherry

**Table A 24: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Stone fruits
Application rate (AR)	0.75	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	10	ha	Application equipment	Vehicle-mounted sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No



**Table A 25: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	7,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	late (dense foliage)	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	113962	424887	AOEM	
	Body	341371	513178	AOEM	
	Head	935	1492	AOEM	
	Protected hands (gloves)	3346	15120	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	6383	14924	AOEM	
	Protected head (hood and face shield)	15	84	AOEM	
	Inhalation	3955	5130	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	7889	15567	AOEM	No data available for a drift reduction scenario
	Body	22025	62653	AOEM	
	Head	112	1458	AOEM	
	Protected hands (gloves)	264	5720	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	510	1206	AOEM	
	Inhalation	31	157	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	11,2504715	4,1718209
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1875079	0,0695303
% of RVNAS	234,38%	86,91%

**Table A 26: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	7,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	113962	424887	AOEM	
	Body	341371	513178	AOEM	
	Head	935	1492	AOEM	
	Protected hands (gloves)	3346	15120	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	6383	14924	AOEM	
	Protected head (hood and face shield)	15	84	AOEM	
	Inhalation	3955	5130	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	7889	15567	AOEM	No data available for a drift reduction scenario
	Body	22025	62653	AOEM	
	Head	112	1458	AOEM	
	Protected hands (gloves)	264	5720	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	510	1206	AOEM	
	Inhalation	31	157	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	11,2504715	0,5164098
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1875079	0,0086068
% of RVNAS	234,38%	10,76%

**Table A 27: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Stone fruits
Application rate (AR)	0.75	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	1	ha	Application equipment	Manual knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 28: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	0,75 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	14330	20827	AOEM	No data available for a drift reduction scenario
	Body	1154528	2182833	AOEM	
	Head	1715	2897	AOEM	
	Protected hands (gloves)	137	305	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	116	281	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	105,5957642	4,3511001
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,7599294	0,0725183
% of RVNAS	2199,91%	90,65%

**Table A 29: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	0,75 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	0,75 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	14330	20827	AOEM	No data available for a drift reduction scenario
	Body	1154528	2182833	AOEM	
	Head	1715	2897	AOEM	
	Protected hands (gloves)	137	305	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	116	281	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	105,5957642	4,3281681
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,7599294	0,0721361
% of RVNAS	2199,91%	90,17%

**Tree nuts**

## Walnut, Hazelnut

**Table A 30: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Tree nuts
Application rate (AR)	1.5	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	10	ha	Application equipment	Vehicle -mounted sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 31: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	15 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	late (dense foliage)	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	194312	728909	AOEM	
	Body	555686	627660	AOEM	
	Head	1871	2984	AOEM	
	Protected hands (gloves)	5253	30241	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	11799	29848	AOEM	
	Protected head (hood and face shield)	30	169	AOEM	
	Inhalation	4861	5216	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Head and respiratory PPE	FP1, P1 and similar		0,8	0,25	
Water soluble bag	No		1		
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	14588	31134	AOEM	No data available for a drift reduction scenario
	Body	44050	125306	AOEM	
	Head	224	2917	AOEM	
	Protected hands (gloves)	528	11440	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1020	2412	AOEM	
	Inhalation	45	314	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	17,7223486	1,6053707
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,2953725	0,0267562
% of RVNAS	369,22%	33,45%

**Table A 32: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	15 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	194312	728909	AOEM	
	Body	555686	627660	AOEM	
	Head	1871	2984	AOEM	
	Protected hands (gloves)	5253	30241	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	11799	29848	AOEM	
	Protected head (hood and face shield)	30	169	AOEM	
	Inhalation	4861	5216	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	14588	31134	AOEM	No data available for a drift reduction scenario
	Body	44050	125306	AOEM	
	Head	224	2917	AOEM	
	Protected hands (gloves)	528	11440	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1020	2412	AOEM	
	Inhalation	45	314	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	17,7223486	0,7096526
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,2953725	0,0118275
% of RVNAS	369,22%	14,78%



**Table A 33: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Tree nuts
Application rate (AR)	1.5	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	1	ha	Application equipment	Manual knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 34: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	late (dense foliage)	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	25586	35393	AOEM	No data available for a drift reduction scenario
	Body	1286832	2197041	AOEM	
	Head	2143	3634	AOEM	
	Protected hands (gloves)	275	609	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	206	425	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	118,6449660	4,4923559
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,9774161	0,0748726
% of RVNAS	2471,77%	93,59%

**Table A 35: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags; with head and respiratory PPE**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	late (dense foliage)	

Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Water soluble bag	No		1	

Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	25586	35393	AOEM	No data available for a drift reduction scenario
	Body	1286832	2197041	AOEM	
	Head	2143	3634	AOEM	
	Protected hands (gloves)	275	609	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	206	425	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Closed cab	Yes		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)	118,6449660	4,2801890
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,9774161	0,0713365
% of RVNAS	2471,77%	89,17%

**Table A 36: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags; with head and respiratory PPE**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance		1,5 kg a.s./ha		<i>i_AppRate</i>	
Assumed area treated		1 ha/day		<i>d_AreaTreated</i>	
Amount of active substance applied		1,5 kg a.s./day		<i>i_AmountAS</i>	
Dermal absorption of the product		1,00%		<i>i_AbsorpProduct</i>	
Dermal absorption of in-use dilution		9,00%		<i>i_AbsorInuse</i>	
Formulation type		Wettable powder, soluble powder			
Indoor or Outdoor application		Outdoor			
Application method		Upward spraying			
Application equipment		Manual-Knapsack			
Season		late (dense foliage)			
		OutdoorWettable powder, soluble powderUpward sprayingManual-Knapsack			
Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Head and respiratory PPE	FP1, P1 and similar		0,8	0,25	
Water soluble bag	Yes		0,1		
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	25586	35393	AOEM	No data available for a drift reduction scenario
	Body	1286832	2197041	AOEM	
	Head	2143	3634	AOEM	
	Protected hands (gloves)	275	609	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	44920	188036	AOEM	
	Inhalation	206	425	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Closed cab	Yes		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)	118,6449660	4,2741410
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	1,9774161	0,0712357
% of RVNAS	2471,77%	89,04%

**Fruiting vegetables (outdoor)**

## Tomato, Aubergines, Cucumber, Gherkins, Courgette

**Table A 37: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Fruiting vegetables
Application rate (AR)	1.25	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	50	ha	Application equipment	Vehicle-mounted sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 38: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	62,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
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 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	582951	2214513	AOEM	
	Body	1515298	950140	AOEM	
	Head	7796	12434	AOEM	
	Protected hands (gloves)	13299	126003	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	41805	124366	AOEM	
	Protected head (hood and face shield)	125	704	AOEM	
	Inhalation	7433	5396	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Water soluble bag	No		1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	9270	47368	AOEM	
	Body	5183	26720	AOEM	
	Head	245	739	AOEM	
	Protected hands (gloves)	400	5398	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	142	349	AOEM	
	Inhalation	8	31	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	29,8246974	2,5507849
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,4970783	0,0425131
% of RVNAS	621,35%	53,14%

**Table A 39: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	62,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	582951	2214513	AOEM	
	Body	1515298	950140	AOEM	
	Head	7796	12434	AOEM	
	Protected hands (gloves)	13299	126003	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	41805	124366	AOEM	
	Protected head (hood and face shield)	125	704	AOEM	
	Inhalation	7433	5396	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	9270	47368	AOEM	
	Body	5183	26720	AOEM	
	Head	245	739	AOEM	
	Protected hands (gloves)	400	5398	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	142	349	AOEM	
	Inhalation	8	31	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	29,8246974	0,8853072
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,4970783	0,0147551
% of RVNAS	621,35%	18,44%

**Table A 40: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Fruiting vegetables
Application rate (AR)	1.25	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	1	ha	Application equipment	Manual knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No



**Table A 41: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,25 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	1544	4213	AOEM	
	Body	88868	137007	AOEM	
	Head	12	85	AOEM	
	Protected hands (gloves)	5	22	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	8903	62630	AOEM	
	Inhalation	26	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	8,2921900	0,8542800
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1382032	0,0142380
% of RVNAS	172,75%	17,80%

**Table A 42: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,25 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	1544	4213	AOEM	
	Body	88868	137007	AOEM	
	Head	12	85	AOEM	
	Protected hands (gloves)	5	22	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	8903	62630	AOEM	
	Inhalation	26	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	8,2921900	0,8313480
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1382032	0,0138558
% of RVNAS	172,75%	17,32%

**Legume vegetables**

## French bean, Peas with pods

**Table A 43: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Legume vegetables
Application rate (AR)	1.5	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	50	ha	Application equipment	Vehicle-mounted sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 44: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	75 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
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 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	670793	2552310	AOEM	
	Body	1722490	1001824	AOEM	
	Head	9355	14921	AOEM	
	Protected hands (gloves)	14975	151203	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	49137	149239	AOEM	
	Protected head (hood and face shield)	150	845	AOEM	
	Inhalation	7848	5420	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Water soluble bag	No		1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	11124	54135	AOEM	
	Body	6220	32064	AOEM	
	Head	294	887	AOEM	
	Protected hands (gloves)	442	5514	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	171	418	AOEM	
	Inhalation	9	35	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	33,4704481	2,7684568
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,5578408	0,0461409
% of RVNAS	697,30%	57,68%

**Table A 45: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	75 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
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 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	670793	2552310	AOEM	
	Body	1722490	1001824	AOEM	
	Head	9355	14921	AOEM	
	Protected hands (gloves)	14975	151203	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	49137	149239	AOEM	
	Protected head (hood and face shield)	150	845	AOEM	
	Inhalation	7848	5420	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	11124	54135	AOEM	
	Body	6220	32064	AOEM	
	Head	294	887	AOEM	
	Protected hands (gloves)	442	5514	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	171	418	AOEM	
	Inhalation	9	35	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	33,4704481	0,9488247
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,5578408	0,0158137
% of RVNAS	697,30%	19,77%

**Table A 46: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Legume vegetables
Application rate (AR)	1.5	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	1	ha	Application equipment	Manual knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 47: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	1544	4213	AOEM	
	Body	88868	137007	AOEM	
	Head	12	85	AOEM	
	Protected hands (gloves)	5	22	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	8903	62630	AOEM	
	Inhalation	26	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	8,2921900	0,8542800
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1382032	0,0142380
% of RVNAS	172,75%	17,80%

**Table A 48: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,5 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	1544	4213	AOEM	
	Body	88868	137007	AOEM	
	Head	12	85	AOEM	
	Protected hands (gloves)	5	22	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	8903	62630	AOEM	
	Inhalation	26	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	8,2921900	0,8313480
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1382032	0,0138558
% of RVNAS	172,75%	17,32%

**Table and wine grapes**



## Grape

**Table A 49: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Grape
Application rate (AR)	1.25	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	10	ha	Application equipment	Vehicle-mounted sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 50: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	12,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	168867	632438	AOEM	
	Body	488845	595279	AOEM	
	Head	1559	2487	AOEM	
	Protected hands (gloves)	4665	25201	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	10039	24873	AOEM	
	Protected head (hood and face shield)	25	141	AOEM	
	Inhalation	4604	5193	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Water soluble bag	No		1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	12410	25945	AOEM	No data available for a drift reduction scenario
	Body	36708	104422	AOEM	
	Head	187	2431	AOEM	
	Protected hands (gloves)	440	9533	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	850	2010	AOEM	
	Inhalation	41	262	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	15,6751142	1,4842076
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,2612519	0,0247368
% of RVNAS	326,56%	30,92%

**Table A 51: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	12,5 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	168867	632438	AOEM	
	Body	488845	595279	AOEM	
	Head	1559	2487	AOEM	
	Protected hands (gloves)	4665	25201	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	10039	24873	AOEM	
	Protected head (hood and face shield)	25	141	AOEM	
	Inhalation	4604	5193	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	12410	25945	AOEM	No data available for a drift reduction scenario
	Body	36708	104422	AOEM	
	Head	187	2431	AOEM	
	Protected hands (gloves)	440	9533	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	850	2010	AOEM	
	Inhalation	41	262	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	15,6751142	0,6503180
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,2612519	0,0108386
% of RVNAS	326,56%	13,55%

**Table A 52: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Grapes
Application rate (AR)	1.25	kg a.s./ha	Application method	Upward spraying
Area treated per day (A)	1	ha	Application equipment	Manual knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 53: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,25 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	3279	10438	AOEM	No data available for a drift reduction scenario
	Body	63647	179121	AOEM	
	Head	164	885	AOEM	
	Protected hands (gloves)	30	155	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1033	1938	AOEM	
	Inhalation	97	208	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	6,2631916	0,2329604
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1043865	0,0038827
% of RVNAS	130,48%	4,85%

**Table A 54: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,25 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,25 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Upward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	3279	10438	AOEM	No data available for a drift reduction scenario
	Body	63647	179121	AOEM	
	Head	164	885	AOEM	
	Protected hands (gloves)	30	155	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	1033	1938	AOEM	
	Inhalation	97	208	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	6,2631916	0,2100284
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1043865	0,0035005
% of RVNAS	130,48%	4,38%

**Berries and small fruits**

## Currant

**Table A 55: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Low berries and small fruits
Application rate (AR)	1.2	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	50	ha	Application equipment	Vehicle-mounted sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 56: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,2 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	60 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
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 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	564916	2145228	AOEM	
	Body	1472434	938938	AOEM	
	Head	7484	11937	AOEM	
	Protected hands (gloves)	12950	120963	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	40319	119391	AOEM	
	Protected head (hood and face shield)	120	676	AOEM	
	Inhalation	7343	5391	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	FP1, P1 and similar		0,8	0,25
	Water soluble bag	No		1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	8899	45973	AOEM	
	Body	4976	25651	AOEM	
	Head	235	709	AOEM	
	Protected hands (gloves)	392	5373	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	136	335	AOEM	
	Inhalation	8	31	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	29,0697567	2,5051582
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,4844959	0,0417526
% of RVNAS	605,62%	52,19%



**Table A 57: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,2 kg a.s./ha	<i>i_AppRate</i>			
Assumed area treated	50 ha/day	<i>d_AreaTreated</i>			
Amount of active substance applied	60 kg a.s./day	<i>i_AmountAS</i>			
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>			
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>			
Formulation type	Wettable powder, soluble powder				
Indoor or Outdoor application	Outdoor				
Application method	Downward spraying				
Application equipment	Vehicle-mounted				
Season	not relevant				
OutdoorWettable powder, soluble powderDownward sprayingVehicle-mounted					
Mixing and loading	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	564916	2145228	AOEM	
	Body	1472434	938938	AOEM	
	Head	7484	11937	AOEM	
	Protected hands (gloves)	12950	120963	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	40319	119391	AOEM	
	Protected head (hood and face shield)	120	676	AOEM	
	Inhalation	7343	5391	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	8899	45973	AOEM	
	Body	4976	25651	AOEM	
	Head	235	709	AOEM	
	Protected hands (gloves)	392	5373	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	136	335	AOEM	
	Inhalation	8	31	AOEM	
	Protective Equipment	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		vehicle mounted upward spraying only	

**1. Total**

	Without RPE/PPE	With RPE/PPE
<b>Longer term</b>		
Total systemic exposure from mixing, loading and application (mg a.s./day)	29,0697567	0,8718354
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,4844959	0,0145306
% of RVNAS	605,62%	18,16%

**Table A 58: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Low berries and small fruits
Application rate (AR)	1.2	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	1	ha	Application equipment	Manual Knapsack sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Outdoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	60	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 59: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,2 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,2 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	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 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	1544	4213	AOEM	
	Body	88868	137007	AOEM	
	Head	12	85	AOEM	
	Protected hands (gloves)	5	22	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	8903	62630	AOEM	
	Inhalation	26	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	8,2921900	0,8542800
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1382032	0,0142380
% of RVNAS	172,75%	17,80%

**Table A 60: Estimation of longer term operator exposure towards copper according to EFSA guidance – with water-soluble bags**

**Operator exposure for MIEDZIAN 50 WP outdoor spray applications**

Application rate of active substance	1,2 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	1 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,2 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	1,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	9,00%	<i>i_AbsorInuse</i>
Formulation type	Wettable powder, soluble powder	
Indoor or Outdoor application	Outdoor	
Application method	Downward spraying	
Application equipment	Manual-Knapsack	
Season	not relevant	

	Exposure values	µg exposure/day mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	9495	25482	AOEM	
	Body	803	2787	AOEM	
	Head	5	11	AOEM	
	Protected hands (gloves)	18	164	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	25	103	AOEM	
	Protected head (hood and face shield)	5	11	AOEM	
	Inhalation	25	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Application	Head and respiratory PPE	None		1	1
	Water soluble bag	Yes		0,1	
	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
	Hands	1544	4213	AOEM	
	Body	88868	137007	AOEM	
	Head	12	85	AOEM	
	Protected hands (gloves)	5	22	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	8903	62630	AOEM	
	Inhalation	26	26	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	Yes		Incl. in AOEM model	
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
	Closed cab	Yes		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)	8,2921900	0,8313480
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1382032	0,0138558
% of RVNAS	172,75%	17,32%

**Fruiting vegetables (indoor)**

## Tomato, Aubergines, Melon, Pumpkins, Watermelon

**Table A 61: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Fruiting vegetables
Application rate (AR)	1.25	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	1	ha	Application equipment	Hand held sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Indoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	70	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 62: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

OPERATOR EXPOSURE		DUTCH GREENHOUSE MODEL		
form	WP	Application including mixing and loading		
a.s.	Copper			
Parameter	Value	Unit	References, comments	
MANUAL SPRAYING in greenhouses				
AR Application rate	1,25	kg a.s./ha	summary of intended uses	
A Area treated	1	ha/ day	Dutch model	
Inhalation Exposure			without PPE	
SV Surrogate Exposure Value	1	mg a.s./ kg a.s.	For dusting see note* (Dutch model)	
Inhalation Exposure (without PPE)	1,25	mg a.s./ day	IE = SV x AR x A	
Inhalation Exposure (with PPE)			with PPE	
PPE-factor	10		Non-powered mask filtertype 2 (most conservative): 10; more advanced RPE: see note** (Dutch model)	
Inhalation Exposure (with PPE)	0,125	mg a.s./ day	IE(PPE) = (1/PPE factor) x IE	
Dermal Exposure			without PPE	
SV Surrogate Exposure Value	200	mg a.s./ kg a.s.	For dusting see note* (Dutch model)	
Dermal Exposure	250	mg a.s./ day	DE = SV x AR x A	
Dermal Exposure (with PPE)			with PPE	
PPE-factor	10		Gloves + coverall: 10 (Dutch model)	
Dermal Exposure (with PPE)	25	mg a.s./ day	DE(PPE) = (1/PPE-factor) x DE	
Internal exposure				
IA Inhalation Absorption	100	%		
DA Dermal Absorption	9	%		
AOEL	0,08	mg a.s./ day	based on 70 kg bw	
	Without PPE	With PPE		
Internal exposure	[mg a.s. / day ]	[mg a.s. / day]		

Inhalation	1,2500	0,1250	IE(int) = IE x (IA/100)
Dermal	22,5000	2,2500	DE(int) = DE x (DA/100)
<b>Total</b>	<b>23,7500</b>	<b>2,3750</b>	<b>sum</b>
<b>% AOEL</b>			
Inhalation	1563	156	%AOEL = 100 x IE(int) / AOEL
Dermal	28125	2813	%AOEL = 100 x DE(int) / AOEL
<b>Total</b>	<b>29688</b>	<b>2969</b>	<b>sum</b>

\* NOTE: The above mentioned model is for spraying in greenhouses. For dusting of carnations the surrogate values should be changed: inhalation should be 20 mg/kg instead of 1, and dermal should be 300 mg/kg instead of 200.

\*\* Note: Only for gasforming/gaseous preparations and soil fumigation preparations: powered full-face filtering devices with filtertype 2 (factor 20), powered full-face filtering devices with filtertype 3 (factor 40)

	No PPE	With PPE
<b>Systemic exposure [mg/kg bw/day]</b>	0,3393	0.03393
<b>% AOEL</b>	424.2 %	<b>42.4 %</b>

## Fruiting vegetables (indoor)

### Cucumber

**Table A 63: Input parameters considered for the estimation of operator exposure**

Formulation type	WP		Crop type	Fruiting vegetables
Application rate (AR)	0.8	kg a.s./ha	Application method	Downward spraying
Area treated per day (A)	1	ha	Application equipment	Hand held sprayer
Dermal absorption (DA)	1	% (concentr.)	Indoor/outdoor	Indoor
	9	% (dilution)	Closed cabin	No
Inhalation absorption (IA)	100	%	Drift reduction	No
Body weight (BW)	70	kg/person	Cultivation	Normal
AOEL	0.08	mg/kg bw/d	Water soluble bag	Yes and No

**Table A 64: Estimation of longer term operator exposure towards copper according to EFSA guidance – without water-soluble bags**

OPERATOR EXPOSURE		DUTCH GREENHOUSE MODEL		
form	WP	Application including mixing and loading		
a.s.	Copper			
Parameter	Value	Unit	References, comments	
MANUAL SPRAYING in greenhouses				
AR	Application rate	0,8	kg a.s./ha	summary of intended uses
A	Area treated	1	ha/ day	Dutch model
Inhalation Exposure				
				without PPE
SV	Surrogate Exposure Value	1	mg a.s./ kg a.s.	For dusting see note* (Dutch model)
	Inhalation Exposure (without PPE)	0,8	mg a.s./ day	IE = SV x AR x A
Inhalation Exposure (with PPE)				
				with PPE

PPE-factor	10		Non-powered mask filtertype 2 (most conservative): 10; more advanced RPE: see note** (Dutch model)
Inhalation Exposure (with PPE)	0,08	mg a.s./ day	IE(PPE) = (1/PPE factor) x IE
<b>Dermal Exposure</b>			
SV Surrogate Exposure Value	200	mg a.s./ kg a.s.	without PPE For dusting see note* (Dutch model)
Dermal Exposure	160	mg a.s./ day	DE = SV x AR x A
<b>Dermal Exposure (with PPE)</b>			
PPE-factor	10		with PPE Gloves + coverall: 10 (Dutch model)
Dermal Exposure (with PPE)	16	mg a.s./ day	DE(PPE) = (1/PPE-factor) x DE
<b>Internal exposure</b>			
IA Inhalation Absorption	100	%	
DA Dermal Absorption	9	%	
AOEL	0,08	mg a.s./ day	based on 70 kg bw
	<b>Without PPE</b>	<b>With PPE</b>	
<b>Internal exposure</b>	[mg a.s. / day ]	[mg a.s. / day]	
Inhalation	0,8000	0,0800	IE(int) = IE x (IA/100)
Dermal	14,4000	1,4400	DE(int) = DE x (DA/100)
<b>Total</b>	<b>15,2000</b>	<b>1,5200</b>	<b>sum</b>
<b>% AOEL</b>			
Inhalation	1000	100	%AOEL = 100 x IE(int) / AOEL
Dermal	18000	1800	%AOEL = 100 x DE(int) / AOEL
<b>Total</b>	<b>19000</b>	<b>1900</b>	<b>sum</b>

\* NOTE: The above mentioned model is for spraying in greenhouses. For dusting of carnations the surrogate values should be changed: inhalation should be 20 mg/kg instead of 1, and dermal should be 300 mg/kg instead of 200.

\*\* Note: Only for gasforming/gaseous preparations and soil fumigation preparations: powered full-face filtering devices with filtertype 2 (factor 20), powered full-face filtering devices with filtertype 3 (factor 40)

	No PPE	With PPE
<b>Systemic exposure [mg/kg bw/day]</b>	0.2171	0.02171
<b>% AOEL</b>	271.4 %	27.1 %

## B. Non-professional user

Pome frutis: Apple, pear, Quince, Medlar

**Table A 65:** Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	1,5 kg product/ha	Work rate/day	0,01 ha
Application volume	500 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	1,2855 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	1,2855 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,011505 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,011505 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	500 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	1,5 mg/ml		
Dermal exposure to a.s.	24,2625 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	1,5 mg/ml
Inhalation exposure to a.s.	0,015 mg/day
Percent absorbed	100 %
Absorbed dose	0,015 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	1,2855 mg/day	24,2625 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,012855 mg/day	2,183625 mg/day
Inhalation exposure to a.s.	0,011505 mg/day	0,015 mg/day
Absorbed dose	0,02436 mg/day	2,198625 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	2,222985 mg/day	
Operator body weight	60 kg	
Operator exposure	0,03704975 mg/kg bw/day	WARNING: Extrapolated value from WG data

% AOEL = 46.3 %

**Stone frutis: Cherry, sweet cherry, apricot, plum**



**Table A 66: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	3 kg product/ha	Work rate/day	0,01 ha
Application volume	500 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	2,571 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	2,571 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,02301 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,02301 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	500 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	3 mg/ml		
Dermal exposure to a.s.	48,525 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	3 mg/ml
Inhalation exposure to a.s.	0,03 mg/day
Percent absorbed	100 %
Absorbed dose	0,03 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	2,571 mg/day	48,525 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,02571 mg/day	4,36725 mg/day
Inhalation exposure to a.s.	0,02301 mg/day	0,03 mg/day
Absorbed dose	0,04872 mg/day	4,39725 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	4,44597 mg/day	
Operator body weight	60 kg	
Operator exposure	0,0740995 mg/kg bw/day	WARNING: Extrapolated value from WG data

**% AOEL = 92.6 %**

**Stone frutis: Cherry, sweet cherry**

**Table A 67: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	1,5 kg product/ha	Work rate/day	0,01 ha
Application volume	500 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	1,2855 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	1,2855 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,011505 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,011505 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	500 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	1,5 mg/ml		
Dermal exposure to a.s.	24,2625 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	1,5 mg/ml
Inhalation exposure to a.s.	0,015 mg/day
Percent absorbed	100 %
Absorbed dose	0,015 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	1,2855 mg/day	24,2625 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,012855 mg/day	2,183625 mg/day
Inhalation exposure to a.s.	0,011505 mg/day	0,015 mg/day
Absorbed dose	0,02436 mg/day	2,198625 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	2,222985 mg/day	
Operator body weight	60 kg	
Operator exposure	0,03704975 mg/kg bw/day	WARNING: Extrapolated value from WG data

**% AOEL = 46.3 %**

**Stone frutis: Peach**

**Table A 68: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	3 kg product/ha	Work rate/day	0,01 ha
Application volume	700 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	2,571 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	2,571 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,02301 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,02301 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	700 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	2,142857143 mg/ml		
Dermal exposure to a.s.	34,66071429 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	2,142857143 mg/ml
Inhalation exposure to a.s.	0,021428571 mg/day
Percent absorbed	100 %
Absorbed dose	0,021428571 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	2,571 mg/day	34,66071429 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,02571 mg/day	3,119464286 mg/day
Inhalation exposure to a.s.	0,02301 mg/day	0,021428571 mg/day
Absorbed dose	0,04872 mg/day	3,140892857 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	3,189612857 mg/day	
Operator body weight	60 kg	
Operator exposure	0,053160214 mg/kg bw/day	WARNING: Extrapolated value from WG data

**% AOEL = 66.5 %**

**Tree nuts: Walnut, Hazelnut**

**Table A 69: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	3 kg product/ha	Work rate/day	0,01 ha
Application volume	800 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	2,571 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	2,571 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,02301 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,02301 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	800 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	1,875 mg/ml		
Dermal exposure to a.s.	30,328125 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	1,875 mg/ml
Inhalation exposure to a.s.	0,01875 mg/day
Percent absorbed	100 %
Absorbed dose	0,01875 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	2,571 mg/day	30,328125 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,02571 mg/day	2,72953125 mg/day
Inhalation exposure to a.s.	0,02301 mg/day	0,01875 mg/day
Absorbed dose	0,04872 mg/day	2,74828125 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	2,79700125 mg/day	
Operator body weight	60 kg	
Operator exposure	0,046616688 mg/kg bw/day	WARNING: Extrapolated value from WG data

**% AOEL = 58.3 %**

**Fruiting vegetables (outdoor):** Tomato, Aubergines, Cucumber, Gherkins, Courgette

**Table A 70: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	2,5 kg product/ha	Work rate/day	0,01 ha
Application volume	700 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	2,1425 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	2,1425 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,019175 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,019175 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	700 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	1,785714286 mg/ml		
Dermal exposure to a.s.	28,88392857 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	1,785714286 mg/ml
Inhalation exposure to a.s.	0,017857143 mg/day
Percent absorbed	100 %
Absorbed dose	0,017857143 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	2,1425 mg/day	28,88392857 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,021425 mg/day	2,599553571 mg/day
Inhalation exposure to a.s.	0,019175 mg/day	0,017857143 mg/day
Absorbed dose	0,0406 mg/day	2,617410714 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	2,658010714 mg/day	
Operator body weight	60 kg	
Operator exposure	0,044300179 mg/kg bw/day	WARNING: Extrapolated value from WG data

**% AOEL = 55.4 %**

**Legume vegetables: French bean, Peas with pods**

**Table A 71: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	3 kg product/ha	Work rate/day	0,01 ha
Application volume	600 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	2,571 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	2,571 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,02301 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,02301 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	600 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	2,5 mg/ml		
Dermal exposure to a.s.	40,4375 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	2,5 mg/ml
Inhalation exposure to a.s.	0,025 mg/day
Percent absorbed	100 %
Absorbed dose	0,025 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	2,571 mg/day	40,4375 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,02571 mg/day	3,639375 mg/day
Inhalation exposure to a.s.	0,02301 mg/day	0,025 mg/day
Absorbed dose	0,04872 mg/day	3,664375 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	3,713095 mg/day	
Operator body weight	60 kg	
Operator exposure	0,061884917 mg/kg bw/day	WARNING: Extrapolated value from WG data

% AOEL = 77.4 %

**Table and wine grapes: Grape**

**Table A 72: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	2,5 kg product/ha	Work rate/day	0,01 ha
Application volume	500 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	2,1425 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	2,1425 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,019175 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,019175 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	500 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	2,5 mg/ml		
Dermal exposure to a.s.	40,4375 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	2,5 mg/ml
Inhalation exposure to a.s.	0,025 mg/day
Percent absorbed	100 %
Absorbed dose	0,025 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	2,1425 mg/day	40,4375 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,021425 mg/day	3,639375 mg/day
Inhalation exposure to a.s.	0,019175 mg/day	0,025 mg/day
Absorbed dose	0,0406 mg/day	3,664375 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	3,704975 mg/day	
Operator body weight	60 kg	
Operator exposure	0,061749583 mg/kg bw/day	WARNING: Extrapolated value from WG data

% AOEL = 77.2 %

**Berries and small fruits: Currant**

**Table A 73: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags**

THE UK PREDICTIVE OPERATOR EXPOSURE MODEL (POEM) WITH GERMAN MODEL MIX/LOAD DATA (75th PERCENTILE)

Application method	Home garden sprayer (5 litre tank). Outdoor, low level target		
Product	MIEDZAIN 50 WP	Active substance	copper
Formulation type	WP or SP	a.s. concentration	500 mg/g
Dermal absorption from product	1 %	Dermal absorption from spray	9 %
PPE during mix/loading	None	PPE during application	None
Dose	2,4 kg product/ha	Work rate/day	0,01 ha
Application volume	700 l/ha	Duration of spraying	0,5 h

#### DERMAL EXPOSURE DURING MIXING AND LOADING

Hand contamination/kg a.s.	171,4 mg/kg a.s.	WARNING: Extrapolated value from WG data
Hand contamination/day	2,0568 mg/day	
Protective clothing	None	
Transmission to skin	100 %	
Dermal exposure to a.s.	2,0568 mg/day	

#### INHALATION EXPOSURE DURING MIXING AND LOADING

Inhalation exposure/kg a.s.	1,534 mg/kg a.s.
Inhalation exposure/day	0,018408 mg/day
RPE	None
Transmission through RPE	100 %
Inhalation exposure to a.s.	0,018408 mg/day

#### DERMAL EXPOSURE DURING SPRAY APPLICATION

Application technique	Home garden sprayer (5 litre tank). Outdoor, low level target		
Application volume	700 spray/ha		
Volume of surface contamination	50 ml/h		
Distribution	Hands	Trunk	Legs
	25%	25%	50%
Clothing	None	T-shirt 10% exp	Shorts 70% exposed
Penetration	100%	20%	18%
Dermal exposure	10	3,5	18,85 ml/h
Duration of exposure	0,5 h		
Total dermal exposure to spray	16,175 ml/day		
Concentration of a.s. in spray solut	1,714285714 mg/ml		
Dermal exposure to a.s.	27,72857143 mg/day		

#### INHALATION EXPOSURE DURING SPRAYING

Inhalation exposure to spray	0,02 ml/h
Duration of exposure	0,5 h
Concentration of a.s. in spray	1,714285714 mg/ml
Inhalation exposure to a.s.	0,017142857 mg/day
Percent absorbed	100 %
Absorbed dose	0,017142857 mg/day

#### ABSORBED DOSE

	Mix/load	Application
Dermal exposure to a.s.	2,0568 mg/day	27,72857143 mg/day
Percent absorbed	1 %	9 %
Absorbed dose (dermal route)	0,020568 mg/day	2,495571429 mg/day
Inhalation exposure to a.s.	0,018408 mg/day	0,017142857 mg/day
Absorbed dose	0,038976 mg/day	2,512714286 mg/day

#### PREDICTED EXPOSURE

Total absorbed dose	2,551690286 mg/day	
Operator body weight	60 kg	
Operator exposure	0,042528171 mg/kg bw/day	WARNING: Extrapolated value from WG data

% AOEL = 53.2 %

**Fruiting vegetables (indoor): Tomato, Aubergines, Melon, Pumpkins, Watermelon**



**Table A 74: Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to Dutch Greenhouse model – without water-soluble bags**

OPERATOR EXPOSURE		DUTCH GREENHOUSE MODEL		
form	WP	Application including mixing and loading		
a.s.	Copper			
Parameter	Value	Unit	References, comments	
MANUAL SPRAYING in greenhouses				
AR Application rate	1,25	kg a.s./ha	summary of intended uses	
A Area treated	0,05	ha/ day	Dutch model	
Inhalation Exposure			without PPE	
SV Surrogate Exposure Value	1	mg a.s./ kg a.s.	For dusting see note* (Dutch model)	
Inhalation Exposure (without PPE)		0,0625	mg a.s./ day	IE = SV x AR x A
Inhalation Exposure (with PPE)			with PPE	
PPE-factor	10		Non-powered mask filtertype 2 (most conservative): 10; more advanced RPE: see note** (Dutch model)	
Inhalation Exposure (with PPE)		0,00625	mg a.s./ day	IE(PPE) = (1/PPE factor) x IE
Dermal Exposure			without PPE	
SV Surrogate Exposure Value	200	mg a.s./ kg a.s.	For dusting see note* (Dutch model)	
Dermal Exposure		12,5	mg a.s./ day	DE = SV x AR x A
Dermal Exposure (with PPE)			with PPE	
PPE-factor	10		Gloves + coverall: 10 (Dutch model)	
Dermal Exposure (with PPE)		1,25	mg a.s./ day	DE(PPE) = (1/PPE-factor) x DE
Internal exposure				
IA Inhalation Absorption	100	%		
DA Dermal Absorption	9	%		
AOEL	0,08	mg a.s./ day	based on 70 kg bw	
	Without PPE	With PPE		
Internal exposure	[mg a.s. / day ]	[mg a.s. / day]		
Inhalation	0,0625	0,0063	IE(int) = IE x (IA/100)	
Dermal	1,1250	0,1125	DE(int) = DE x (DA/100)	
Total	1,1875	0,1188	sum	
% AOEL				
Inhalation	78	8	%AOEL = 100 x IE(int) / AOEL	
Dermal	1406	141	%AOEL = 100 x DE(int) / AOEL	
Total	1484	148	sum	

\* NOTE: The above mentioned model is for spraying in greenhouses. For dusting of carnations the surrogate values should be changed: inhalation should be 20 mg/kg instead of 1, and dermal should be 300 mg/kg instead of 200.

\*\* Note: Only for gasforming/gaseous preparations and soil fumigation preparations: powered full-face filtering devices with filtertype 2 (factor 20), powered full-face filtering devices with filtertype 3 (factor 40)

	<b>No PPE</b>
<b>Systemic exposure [mg/kg bw/day]</b>	0.01696
<b>% AOEL</b>	<b>21.2 %</b>

### Fruiting vegetables (indoor): Cucumber

**Table A 75:** Input parameters considered for the estimation of operator exposure and Estimation of longer term operator exposure towards copper according to UK POEM – without water-soluble bags

OPERATOR EXPOSURE		DUTCH GREENHOUSE MODEL		
form	WP	Application including mixing and loading		
a.s.	Copper			
Parameter	Value	Unit	References, comments	
MANUAL SPRAYING in greenhouses				
AR Application rate	0,8	kg a.s./ha	summary of intended uses	
A Area treated	0,05	ha/ day	Dutch model	
Inhalation Exposure			without PPE	
SV Surrogate Exposure Value	1	mg a.s./ kg a.s.	For dusting see note* (Dutch model)	
Inhalation Exposure (without PPE)	0,04	mg a.s./ day	IE = SV x AR x A	
Inhalation Exposure (with PPE)			with PPE	
PPE-factor	10		Non-powered mask filtertype 2 (most conservative): 10; more advanced RPE: see note** (Dutch model)	
Inhalation Exposure (with PPE)	0,004	mg a.s./ day	IE(PPE) = (1/PPE factor) x IE	
Dermal Exposure			without PPE	
SV Surrogate Exposure Value	200	mg a.s./ kg a.s.	For dusting see note* (Dutch model)	
Dermal Exposure	8	mg a.s./ day	DE = SV x AR x A	
Dermal Exposure (with PPE)			with PPE	
PPE-factor	10		Gloves + coverall: 10 (Dutch model)	
Dermal Exposure (with PPE)	0,8	mg a.s./ day	DE(PPE) = (1/PPE-factor) x DE	
Internal exposure				
IA Inhalation Absorption	100	%		
DA Dermal Absorption	9	%		
AOEL	0,08	mg a.s./ day	based on 70 kg bw	
	Without PPE	With PPE		
Internal exposure	[mg a.s. / day ]	[mg a.s. / day]		
Inhalation	0,0400	0,0040	IE(int) = IE x (IA/100)	
Dermal	0,7200	0,0720	DE(int) = DE x (DA/100)	
Total	0,7600	0,0760	sum	
% AOEL				
Inhalation	50	5	%AOEL = 100 x IE(int) / AOEL	
Dermal	900	90	%AOEL = 100 x DE(int) /	

	Total	950	95	AOEL sum
*	NOTE: The above mentioned model is for spraying in greenhouses. For dusting of carnations the surrogate values should be changed: inhalation should be 20 mg/kg instead of 1, and dermal should be 300 mg/kg instead of 200.			
**	Note: Only for gasforming/gaseous preparations and soil fumigation preparations: powered full-face filtering devices with filtertype 2 (factor 20), powered full-face filtering devices with filtertype 3 (factor 40)			

	No PPE
Systemic exposure [mg/kg bw/day]	0.01086
% AOEL	13.6 %

## A 3.2 Worker exposure calculations (KCP 7.2.3.1)

### A 3.2.1 Calculations for copper

#### Pome frutis: Apple, pear, Quince, Medlar Stone fruits: Cherry, sweet cherry

**Table A 76: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Searching, Reaching, picking	Dislodgeable foliar residue (DFR)	3	µg/cm <sup>2</sup> /kg a.s./ha
Application rate (AR)	0.75 kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	2	Inhalation absorption (IA)	100	%
Interval between applications	7 days	Work rate per day (WR)	6	h/d
Half-life of active substance	30 days	TC dermal (potential)	2250	cm <sup>2</sup> /h
Multiple application factor (MAF)	1.9	TC dermal (work wear)	4500	cm <sup>2</sup> /h
Body weight (BW)	60 kg/person	TC dermal (work wear, gloves)	2250	cm <sup>2</sup> /h
AOEL	0.08 mg/kg bw/d			

**Table A 77: Estimation of acute worker exposure towards active substance according to EUROPOEM II**

WORKER EXPOSURE		EUROPOEM II MODEL		
form	WP	Re-entry in the field		
a.s.	copper			
Parameter		Value	Unit	References, comments
Re-entry activities in the field				
AR	Application rate	1,425	kg a.s./ha	summary of intended uses
Worker				
Duration		6	hours / day	default: 6 h (Europoem II)
T				
Inhalation Exposure				without PPE
no model available		-		
Dermal Exposure				

<b>DFR</b>	Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europoem II)
<b>TC</b>	Transfer coefficient	0,45	m2/ hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)
	Dermal Exposure	115,425	mg a.s./ day	DE = DFR x AR x TC x T
<b>Internal exposure</b>				
<b>DA</b>	Dermal Absorption	9	%	
	PPE-factor dermal	5		gloves*
	AOEL	0,08	mg a.s./ day	based on 70 kg bw
		<b>Without PPE</b>	<b>With PPE</b>	
		[mg a.s./ day ]	[mg a.s./ day]	
<b>Internal exposure</b>				
	Inhalation	-	-	no model available
	Dermal	10,388	2,078	DE(int) = DE x (DA/100)
	<b>Total</b>	<b>10,388</b>	<b>2,078</b>	<b>sum</b>
<b>% AOEL</b>				
	Inhalation	-	-	no model available
	Dermal	12985	2597	%AOEL = 100 x DE(int) / AOEL
	<b>Total</b>	<b>12985</b>	<b>2597</b>	<b>sum</b>

\* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.

	No gloves	With gloves
<b>Systemic exposure [mg/kg bw/day]</b>	0.1484	0.02968
<b>% AOEL</b>	185.5%	37.1 %

### Stone fruits: Cherry, sweet cherry, apricot, plum, peach

**Table A 78: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Searching, Reaching, picking		Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	1.5	kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	1		Inhalation absorption (IA)	100	%
Interval between applications	365	days	Work rate per day (WR)	6	h/d
Half-life of active substance	30	days	TC dermal (potential)	2250	cm²/h
Multiple application factor (MAF)	-		TC dermal (work wear)	4500	cm²/h
Body weight (BW)	60	kg/person	TC dermal (work wear, gloves)	2250	cm²/h
AOEL	0.08	mg/kg bw/d			

**Table A 79: Estimation of acute worker exposure towards active substance according to EUROPOEM II**

WORKER EXPOSURE		EUROPOEM II MODEL	
form	WP	Re-entry in the field	
a.s.	copper		
Parameter	Value	Unit	References, comments
Re-entry activities in the field			

<b>AR</b>	Application rate	1,5	kg a.s./ha	summary of intended uses
<b>Worker</b>				
	Duration			
<b>T</b>		6	hours / day	default: 6 h (Europoem II)
<b>Inhalation Exposure</b>				without PPE
	no model available	-		
<b>Dermal Exposure</b>				
<b>DFR</b>	Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europoem II)
<b>TC</b>	Transfer coefficient	0,45	m2/ hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)
	Dermal Exposure	121,5	mg a.s./ day	DE = DFR x AR x TC x T
<b>Internal exposure</b>				
<b>DA</b>	Dermal Absorption	9	%	
	PPE-factor dermal	5		gloves*
	AOEL	0,08	mg a.s./ day	based on 70 kg bw
		<b>Without PPE</b>	<b>With PPE</b>	
	<b>Internal exposure</b>	[mg a.s./ day ]	[mg a.s./ day]	
	Inhalation	-	-	no model available
	Dermal	10,935	2,187	DE(int) = DE x (DA/100)
	<b>Total</b>	<b>10,935</b>	<b>2,187</b>	<b>sum</b>
	<b>% AOEL</b>			
	Inhalation	-	-	no model available
	Dermal	13669	2734	%AOEL = 100 x DE(int) / AOEL
	<b>Total</b>	<b>13669</b>	<b>2734</b>	<b>sum</b>

\* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.

	No gloves	With gloves
<b>Systemic exposure [mg/kg bw/day]</b>	0.1562	0.0312
<b>% AOEL</b>	195.3 %	<b>39.1 %</b>

### Tree nuts: Walnut, Hazelnut

**Table A 80: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Searching, Reaching, picking		Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	1.5	kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	2		Inhalation absorption (IA)	100	%
Interval between applications	10	days	Work rate per day (WR)	6	h/d
Half-life of active substance	30	days	TC dermal (potential)	2250	cm²/h
Multiple application factor (MAF)	1.8		TC dermal (work wear)	4500	cm²/h

Body weight (BW)	60	kg/person	TC dermal (work wear, gloves)	2250	cm <sup>2</sup> /h
AOEL	0.08	mg/kg bw/d			

**Table A 81: Estimation of acute worker exposure towards active substance according to EUROPOEM II**

WORKER EXPOSURE			EUROPOEM II MODEL	
form	WP		Re-entry in the field	
a.s.	copper			
Parameter	Value	Unit	References, comments	
Re-entry activities in the field				
AR Application rate	2,7	kg a.s./ha	summary of intended uses	
Worker				
Duration				
T	6	hours / day	default: 6 h (Europoem II)	
Inhalation Exposure			without PPE	
no model available	-			
Dermal Exposure				
DFR Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europoem II)	
TC Transfer coefficient	0,45	m2/ hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)	
Dermal Exposure	218,7	mg a.s./ day	DE = DFR x AR x TC x T	
Internal exposure				
DA Dermal Absorption	9	%		
PPE-factor dermal	5		gloves*	
AOEL	0,08	mg a.s./ day	based on 70 kg bw	
	Without PPE	With PPE		
Internal exposure	[mg a.s./ day ]	[mg a.s./ day]		
Inhalation	-	-	no model available	
Dermal	19,683	3,937	DE(int) = DE x (DA/100)	
Total	19,683	3,937	sum	
% AOEL				
Inhalation	-	-	no model available	
Dermal	24604	4921	%AOEL = 100 x DE(int) / AOEL	
Total	24604	4921	sum	

\* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.

	No gloves	With gloves
Systemic exposure [mg/kg bw/day]	0.2812	0.0562
% AOEL	351.5 %	70.3 %

**Fruiting vegetables (outdoor): Tomato, Aubergines, Cucumber, Gherkins, Courgette**

**Table A 82: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Reaching, picking	Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	1,25 kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	3	Inhalation absorption (IA)	100	%
Interval between applications	7 days	Work rate per day (WR)	6	h/d
Half-life of active substance	30 days	TC dermal (potential)	5800	cm²/h
Multiple application factor (MAF)	2.6	TC dermal (work wear)	2500	cm²/h
Body weight (BW)	60 kg/person	TC dermal (work wear, gloves)	580	cm²/h
AOEL	0.08 mg/kg bw/d			

**Table A 83: Estimation of acute worker exposure towards active substance according to EUROPOEM II**

WORKER EXPOSURE			EUROPOEM II MODEL	
form	WP		Re-entry in the field	
a.s.	copper			
Parameter	Value	Unit	References, comments	
Re-entry activities in the field				
AR	Application rate	3,25	kg a.s./ha	summary of intended uses
Worker				
Duration				
T		6	hours / day	default: 6 h (Europoem II)
Inhalation Exposure				
no model available		-	without PPE	
Dermal Exposure				
DFR	Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europoem II)
TC	Transfer coefficient	0,25	m2/ hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)
Dermal Exposure		146,25	mg a.s./ day	DE = DFR x AR x TC x T
Internal exposure				
DA	Dermal Absorption	9	%	
PPE-factor dermal		5		gloves*
AOEL		0,08	mg a.s./ day	based on 70 kg bw
		Without PPE	With PPE	
Internal exposure		[mg a.s./ day ]	[mg a.s./ day]	
Inhalation		-	-	no model available
Dermal		13,163	2,633	DE(int) = DE x (DA/100)
Total		13,163	2,633	sum
% AOEL				
Inhalation		-	-	no model available
Dermal		16453	3291	%AOEL = 100 x DE(int) / AOEL

Total	16453	3291	sum
* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.			

	No gloves	With gloves
Systemic exposure [mg/kg bw/day]	0.1880	0.0376
% AOEL	235.1 %	47.0 %

## Legume vegetables: French bean, Peas with pods

**Table A 84: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Reaching, picking		Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	1.5	kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	2		Inhalation absorption (IA)	100	%
Interval between applications	7	days	Work rate per day (WR)	6	h/d
Half-life of active substance	30	days	TC dermal (potential)	5800	cm²/h
Multiple application factor (MAF)	1.9		TC dermal (work wear)	2500	cm²/h
Body weight (BW)	60	kg/person	TC dermal (work wear, gloves)	580	cm²/h
AOEL	0.08	mg/kg bw/d			

**Table A 85: Estimation of acute worker exposure towards active substance according to EUROPOEM II**

WORKER EXPOSURE		EUROPOEM II MODEL		
form	WP	Re-entry in the field		
a.s.	copper			
Parameter	Value	Unit	References, comments	
Re-entry activities in the field				
AR	Application rate	2,85	kg a.s./ha	summary of intended uses
Worker				
Duration				
T	6	hours / day	default: 6 h (Europoem II)	
Inhalation Exposure				
no model available		-	without PPE	
Dermal Exposure				
DFR	Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europoem II)
TC	Transfer coefficient	0,25	m2/ hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)
Dermal Exposure		128,25	mg a.s./ day	DE = DFR x AR x TC x T
Internal exposure				
DA	Dermal Absorption	9	%	



PPE-factor dermal	5		gloves*
AOEL	0,08	mg a.s./ day	based on 70 kg bw
	<b>Without PPE</b>	<b>With PPE</b>	
<b>Internal exposure</b>	[mg a.s./ day ]	[mg a.s./ day]	
Inhalation	-	-	no model available
Dermal	11,543	2,309	DE(int) = DE x (DA/100)
<b>Total</b>	<b>11,543</b>	<b>2,309</b>	<b>sum</b>
<b>% AOEL</b>			
Inhalation	-	-	no model available
Dermal	14428	2886	%AOEL = 100 x DE(int) / AOEL
<b>Total</b>	<b>14428</b>	<b>2886</b>	<b>sum</b>

\* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.

	No gloves	With gloves
<b>Systemic exposure [mg/kg bw/day]</b>	0.1649	0.0330
<b>% AOEL</b>	206.1 %	<b>41.2 %</b>

## Table and wine grapes: Grape

**Table A 86: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Reaching, picking	Dislodgeable foliar residue (DFR)	3	µg/cm <sup>2</sup> /kg a.s./ha
Application rate (AR)	1.25 kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	3	Inhalation absorption (IA)	100	%
Interval between applications	10 days	Work rate per day (WR)	2	h/d
Half-life of active substance	30 days	TC dermal (potential)	300000	cm <sup>2</sup> /h
Multiple application factor (MAF)	2.4	TC dermal (work wear)	10100	cm <sup>2</sup> /h
Body weight (BW)	60 kg/person	TC dermal (work wear, gloves)	-	cm <sup>2</sup> /h
AOEL	0.08 mg/kg bw/d			

**Table A 87: Estimation of acute worker exposure towards active substance according to EUROPOEM II**

WORKER EXPOSURE		EUROPOEM II MODEL		
form	WP	Re-entry in the field		
a.s.	copper			
Parameter	Value	Unit	References, comments	
Re-entry activities in the field				
AR	Application rate	3	kg a.s./ha	summary of intended uses
Worker				
Duration				
T		2	hours / day	default: 6 h (Europoem II)
Inhalation Exposure			without PPE	

no model available		-	
<b>Dermal Exposure</b>			
<b>DFR</b>	Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha default (Europoem II)
<b>TC</b>	Transfer coefficient	1,01	m2/ hour vegetable (field): 0.25; ornamentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)
Dermal Exposure		181,8	mg a.s./ day DE = DFR x AR x TC x T
<b>Internal exposure</b>			
<b>DA</b>	Dermal Absorption	9	%
	PPE-factor dermal	5	gloves*
	AOEL	0,08	mg a.s./ day based on 70 kg bw
		<b>Without PPE</b>	<b>With PPE</b>
		[mg a.s./ day ]	[mg a.s./ day]
<b>Internal exposure</b>			
	Inhalation	-	-
	Dermal	16,362	3,272
	<b>Total</b>	<b>16,362</b>	<b>3,272</b>
			<b>sum</b>
			no model available
			DE(int) = DE x (DA/100)
<b>% AOEL</b>			
	Inhalation	-	-
	Dermal	20453	4091
	<b>Total</b>	<b>20453</b>	<b>4091</b>
			<b>sum</b>
			no model available
			%AOEL = 100 x DE(int) / AOEL
* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.			
		<b>No gloves</b>	<b>With gloves</b>
<b>Systemic exposure [mg/kg bw/day]</b>		0.2337	0.0467
<b>% AOEL</b>		292.2 %	<b>58.4 %</b>

## Berries and small fruits: Currant

**Table A 88: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Reaching, picking		Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	1.2	kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	2		Inhalation absorption (IA)	100	%
Interval between applications	10	days	Work rate per day (WR)	6	h/d
Half-life of active substance	30	days	TC dermal (potential)	3000	cm²/h
Multiple application factor (MAF)	1.8		TC dermal (work wear)	3000	cm²/h
Body weight (BW)	60	kg/person	TC dermal (work wear, gloves)	750	cm²/h
AOEL	0.08	mg/kg bw/d			

**Table A 89: Estimation of acute worker exposure towards active substance according to EUROPOEM II**

### WORKER EXPOSURE

form WP

### EUROPOEM II MODEL

Re-entry in the field

a.s.	copper			
Parameter	Value	Unit	References, comments	
<b>Re-entry activities in the field</b>				
AR Application rate	2,16	kg a.s./ha	summary of intended uses	
<b>Worker</b>				
Duration				
T	6	hours / day	default: 6 h (Europoem II)	
<b>Inhalation Exposure</b>				
no model available	-		without PPE	
<b>Dermal Exposure</b>				
DFR Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europoem II)	
TC Transfer coefficient	0,3	m2/ hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)	
Dermal Exposure	116,64	mg a.s./ day	DE = DFR x AR x TC x T	
<b>Internal exposure</b>				
DA Dermal Absorption	9	%		
PPE-factor dermal	5		gloves*	
AOEL	0,08	mg a.s./ day	based on 70 kg bw	
	<b>Without PPE</b>	<b>With PPE</b>		
<b>Internal exposure</b>	<b>[mg a.s./ day ]</b>	<b>[mg a.s./ day]</b>		
Inhalation	-	-	no model available	
Dermal	10,498	2,100	DE(int) = DE x (DA/100)	
<b>Total</b>	<b>10,498</b>	<b>2,100</b>	<b>sum</b>	
<b>% AOEL</b>				
Inhalation	-	-	no model available	
Dermal	13122	2624	%AOEL = 100 x DE(int) / AOEL	
<b>Total</b>	<b>13122</b>	<b>2624</b>	<b>sum</b>	
* It is assumed in the used TC values, that body exposure is already reduced by (protective) cloth- ing. The use of gloves will result in an extra reduction factor of 5.				

	No gloves	With gloves
<b>Systemic exposure [mg/kg bw/day]</b>	0.1500	0.03
<b>% AOEL</b>	187.5 %	37.5 %

## Fruiting vegetables (indoor)

### Tomato, Aubergines, Melon, Pumpkins, Watermelon, Cucumber

**Table A 90: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Reaching, picking	Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	1.25 kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	3	Inhalation absorption (IA)	100	%
Interval between applications	7 days	Work rate per day (WR)	6	h/d

Half-life of active substance	30	days	TC dermal (potential)	5800	cm <sup>2</sup> /h
Multiple application factor (MAF)	2.6		TC dermal (work wear)	250	cm <sup>2</sup> /h
Body weight (BW)	60	kg/person	TC dermal (work wear, gloves)	580	cm <sup>2</sup> /h
AOEL	0.08	mg/kg bw/d			

**Table A 91: Estimation of acute worker exposure towards active substance according to EUROPOEM II - greenhouse**

WORKER EXPOSURE			EUROPOEM II & DUTCH MODEL		
form	WP		Re-entry in greenhouses		
a.s.	copper				
Parameter		Value	Unit	References, comments	
Re-entry activities in greenhouses					
AR	Application rate	3,25	kg a.s./ha	summary of intended uses	
Worker					
Duration					
Tc	Cutting	3	hours / day	default: 3 h (Dutch model)	
Tsb	Sorting/ bundling	3	hours / day	default: 3 h (Dutch model)	
Tt	Total duration	6	hours / day	default: 6 h (Europeom II)	
Inhalation Exposure				without PPE	
Task Specific Factor					
Surrogate value (indicative)					
TF	Cutting	0,1	(mg a.s./h)/ (kg/ha)	Dutch model	
TF	Sorting/ bundling	0,01	(mg a.s./h)/ (kg/ha)	Dutch model	
Inhalation Exposure					
	Cutting	0,975	mg a.s./ day	IE = AR x Tc x TF	
	Sorting/ bundling	0,0975	mg a.s./ day	IE = AR x Tsb x TF	
	Total	1,0725	mg a.s./ day	sum	
Dermal Exposure					
DFR	Dislodgeable foliar residue	30	mg a.s./m2/kg a.s./ha	default (Europeom II)	
TC	Transfer coefficient	0,25	m2/ hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europeom II)	
	Dermal Exposure	146,25	mg a.s./ day	DE = DFR x AR x TC x Tt	
Internal exposure					
IA	Inhalation Absorption	100	%		
DA	Dermal Absorption	9	%		
	PPE-factor inhalation	10		reduction factor*	
	PPE-factor dermal	5		gloves**	
	AOEL	0,08	mg a.s./ day	based on 70 kg bw	
		Without PPE	With PPE		
	Internal exposure	[mg a.s./ day ]	[mg a.s./ day]		
	Inhalation	1,073	0,107	IE(int) = IE x (IA100)	
	Dermal	13,163	2,633	DE(int) = DE x (DA/100)	
	Total	14,235	2,740	sum	

	<b>% AOEL</b>			
Inhalation	1341	134	%AOEL = 100 x IE(int) / AOEL	
Dermal	16453	3291	%AOEL = 100 x DE(int) / AOEL	
<b>Total</b>	<b>17794</b>	<b>3425</b>	<b>sum</b>	

\* Breathing apparatus for workers can only be used in closed areas for a relatively short period of time.

\*\* It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.

	No gloves	With gloves
<b>Systemic exposure [mg/kg bw/day]</b>	0.2033	0.0391
<b>% AOEL</b>	254.2 %	<b>48.9 %</b>

### Fruiting vegetables (indoor): Cucumber

**Table A 92: Input parameters considered for the estimation of worker exposure**

Intended use(s)	Reaching, picking		Dislodgeable foliar residue (DFR)	3	µg/cm²/kg a.s./ha
Application rate (AR)	0.8	kg a.s./ha	Dermal absorption (DA)	9	% (worst case)
Number of applications (NA)	4		Inhalation absorption (IA)	100	%
Interval between applications	7	days	Work rate per day (WR)	6	h/d
Half-life of active substance	30	days	TC dermal (potential)	5800	cm²/h
Multiple application factor (MAF)	3.2		TC dermal (work wear)	250	cm²/h
Body weight (BW)	60	kg/person	TC dermal (work wear, gloves)	580	cm²/h
AOEL	0.08	mg/kg bw/d			

**Table A 93: Estimation of acute worker exposure towards active substance according to EUROPOEM II - greenhouse**

WORKER EXPOSURE		EUROPOEM II & DUTCH MODEL		
form	WP	Re-entry in greenhouses		
a.s.	copper			
Parameter		Value	Unit	References, comments
Re-entry activities in greenhouses				
AR	Application rate	2,56	kg a.s./ha	summary of intended uses
Worker				
Duration				
Tc	Cutting	3	hours / day	default: 3 h (Dutch model)
Tsb	Sorting/ bundling	3	hours / day	default: 3 h (Dutch model)
Tt	Total duration	6	hours / day	default: 6 h (Europoem II)
Inhalation Exposure				without PPE
Task Specific Factor				
Surrogate value (indicative)				
TF	Cutting	0,1	(mg a.s./h)/ (kg/ha)	Dutch model
TF	Sorting/ bundling	0,01	(mg a.s./h)/ (kg/ha)	Dutch model
Inhalation Exposure				
	Cutting	0,768	mg a.s./ day	IE = AR x Tc x TF
	Sorting/ bundling	0,0768	mg a.s./ day	IE = AR x Tsb x TF

Total		<b>0,8448</b>	mg a.s./ day	sum
<b>Dermal Exposure</b>				
<b>DFR</b>	Dislodgeable foliar residue	30	mg a.s./m <sup>2</sup> /kg a.s./ha	default (Europoem II)
<b>TC</b>	Transfer coefficient	0,25	m <sup>2</sup> / hour	vegetable (field): 0.25; orna- mentals: 0.5; small fruit: 0.3; large fruit: 0.45 (Europoem II)
Dermal Exposure		<b>115,2</b>	mg a.s./ day	DE = DFR x AR x TC x Tt
<b>Internal exposure</b>				
<b>IA</b>	Inhalation Absorption	100	%	
<b>DA</b>	Dermal Absorption	9	%	
	PPE-factor inhalation	10		reduction factor*
	PPE-factor dermal	5		gloves**
	AOEL	0,08	mg a.s./ day	based on 70 kg bw
		<b>Without PPE</b>	<b>With PPE</b>	
<b>Internal exposure</b>		[mg a.s./ day ]	[mg a.s./ day]	
	Inhalation	0,845	0,084	IE(int) = IE x (IA/100)
	Dermal	10,368	2,074	DE(int) = DE x (DA/100)
	<b>Total</b>	<b>11,213</b>	<b>2,158</b>	<b>sum</b>
<b>% AOEL</b>				
	Inhalation	1056	106	%AOEL = 100 x IE(int) / AOEL
	Dermal	12960	2592	%AOEL = 100 x DE(int) / AOEL
	<b>Total</b>	<b>14016</b>	<b>2698</b>	<b>sum</b>
* Breathing apparatus for workers can only be used in closed areas for a relatively short period of time.				
** It is assumed in the used TC values, that body exposure is already reduced by (protective) clothing. The use of gloves will result in an extra reduction factor of 5.				

	No gloves	With gloves
<b>Systemic exposure [mg/kg bw/day]</b>	0.1602	0.0308
<b>% AOEL</b>	200.2 %	<b>38.5 %</b>

### A 3.3 Resident and bystander exposure calculations (KCP 7.2.2.1)

#### A 3.3.1 Calculations for copper

**Pome frutis Apple, Pear, Quince, Medlar**  
**Stone fruits Cherry, Sweet cherry**  
**Tractor mounted boom spray application outdoors to high crops**

**Table A 94: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Pome fruits, Stone fruits		<b>Drift (D):</b>	19,89	% (HCTM, 5 m)
<b>Application rate (AR):</b>	1,425	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)

<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,018	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,01034	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	8	ha/d (based on High crops, tractor mounted (HCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 95: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Pome fruits, Stone fruits (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(142,5 x 19,89% x 1 x 9%) / 60			(142,5 x 19,89% x 0,21 x 9%) / 16,15		
External exposure	28,34325	mg/person	External exposure	5,9520825	mg/person
External exposure	0,4723875	mg/kg bw/d	External exposure	0,36855	mg/kg bw/d
Absorbed dose:	0,0425149	mg/kg bw/d	Absorbed dose:	0,0331695	mg/kg bw/d
Bystander: Inhalation exposure after application in Pome fruits, Stone fruits					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,018 / 360 x 1,425 x 8 x 5 x 100%) / 60			(0,010 / 360 x 1,425 x 8 x 5 x 100%) / 16,15		
External exposure	0,00285	mg/person	External exposure	0,0016379	mg/person
External exposure	0,0000475	mg/kg bw/d	External exposure	0,0001014	mg/kg bw/d
Absorbed dose:	0,0000475	mg/kg bw/d	Absorbed dose:	0,0001014	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,5537425	mg/person	Total systemic exposure (absorbed dose)	0,5373254	mg/person
Total systemic exposure (absorbed dose)	0,0425624	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0332709	mg/kg bw/d
% of AOEL:	53,20	%	% of AOEL:	41,59	%

**Table A 96: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Pome fruits, Stone fruits		<b>Drift (D):</b>	19,89	% (HCTM, 5 m)
<b>Application rate (AR):</b>	1,425	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%

<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 97: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Pome fruits, Stone fruits (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,01425 x 1 x 19,89% x 5% x 7300 x 2 x 9%) / 60			(0,01425 x 1 x 19,89% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	2,0690573	mg/person	External exposure	0,7369245	mg/person
External exposure	0,0344843	mg/kg bw/d	External exposure	0,04563	mg/kg bw/d
Absorbed dose:	0,0031036	mg/kg bw/d	Absorbed dose:	0,0041067	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,01425 x 1 x 19,89% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,0566865	mg/person
			External exposure	0,00351	mg/kg bw/d
			Absorbed dose	0,0017550	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,01425 x 1 x 19,89% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0141716	mg/person
			External exposure	0,0008775	mg/kg bw/d
			Absorbed dose	0,0004388	mg/kg bw/d
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,2027852	mg/person	Total systemic exposure (absorbed dose)	0,1100623	mg/person
Total systemic exposure (absorbed dose)	0,0033798	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0068150	mg/kg bw/d
% of AOEL:	4,22	%	% of AOEL:	8,52	%



## Manual Knapsack application to high crops

**Table A 98: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Pome fruits, Stone fruits		<b>Drift (D):</b>	19,89	% (HCHH, 5 m)
<b>Application rate (AR):</b>	1,425	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I<sub>A</sub><sup>*</sup>):</b>	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	1	ha/d (based on High crops, hand held (HCHH))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 99: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Pome fruits, Stone fruits (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(142,5 x 19,89% x 1 x 9%) / 60			(142,5 x 19,89% x 0,21 x 9%) / 16,15		
External exposure	28,34325	mg/person	External exposure	5,9520825	mg/person
External exposure	0,4723875	mg/kg bw/d	External exposure	0,36855	mg/kg bw/d
Absorbed dose:	0,0425149	mg/kg bw/d	Absorbed dose:	0,0331695	mg/kg bw/d
Bystander: Inhalation exposure after application in Pome fruits, Stone fruits					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,300 / 360 x 1,425 x 1 x 5 x 100%) / 60			(0,172 / 360 x 1,425 x 1 x 5 x 100%) / 16,15		
External exposure	0,0059375	mg/person	External exposure	0,0034124	mg/person
External exposure	9,896E-05	mg/kg bw/d	External exposure	0,0002113	mg/kg bw/d
Absorbed dose:	0,0000990	mg/kg bw/d	Absorbed dose:	0,0002113	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,55683	mg/person	Total systemic exposure (absorbed dose)	0,5390998	mg/person
Total systemic exposure (absorbed dose)	0,0426138	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0333808	mg/kg bw/d
% of AOEL:	53,27	%	% of AOEL:	41,73	%

**Table A 100: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Pome fruits, Stone fruits		<b>Drift (D):</b>	19,89	% (HCHH, 5 m)
<b>Application rate (AR):</b>	1,425	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%

<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 101: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Pome fruits, Stone fruits (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,01425 x 1 x 19,89% x 5% x 7300 x 2 x 9%) / 60			(0,01425 x 1 x 19,89% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	2,0690573	mg/person	External exposure	0,7369245	mg/person
External exposure	0,0344843	mg/kg bw/d	External exposure	0,04563	mg/kg bw/d
Absorbed dose:	0,0031036	mg/kg bw/d	Absorbed dose:	0,0041067	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,01425 x 1 x 19,89% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,0566865	mg/person
			External exposure	0,00351	mg/kg bw/d
			Absorbed dose	0,0017550	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,01425 x 1 x 19,89% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0141716	mg/person
			External exposure	0,0008775	mg/kg bw/d
			Absorbed dose	0,0004388	mg/kg bw/d
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		

Total systemic exposure (absorbed dose)	0,2027852	mg/person	Total systemic exposure (absorbed dose)	0,1100623	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0033798</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0068150</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>4,22</b>	<b>%</b>	<b>% of AOEL:</b>	<b>8,52</b>	<b>%</b>

### Stone fruits: Cherry, sweet cherry, apricot, plum

### Tractor mounted boom spray application outdoors to high crops

**Table A 102: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Stone fruits		<b>Drift (D):</b>	15,73	% (HCTM, 3 m)
<b>Application rate (AR):</b>	1,5	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I<sub>A</sub>):</b>	0,018	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,01034	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	8	ha/d (based on High crops, tractor mounted (HCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 103: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Pome fruits, Stone fruits (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(150 x 15,73% x 1 x 9%) / 60			(150 x 15,73% x 0,21 x 9%) / 16,15		
External exposure	23,595	mg/person	External exposure	4,95495	mg/person
External exposure	0,39325	mg/kg bw/d	External exposure	0,306808	mg/kg bw/d
Absorbed dose:	0,0353925	mg/kg bw/d	Absorbed dose:	0,0276127	mg/kg bw/d
Bystander: Inhalation exposure after application in Pome fruits, Stone fruits					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,018 / 360 x 1,5 x 8 x 5 x 100%) / 60			(0,010 / 360 x 1,5 x 8 x 5 x 100%) / 16,15		
External exposure	0,003	mg/person	External exposure	0,0017241	mg/person
External exposure	0,00005	mg/kg bw/d	External exposure	0,0001068	mg/kg bw/d
Absorbed dose:	0,0000500	mg/kg bw/d	Absorbed dose:	0,0001068	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,12655	mg/person	Total systemic exposure (absorbed dose)	0,4476696	mg/person
Total systemic exposure (absorbed dose)	0,0354425	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0277195	mg/kg bw/d
% of AOEL:	44,30	%	% of AOEL:	34,65	%

**Table A 104: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Stone fruits		<b>Drift (D):</b>	15,73	% (HCTM, 3 m)
<b>Application rate (AR):</b>	1,5	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 105: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Pome fruits, Stone fruits (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,015 x 1 x 15,73% x 5% x 7300 x 2 x 9%) / 60			(0,015 x 1 x 15,73% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	1,722435	mg/person	External exposure	0,61347	mg/person
External exposure	0,0287073	mg/kg bw/d	External exposure	0,0379858	mg/kg bw/d
Absorbed dose:	0,0025837	mg/kg bw/d	Absorbed dose:	0,0034187	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,015 x 1 x 15,73% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,04719	mg/person
			External exposure	0,002922	mg/kg bw/d
			Absorbed dose	0,0014610	mg/kg bw/d

			<b>Residents: Oral exposure (object-to-mouth transfer)</b>		
			$SOE_O = (AR \times NA \times D \times DFR \times IgR \times OA) / BW$		
			$(0,015 \times 1 \times 15,73\% \times 20\% \times 25 \times 50\%) / 16,15$		
External exposure		0,0117975	mg/person		
External exposure		0,0007305	mg/kg bw/d		
<b>Absorbed dose</b>		<b>0,0003652</b>	<b>mg/kg bw/d</b>		
Total systemic exposure: $SE_R = SDE_R + SIE_R$			Total systemic exposure: $SE_R = SDE_R + SIE_R + SOE_H + SOE_O$		
Total systemic exposure (absorbed dose)	0,1715892	mg/person	Total systemic exposure (absorbed dose)	0,0930161	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0028598</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0057595</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>3,57</b>	<b>%</b>	<b>% of AOEL:</b>	<b>7,20</b>	<b>%</b>

### Manual Knapsack application to high crops

**Table A 106: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Stone fruits		<b>Drift (D):</b>	15,73	% (HCHH, 3 m)
<b>Application rate (AR):</b>	1,5	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I<sub>A</sub>):</b>	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	1	ha/d (based on High crops, hand held (HCHH))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 107: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Stone fruits (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(150 x 15,73% x 1 x 9%) / 60			(150 x 15,73% x 0,21 x 9%) / 16,15		
External exposure	23,595	mg/person	External exposure	4,95495	mg/person
External exposure	0,39325	mg/kg bw/d	External exposure	0,306808	mg/kg bw/d
Absorbed dose:	0,0353925	mg/kg bw/d	Absorbed dose:	0,0276127	mg/kg bw/d
Bystander: Inhalation exposure after application in Stone fruits					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,300 / 360 x 1,5 x 1 x 5 x 100%) / 60			(0,172 / 360 x 1,5 x 1 x 5 x 100%) / 16,15		
External exposure	0,00625	mg/person	External exposure	0,003592	mg/person
External exposure	0,0001042	mg/kg bw/d	External exposure	0,0002224	mg/kg bw/d
Absorbed dose:	0,0001042	mg/kg bw/d	Absorbed dose:	0,0002224	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,1298	mg/person	Total systemic exposure (absorbed dose)	0,4495375	mg/person

<b>Total systemic exposure</b> (absorbed dose)	<b>0,0354967</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure</b> (absorbed dose)	<b>0,0278351</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>44,37</b>	<b>%</b>	<b>% of AOEL:</b>	<b>34,79</b>	<b>%</b>

**Table A 108: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Stone fruits		<b>Drift (D):</b>	15,73	% (HCHH, 3 m)
<b>Application rate (AR):</b>	1,5	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 109: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Stone fruits (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,015 x 1 x 15,73% x 5% x 7300 x 2 x 9%) / 60			(0,015 x 1 x 15,73% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	1,722435	mg/person	External exposure	0,61347	mg/person
External exposure	0,0287073	mg/kg bw/d	External exposure	0,0379858	mg/kg bw/d
Absorbed dose:	0,0025837	mg/kg bw/d	Absorbed dose:	0,0034187	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		

			(0,015 x 1 x 15,73% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,04719	mg/person
			External exposure	0,002922	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0014610</b>	<b>mg/kg bw/d</b>
			<b>Residents: Oral exposure (object-to-mouth transfer)</b>		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,015 x 1 x 15,73% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0117975	mg/person
			External exposure	0,0007305	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0003652</b>	<b>mg/kg bw/d</b>
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,1715892	mg/person	Total systemic exposure (absorbed dose)	0,0930161	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0028598</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0057595</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>3,57</b>	<b>%</b>	<b>% of AOEL:</b>	<b>7,20</b>	<b>%</b>

### Stone fruits: peach

#### Tractor mounted boom spray application outdoors to high crops

**Table A 110: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Stone fruits: peach		<b>Drift (D):</b>	19,89	% (HCTM, 5 m)
<b>Application rate (AR):</b>	1,5	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,018	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,01034	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	8	ha/d (based on High crops, tractor mounted (HCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 111: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Stone fruits: peach (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(150 x 19,89% x 1 x 9%) / 60			(150 x 19,89% x 0,21 x 9%) / 16,15		
External exposure	29,835	mg/person	External exposure	6,26535	mg/person
External exposure	0,49725	mg/kg bw/d	External exposure	0,3879474	mg/kg bw/d
Absorbed dose:	0,0447525	mg/kg bw/d	Absorbed dose:	0,0349153	mg/kg bw/d
Bystander: Inhalation exposure after application in Stone fruits: peach					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		

(0,018 / 360 x 1,5 x 8 x 5 x 100%) / 60			(0,010 / 360 x 1,5 x 8 x 5 x 100%) / 16,15		
External exposure	0,003	mg/person	External exposure	0,0017241	mg/person
External exposure	0,00005	mg/kg bw/d	External exposure	0,0001068	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0000500</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0001068</b>	<b>mg/kg bw/d</b>
Total systemic exposure: $SE_B = SDE_B + SIE_B$			Total systemic exposure: $SE_B = SDE_B + SIE_B$		
Total systemic exposure (absorbed dose)	2,68815	mg/person	Total systemic exposure (absorbed dose)	0,5656056	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0448025</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0350220</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>56,00</b>	<b>%</b>	<b>% of AOEL:</b>	<b>43,78</b>	<b>%</b>

**Table A 112: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Stone fruits: peach		<b>Drift (D):</b>	19,89	% (HCTM, 5 m)
<b>Application rate (AR):</b>	1,5	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 113: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Stone fruits: peach (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,015 x 1 x 19,89% x 5% x 7300 x 2 x 9%) / 60			(0,015 x 1 x 19,89% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	2,177955	mg/person	External exposure	0,77571	mg/person
External exposure	0,0362993	mg/kg bw/d	External exposure	0,0480316	mg/kg bw/d
Absorbed dose:	0,0032669	mg/kg bw/d	Absorbed dose:	0,0043228	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		



(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			<b>Residents: Oral exposure (hand-to-mouth transfer)</b>		
			$SOE_H = (AR \times NA \times D \times TTR \times SE \times SA \times Freq \times H \times OA) / BW$		
			(0,015 x 1 x 19,89% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,05967	mg/person
			External exposure	0,0036947	mg/kg bw/d
			Absorbed dose	0,0018474	mg/kg bw/d
			<b>Residents: Oral exposure (object-to-mouth transfer)</b>		
			$SOE_O = (AR \times NA \times D \times DFR \times IgR \times OA) / BW$		
			(0,015 x 1 x 19,89% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0149175	mg/person
			External exposure	0,0009237	mg/kg bw/d
			Absorbed dose	0,0004618	mg/kg bw/d
Total systemic exposure: $SE_R = SDE_R + SIE_R$			Total systemic exposure: $SE_R = SDE_R + SIE_R + SOE_H + SOE_O$		
Total systemic exposure (absorbed dose)	0,212586	mg/person	Total systemic exposure (absorbed dose)	0,1154177	mg/person
Total systemic exposure (absorbed dose)	0,0035431	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0071466	mg/kg bw/d
% of AOEL:	4,43	%	% of AOEL:	8,93	%

### Manual Knapsack application to high crops

**Table A 114: Input parameters considered for the estimation of longer term resident exposure**

Intended use(s):	Stone fruits: peach		Drift (D):	19,89	% (HCHH, 5 m)
Application rate (AR):	1,5	kg a.s./ha	Exposed Body Surface Area (BSA):	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
Body weight (BW):	60	kg/person (adults)	Specific Inhalation Exposure (I* <sub>A</sub> ):	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)
Dermal absorption (DA):	9,00	% ('worst case')	Area Treated (A):	1	ha/d (based on High crops, hand held (HCHH))
Inhalation absorption (IA):	100	%	Exposure duration (T):	5	min
AOEL:	0,08	mg/kg bw/d			

**Table A 115: Estimation of longer term resident exposure towards copper**

Adults	Children
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<b>Bystander: Dermal exposure after application in Stone fruits: peach (via spray drift)</b>					
$SDE_B = (AR \times D \times BSA \times DA) / BW$			$SDE_B = (AR \times D \times BSA \times DA) / BW$		
$(150 \times 19,89\% \times 1 \times 9\%) / 60$			$(150 \times 19,89\% \times 0,21 \times 9\%) / 16,15$		
External exposure	29,835	mg/person	External exposure	6,26535	mg/person
External exposure	0,49725	mg/kg bw/d	External exposure	0,3879474	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0447525</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0349153</b>	<b>mg/kg bw/d</b>
<b>Bystander: Inhalation exposure after application in Stone fruits: peach</b>					
$SIE_B = (I^*_A \times AR \times A \times T \times IA) / BW$			$SIE_B = (I^*_A \times AR \times A \times T \times IA) / BW$		
$(0,300 / 360 \times 1,5 \times 1 \times 5 \times 100\%) / 60$			$(0,172 / 360 \times 1,5 \times 1 \times 5 \times 100\%) / 16,15$		
External exposure	0,00625	mg/person	External exposure	0,003592	mg/person
External exposure	0,0001042	mg/kg bw/d	External exposure	0,0002224	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0001042</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0002224</b>	<b>mg/kg bw/d</b>
Total systemic exposure: $SE_B = SDE_B + SIE_B$			Total systemic exposure: $SE_B = SDE_B + SIE_B$		
Total systemic exposure (absorbed dose)	2,6914	mg/person	Total systemic exposure (absorbed dose)	0,5674735	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0448567</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0351377</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>56,07</b>	<b>%</b>	<b>% of AOEL:</b>	<b>43,92</b>	<b>%</b>

**Table A 116: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Stone fruits: peach		<b>Drift (D):</b>	19,89	% (HCHH, 5 m)
<b>Application rate (AR):</b>	1,5	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 117: Estimation of acute bystander exposure towards copper**

Resident exposure towards copper

Adults			Children		
Residents: Dermal exposure after application in Stone fruits: peach (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,015 x 1 x 19,89% x 5% x 7300 x 2 x 9%) / 60			(0,015 x 1 x 19,89% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	2,177955	mg/person	External exposure	0,77571	mg/person
External exposure	0,0362993	mg/kg bw/d	External exposure	0,0480316	mg/kg bw/d
Absorbed dose:	0,0032669	mg/kg bw/d	Absorbed dose:	0,0043228	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,015 x 1 x 19,89% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,05967	mg/person
			External exposure	0,0036947	mg/kg bw/d
			Absorbed dose	0,0018474	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,015 x 1 x 19,89% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0149175	mg/person
			External exposure	0,0009237	mg/kg bw/d
			Absorbed dose	0,0004618	mg/kg bw/d
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,212586	mg/person	Total systemic exposure (absorbed dose)	0,1154177	mg/person
Total systemic exposure (absorbed dose)	0,0035431	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0071466	mg/kg bw/d
% of AOEL:	4,43	%	% of AOEL:	8,93	%

## Tree nuts Walnut, Hazelnut

### Tractor mounted boom spray application outdoors to high crops

**Table A 118: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Walnut, Hazelnut		<b>Drift (D):</b>	8,41	% (HCTM, 5 m)
<b>Application rate (AR):</b>	2,7	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,018	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,01034	mg/kg a.s. (6 hours, children)

<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	8	ha/d (based on High crops, tractor mounted (HCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 119: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Walnut, Hazelnut (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(270 x 8,41% x 1 x 9%) / 60			(270 x 8,41% x 0,21 x 9%) / 16,15		
External exposure	22,707	mg/person	External exposure	4,76847	mg/person
External exposure	0,37845	mg/kg bw/d	External exposure	0,2952613	mg/kg bw/d
Absorbed dose:	0,0340605	mg/kg bw/d	Absorbed dose:	0,0265735	mg/kg bw/d
Bystander: Inhalation exposure after application in Walnut, Hazelnut					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,018 / 360 x 2,7 x 8 x 5 x 100%) / 60			(0,010 / 360 x 2,7 x 8 x 5 x 100%) / 16,15		
External exposure	0,0054	mg/person	External exposure	0,0031034	mg/person
External exposure	0,00009	mg/kg bw/d	External exposure	0,0001922	mg/kg bw/d
Absorbed dose:	0,0000900	mg/kg bw/d	Absorbed dose:	0,0001922	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,04903	mg/person	Total systemic exposure (absorbed dose)	0,4322657	mg/person
Total systemic exposure (absorbed dose)	0,0341505	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0267657	mg/kg bw/d
% of AOEL:	42,69	%	% of AOEL:	33,46	%

**Table A 120: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Walnut, Hazelnut		<b>Drift (D):</b>	8,41	% (HCTM, 5 m)
<b>Application rate (AR):</b>	2,7	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>

			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 121: Estimation of acute bystander exposure towards copper**

Resident exposure towards copper					
Adults			Children		
Residents: Dermal exposure after application in Walnut, Hazelnut (via deposits caused by spray drift)					
$SDE_R = (AR \times NA \times D \times TTR \times TC \times H \times DA) / BW$			$SDE_R = (AR \times NA \times D \times TTR \times TC \times H \times DA) / BW$		
$(0,027 \times 1 \times 8,41\% \times 5\% \times 7300 \times 2 \times 9\%) / 60$			$(0,027 \times 1 \times 8,41\% \times 5\% \times 2600 \times 2 \times 9\%) / 16,15$		
External exposure	1,657611	mg/person	External exposure	0,590382	mg/person
External exposure	0,0276269	mg/kg bw/d	External exposure	0,0365562	mg/kg bw/d
Absorbed dose:	0,0024864	mg/kg bw/d	Absorbed dose:	0,0032901	mg/kg bw/d
Residents: Inhalation exposure to vapour					
$SIE_R = (AC_V \times IR \times IA) / BW$			$SIE_R = (AC_V \times IR \times IA) / BW$		
$(0,001 \times 16,57 \times 100\%) / 60$			$(0,001 \times 8,31 \times 100\%) / 16,15$		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			$SOE_H = (AR \times NA \times D \times TTR \times SE \times SA \times Freq \times H \times OA) / BW$		
			$(0,027 \times 1 \times 8,41\% \times 5\% \times 50\% \times 20 \times 20 \times 2 \times 50\%) / 16,15$		
			External exposure	0,045414	mg/person
			External exposure	0,002812	mg/kg bw/d
			Absorbed dose	0,0014060	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			$SOE_O = (AR \times NA \times D \times DFR \times IgR \times OA) / BW$		
			$(0,027 \times 1 \times 8,41\% \times 20\% \times 25 \times 50\%) / 16,15$		
			External exposure	0,0113535	mg/person
			External exposure	0,000703	mg/kg bw/d
			Absorbed dose	0,0003515	mg/kg bw/d
Total systemic exposure: $SE_R = SDE_R + SIE_R$			Total systemic exposure: $SE_R = SDE_R + SIE_R + SOE_H + SOE_O$		
Total systemic exposure (absorbed dose)	0,165755	mg/person	Total systemic exposure (absorbed dose)	0,0898281	mg/person
Total systemic exposure (absorbed dose)	0,0027626	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0055621	mg/kg bw/d
% of AOEL:	3,45	%	% of AOEL:	6,95	%

### Manual Knapsack application to high crops

**Table A 122: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Walnut, Hazelnut		<b>Drift (D):</b>	8,41	% (HCHH, 5 m)
<b>Application rate (AR):</b>	2,7	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I<sub>A</sub><sup>*</sup>):</b>	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	1	ha/d (based on High crops, hand held (HCHH))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 123: Estimation of longer term resident exposure towards copper**

Bystander exposure towards copper					
Adults			Children		
Bystander: Dermal exposure after application in Walnut, Hazelnut (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(270 x 8,41% x 1 x 9%) / 60			(270 x 8,41% x 0,21 x 9%) / 16,15		
External exposure	22,707	mg/person	External exposure	4,76847	mg/person
External exposure	0,37845	mg/kg bw/d	External exposure	0,2952613	mg/kg bw/d
Absorbed dose:	0,0340605	mg/kg bw/d	Absorbed dose:	0,0265735	mg/kg bw/d
Bystander: Inhalation exposure after application in Walnut, Hazelnut					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,300 / 360 x 2,7 x 1 x 5 x 100%) / 60			(0,172 / 360 x 2,7 x 1 x 5 x 100%) / 16,15		
External exposure	0,01125	mg/person	External exposure	0,0064655	mg/person
External exposure	0,0001875	mg/kg bw/d	External exposure	0,0004003	mg/kg bw/d
Absorbed dose:	0,0001875	mg/kg bw/d	Absorbed dose:	0,0004003	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,05488	mg/person	Total systemic exposure (absorbed dose)	0,4356278	mg/person
Total systemic exposure (absorbed dose)	0,0342480	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0269739	mg/kg bw/d
% of AOEL:	42,81	%	% of AOEL:	33,72	%

**Table A 124: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Walnut, Hazelnut		<b>Drift (D):</b>	8,41	% (HCHH, 5 m)
<b>Application rate (AR):</b>	2,7	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h

	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 125: Estimation of acute bystander exposure towards copper**

Resident exposure towards copper					
Adults			Children		
Residents: Dermal exposure after application in Walnut, Hazelnut (via deposits caused by spray drift)					
$SDE_R = (AR \times NA \times D \times TTR \times TC \times H \times DA) / BW$			$SDE_R = (AR \times NA \times D \times TTR \times TC \times H \times DA) / BW$		
$(0,027 \times 1 \times 8,41\% \times 5\% \times 7300 \times 2 \times 9\%) / 60$			$(0,027 \times 1 \times 8,41\% \times 5\% \times 2600 \times 2 \times 9\%) / 16,15$		
External exposure	1,657611	mg/person	External exposure	0,590382	mg/person
External exposure	0,0276269	mg/kg bw/d	External exposure	0,0365562	mg/kg bw/d
Absorbed dose:	0,0024864	mg/kg bw/d	Absorbed dose:	0,0032901	mg/kg bw/d
Residents: Inhalation exposure to vapour					
$SIE_R = (AC_V \times IR \times IA) / BW$			$SIE_R = (AC_V \times IR \times IA) / BW$		
$(0,001 \times 16,57 \times 100\%) / 60$			$(0,001 \times 8,31 \times 100\%) / 16,15$		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			$SOE_H = (AR \times NA \times D \times TTR \times SE \times SA \times Freq \times H \times OA) / BW$		
			$(0,027 \times 1 \times 8,41\% \times 5\% \times 50\% \times 20 \times 20 \times 2 \times 50\%) / 16,15$		
			External exposure	0,045414	mg/person
			External exposure	0,002812	mg/kg bw/d
			Absorbed dose	0,0014060	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			$SOE_O = (AR \times NA \times D \times DFR \times IgR \times OA) / BW$		
			$(0,027 \times 1 \times 8,41\% \times 20\% \times 25 \times 50\%) / 16,15$		
			External exposure	0,0113535	mg/person
			External exposure	0,000703	mg/kg bw/d
			Absorbed dose	0,0003515	mg/kg bw/d
Total systemic exposure: $SE_R = SDE_R + SIE_R$			Total systemic exposure: $SE_R = SDE_R + SIE_R + SOE_H + SOE_O$		

Total systemic exposure (absorbed dose)	0,165755	mg/person	Total systemic exposure (absorbed dose)	0,0898281	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0027626</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0055621</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>3,45</b>	<b>%</b>	<b>% of AOEL:</b>	<b>6,95</b>	<b>%</b>

**Fruiting vegetables (outdoor): Tomato, Aubergines, Cucumber, Gherkins, Courgette**

**Fruiting vegetables (indoor): Tomato, Aubergines, Melon, Pumpkins, Water-melon**

**Tractor mounted boom spray application outdoors to low crops**

**Table A 126: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Fruiting vegetables		<b>Drift (D):</b>	8,50	% (FCTM, 1 m)
<b>Application rate (AR):</b>	3,25	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,001	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,00057	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	20	ha/d (based on Field Crops, Tractor Mounted (FCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 127: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Fruiting vegetables (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(325 x 8,5% x 1 x 9%) / 60			(325 x 8,5% x 0,21 x 9%) / 16,15		
External exposure	27,625	mg/person	External exposure	5,80125	mg/person
External exposure	0,4604167	mg/kg bw/d	External exposure	0,3592105	mg/kg bw/d
Absorbed dose:	0,0414375	mg/kg bw/d	Absorbed dose:	0,0323289	mg/kg bw/d
Bystander: Inhalation exposure after application in Fruiting vegetables					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		



(0,001 / 360 x 3,25 x 20 x 5 x 100%) / 60			(0,001 / 360 x 3,25 x 20 x 5 x 100%) / 16,15		
External exposure	0,0009028	mg/person	External exposure	0,0005188	mg/person
External exposure	1,505E-05	mg/kg bw/d	External exposure	3,213E-05	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0000150</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0000321</b>	<b>mg/kg bw/d</b>
Total systemic exposure: $SE_B = SDE_B + SIE_B$			Total systemic exposure: $SE_B = SDE_B + SIE_B$		
Total systemic exposure (absorbed dose)	2,4871528	mg/person	Total systemic exposure (absorbed dose)	0,5226313	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0414525</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0323611</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>51,82</b>	<b>%</b>	<b>% of AOEL:</b>	<b>40,45</b>	<b>%</b>

**Table A 128: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Fruiting vegetables		<b>Drift (D):</b>	8,50	% (FCTM, 1 m)
<b>Application rate (AR):</b>	3,25	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 129: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Fruiting vegetables (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,0325 x 1 x 2,77% x 5% x 7300 x 2 x 9%) / 60			(0,0325 x 1 x 2,77% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	2,016625	mg/person	External exposure	0,71825	mg/person
External exposure	0,0336104	mg/kg bw/d	External exposure	0,0444737	mg/kg bw/d
Absorbed dose:	0,0030249	mg/kg bw/d	Absorbed dose:	0,0040026	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		

(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0002762</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0005146</b>	<b>mg/kg bw/d</b>
			<b>Residents: Oral exposure (hand-to-mouth transfer)</b>		
			$SOE_H = (AR \times NA \times D \times TTR \times SE \times SA \times Freq \times H \times OA) / BW$		
			(0,0325 x 1 x 2,77% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,05525	mg/person
			External exposure	0,0034211	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0017105</b>	<b>mg/kg bw/d</b>
			<b>Residents: Oral exposure (object-to-mouth transfer)</b>		
			$SOE_O = (AR \times NA \times D \times DFR \times IgR \times OA) / BW$		
			(0,0325 x 1 x 2,77% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0138125	mg/person
			External exposure	0,0008553	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0004276</b>	<b>mg/kg bw/d</b>
Total systemic exposure: $SE_R = SDE_R + SIE_R$			Total systemic exposure: $SE_R = SDE_R + SIE_R + SOE_H + SOE_O$		
Total systemic exposure (absorbed dose)	0,1980663	mg/person	Total systemic exposure (absorbed dose)	0,1074838	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0033011</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0066553</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>4,13</b>	<b>%</b>	<b>% of AOEL:</b>	<b>8,32</b>	<b>%</b>

### Manual Knapsack application to low crops

**Table A 130: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Fruiting vegetables		<b>Drift (D):</b>	8,50	% (HCHH, 0 m)
<b>Application rate (AR):</b>	3,25	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	1	ha/d (based on High crops, hand held (HCHH))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 131: Estimation of longer term resident exposure towards copper**

<b>Adults</b>	<b>Children</b>
<b>Bystander: Dermal exposure after application in Fruiting vegetables (via spray drift)</b>	
$SDE_B = (AR \times D \times BSA \times DA) / BW$	$SDE_B = (AR \times D \times BSA \times DA) / BW$
(325 x 8,5% x 1 x 9%) / 60	(325 x 8,5% x 0,21 x 9%) / 16,15

External exposure	27,625	mg/person	External exposure	5,80125	mg/person
External exposure	0,4604167	mg/kg bw/d	External exposure	0,3592105	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0414375</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0323289</b>	<b>mg/kg bw/d</b>
<b>Bystander: Inhalation exposure after application in Fruiting vegetables</b>					
$SIE_B = (I^*_A \times AR \times A \times T \times IA) / BW$			$SIE_B = (I^*_A \times AR \times A \times T \times IA) / BW$		
$(0,300 / 360 \times 3,25 \times 1 \times 5 \times 100\%) / 60$			$(0,172 / 360 \times 3,25 \times 1 \times 5 \times 100\%) / 16,15$		
External exposure	0,0135417	mg/person	External exposure	0,0077826	mg/person
External exposure	0,0002257	mg/kg bw/d	External exposure	0,0004819	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0002257</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0004819</b>	<b>mg/kg bw/d</b>
Total systemic exposure: $SE_B = SDE_B + SIE_B$			Total systemic exposure: $SE_B = SDE_B + SIE_B$		
Total systemic exposure (absorbed dose)	2,4997917	mg/person	Total systemic exposure (absorbed dose)	0,5298951	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0416632</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0328108</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>52,08</b>	<b>%</b>	<b>% of AOEL:</b>	<b>41,01</b>	<b>%</b>

**Table A 132: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Fruiting vegetables		<b>Drift (D):</b>	8,50	% (HCHH, 0 m)
<b>Application rate (AR):</b>	3,25	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 133: Estimation of acute bystander exposure towards copper**

<b>Adults</b>	<b>Children</b>
<b>Residents: Dermal exposure after application in Fruiting vegetables (via deposits caused by spray drift)</b>	
$SDE_R = (AR \times NA \times D \times TTR \times TC \times H \times DA) / BW$	$SDE_R = (AR \times NA \times D \times TTR \times TC \times H \times DA) / BW$
$(0,0325 \times 1 \times 0\% \times 5\% \times 7300 \times 2 \times 9\%) / 60$	$(0,0325 \times 1 \times 0\% \times 5\% \times 2600 \times 2 \times 9\%) / 16,15$

External exposure	2,016625	mg/person	External exposure	0,71825	mg/person
External exposure	0,0336104	mg/kg bw/d	External exposure	0,0444737	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0030249</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0040026</b>	<b>mg/kg bw/d</b>
<b>Residents: Inhalation exposure to vapour</b>					
$SIE_R = (AC_V \times IR \times IA) / BW$			$SIE_R = (AC_V \times IR \times IA) / BW$		
$(0,001 \times 16,57 \times 100\%) / 60$			$(0,001 \times 8,31 \times 100\%) / 16,15$		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
<b>Absorbed dose:</b>	<b>0,0002762</b>	<b>mg/kg bw/d</b>	<b>Absorbed dose:</b>	<b>0,0005146</b>	<b>mg/kg bw/d</b>
			<b>Residents: Oral exposure (hand-to-mouth transfer)</b>		
			$SOE_H = (AR \times NA \times D \times TTR \times SE \times SA \times Freq \times H \times OA) / BW$		
			$(0,0325 \times 1 \times 0\% \times 5\% \times 50\% \times 20 \times 20 \times 2 \times 50\%) / 16,15$		
			External exposure	0,05525	mg/person
			External exposure	0,0034211	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0017105</b>	<b>mg/kg bw/d</b>
			<b>Residents: Oral exposure (object-to-mouth transfer)</b>		
			$SOE_O = (AR \times NA \times D \times DFR \times IgR \times OA) / BW$		
			$(0,0325 \times 1 \times 0\% \times 20\% \times 25 \times 50\%) / 16,15$		
			External exposure	0,0138125	mg/person
			External exposure	0,0008553	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0004276</b>	<b>mg/kg bw/d</b>
Total systemic exposure: $SE_R = SDE_R + SIE_R$			Total systemic exposure: $SE_R = SDE_R + SIE_R + SOE_H + SOE_O$		
Total systemic exposure (absorbed dose)	0,1980663	mg/person	Total systemic exposure (absorbed dose)	0,1074838	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0033011</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0066553</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>4,13</b>	<b>%</b>	<b>% of AOEL:</b>	<b>8,32</b>	<b>%</b>

## Legume vegetables: French bean, Peas with pods

### Tractor mounted boom spray application outdoors to low crops

**Table A 134:** Input parameters considered for the estimation of longer term resident exposure

<b>Intended use(s):</b>	Legume vegetables		<b>Drift (D):</b>	8,50	% (FCTM, 1 m)
<b>Application rate (AR):</b>	2,85	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I<sub>A</sub>):</b>	0,001	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,00057	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	20	ha/d (based on Field Crops, Tractor Mounted (FCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min

<b>AOEL:</b>	0,08	mg/kg bw/d			
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**Table A 135: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Legume vegetables (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(285 x 8,5% x 1 x 9%) / 60			(285 x 8,5% x 0,21 x 9%) / 16,15		
External exposure	24,225	mg/person	External exposure	5,08725	mg/person
External exposure	0,40375	mg/kg bw/d	External exposure	0,315	mg/kg bw/d
Absorbed dose:	0,0363375	mg/kg bw/d	Absorbed dose:	0,0283500	mg/kg bw/d
Bystander: Inhalation exposure after application in Legume vegetables					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,001 / 360 x 2,85 x 20 x 5 x 100%) / 60			(0,001 / 360 x 2,85 x 20 x 5 x 100%) / 16,15		
External exposure	0,0007917	mg/person	External exposure	0,000455	mg/person
External exposure	1,319E-05	mg/kg bw/d	External exposure	2,817E-05	mg/kg bw/d
Absorbed dose:	0,0000132	mg/kg bw/d	Absorbed dose:	0,0000282	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,1810417	mg/person	Total systemic exposure (absorbed dose)	0,4583075	mg/person
Total systemic exposure (absorbed dose)	0,0363507	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0283782	mg/kg bw/d
% of AOEL:	45,44	%	% of AOEL:	35,47	%

**Table A 136: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Legume vegetables		<b>Drift (D):</b>	8,50	% (FCTM, 1 m)
<b>Application rate (AR):</b>	2,85	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%

			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d
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**Table A 137: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Legume vegetables (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,0285 x 1 x 2,77% x 5% x 7300 x 2 x 9%) / 60			(0,0285 x 1 x 2,77% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	1,768425	mg/person	External exposure	0,62985	mg/person
External exposure	0,0294738	mg/kg bw/d	External exposure	0,039	mg/kg bw/d
Absorbed dose:	0,0026526	mg/kg bw/d	Absorbed dose:	0,0035100	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,0285 x 1 x 2,77% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,04845	mg/person
			External exposure	0,003	mg/kg bw/d
			Absorbed dose	0,0015000	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,0285 x 1 x 2,77% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0121125	mg/person
			External exposure	0,00075	mg/kg bw/d
			Absorbed dose	0,0003750	mg/kg bw/d
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,1757283	mg/person	Total systemic exposure (absorbed dose)	0,0952778	mg/person
Total systemic exposure (absorbed dose)	0,0029288	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0058996	mg/kg bw/d
% of AOEL:	3,66	%	% of AOEL:	7,37	%

**Table A 138: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Legume vegetables		<b>Drift (D):</b>	8,50	% (HCHH, 0 m)
<b>Application rate (AR):</b>	2,85	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I<sub>A</sub>):</b>	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	1	ha/d (based on High crops, hand held (HCHH))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 139: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Legume vegetables (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(285 x 8,5% x 1 x 9%) / 60			(285 x 8,5% x 0,21 x 9%) / 16,15		
External exposure	24,225	mg/person	External exposure	5,08725	mg/person
External exposure	0,40375	mg/kg bw/d	External exposure	0,315	mg/kg bw/d
Absorbed dose:	0,0363375	mg/kg bw/d	Absorbed dose:	0,0283500	mg/kg bw/d
Bystander: Inhalation exposure after application in Legume vegetables					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,300 / 360 x 2,85 x 1 x 5 x 100%) / 60			(0,172 / 360 x 2,85 x 1 x 5 x 100%) / 16,15		
External exposure	0,011875	mg/person	External exposure	0,0068247	mg/person
External exposure	0,0001979	mg/kg bw/d	External exposure	0,0004226	mg/kg bw/d
Absorbed dose:	0,0001979	mg/kg bw/d	Absorbed dose:	0,0004226	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,192125	mg/person	Total systemic exposure (absorbed dose)	0,4646772	mg/person
Total systemic exposure (absorbed dose)	0,0365354	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0287726	mg/kg bw/d
% of AOEL:	45,67	%	% of AOEL:	35,97	%

**Table A 140: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Legume vegetables		<b>Drift (D):</b>	8,50	% (HCHH, 0 m)
<b>Application rate (AR):</b>	2,85	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h

	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 141: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Legume vegetables (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,0285 x 1 x 0% x 5% x 7300 x 2 x 9%) / 60			(0,0285 x 1 x 0% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	1,768425	mg/person	External exposure	0,62985	mg/person
External exposure	0,0294738	mg/kg bw/d	External exposure	0,039	mg/kg bw/d
Absorbed dose:	0,0026526	mg/kg bw/d	Absorbed dose:	0,0035100	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,0285 x 1 x 0% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,04845	mg/person
			External exposure	0,003	mg/kg bw/d
			Absorbed dose	0,0015000	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,0285 x 1 x 0% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0121125	mg/person
			External exposure	0,00075	mg/kg bw/d
			Absorbed dose	0,0003750	mg/kg bw/d
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,1757283	mg/person	Total systemic exposure (absorbed dose)	0,0952778	mg/person



<b>Total systemic exposure</b> (absorbed dose)	<b>0,0029288</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure</b> (absorbed dose)	<b>0,0058996</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>3,66</b>	<b>%</b>	<b>% of AOEL:</b>	<b>7,37</b>	<b>%</b>

## Table and wine grapes: Grape

### Tractor mounted boom spray application outdoors to high crops

**Table A 142: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	8,02	% (HCTM, 3 m)
<b>Application rate (AR):</b>	3	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,018	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,01034	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	8	ha/d (based on High crops, tractor mounted (HCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 143: Estimation of longer term resident exposure towards copper**

Bystander exposure towards copper					
Adults			Children		
Bystander: Dermal exposure after application in Grape (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(300 x 8,02% x 1 x 9%) / 60			(300 x 8,02% x 0,21 x 9%) / 16,15		
External exposure	24,06	mg/person	External exposure	5,0526	mg/person
External exposure	0,401	mg/kg bw/d	External exposure	0,3128545	mg/kg bw/d
Absorbed dose:	0,0360900	mg/kg bw/d	Absorbed dose:	0,0281569	mg/kg bw/d
Bystander: Inhalation exposure after application in Grape					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,018 / 360 x 3 x 8 x 5 x 100%) / 60			(0,010 / 360 x 3 x 8 x 5 x 100%) / 16,15		
External exposure	0,006	mg/person	External exposure	0,0034483	mg/person
External exposure	0,0001	mg/kg bw/d	External exposure	0,0002135	mg/kg bw/d
Absorbed dose:	0,0001000	mg/kg bw/d	Absorbed dose:	0,0002135	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,1714	mg/person	Total systemic exposure (absorbed dose)	0,4581823	mg/person
Total systemic exposure (absorbed dose)	0,0361900	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0283704	mg/kg bw/d
% of AOEL:	45,24	%	% of AOEL:	35,46	%

**Table A 144: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	8,02	% (HCTM, 3 m)
<b>Application rate (AR):</b>	3	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 145: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Grape (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,03 x 1 x 8,02% x 5% x 7300 x 2 x 9%) / 60			(0,03 x 1 x 8,02% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	1,75638	mg/person	External exposure	0,62556	mg/person
External exposure	0,029273	mg/kg bw/d	External exposure	0,0387344	mg/kg bw/d
Absorbed dose:	0,0026346	mg/kg bw/d	Absorbed dose:	0,0034861	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,03 x 1 x 8,02% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,04812	mg/person
			External exposure	0,0029796	mg/kg bw/d
			Absorbed dose	0,0014898	mg/kg bw/d

			<b>Residents: Oral exposure (object-to-mouth transfer)</b>		
			$SOE_O = (AR \times NA \times D \times DFR \times IgR \times OA) / BW$		
			$(0,03 \times 1 \times 8,02\% \times 20\% \times 25 \times 50\%) / 16,15$		
External exposure		0,01203	mg/person		
External exposure		0,0007449	mg/kg bw/d		
<b>Absorbed dose</b>		<b>0,0003724</b>	<b>mg/kg bw/d</b>		
Total systemic exposure: $SE_R = SDE_R + SIE_R$			Total systemic exposure: $SE_R = SDE_R + SIE_R + SOE_H + SOE_O$		
Total systemic exposure (absorbed dose)	0,1746442	mg/person	Total systemic exposure (absorbed dose)	0,0946854	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0029107</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0058629</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>3,64</b>	<b>%</b>	<b>% of AOEL:</b>	<b>7,33</b>	<b>%</b>

### Manual Knapsack application to high crops

**Table A 146: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	8,02	% (HCHH, 3 m)
<b>Application rate (AR):</b>	3	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	1	ha/d (based on High crops, hand held (HCHH))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 147: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Grape (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(300 x 8,02% x 1 x 9%) / 60			(300 x 8,02% x 0,21 x 9%) / 16,15		
External exposure	24,06	mg/person	External exposure	5,0526	mg/person
External exposure	0,401	mg/kg bw/d	External exposure	0,3128545	mg/kg bw/d
Absorbed dose:	0,0360900	mg/kg bw/d	Absorbed dose:	0,0281569	mg/kg bw/d
Bystander: Inhalation exposure after application in Grape					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,300 / 360 x 3 x 1 x 5 x 100%) / 60			(0,172 / 360 x 3 x 1 x 5 x 100%) / 16,15		
External exposure	0,0125	mg/person	External exposure	0,0071839	mg/person
External exposure	0,0002083	mg/kg bw/d	External exposure	0,0004448	mg/kg bw/d
Absorbed dose:	0,0002083	mg/kg bw/d	Absorbed dose:	0,0004448	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	2,1779	mg/person	Total systemic exposure (absorbed dose)	0,4619179	mg/person

<b>Total systemic exposure</b> (absorbed dose)	<b>0,0362983</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure</b> (absorbed dose)	<b>0,0286017</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>45,37</b>	<b>%</b>	<b>% of AOEL:</b>	<b>35,75</b>	<b>%</b>

**Table A 148: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	8,02	% (HCHH, 3 m)
<b>Application rate (AR):</b>	3	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 149: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Grape (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,03 x 1 x 8,02% x 5% x 7300 x 2 x 9%) / 60			(0,03 x 1 x 8,02% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	1,75638	mg/person	External exposure	0,62556	mg/person
External exposure	0,029273	mg/kg bw/d	External exposure	0,0387344	mg/kg bw/d
Absorbed dose:	0,0026346	mg/kg bw/d	Absorbed dose:	0,0034861	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		

			(0,03 x 1 x 8,02% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,04812	mg/person
			External exposure	0,0029796	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0014898</b>	<b>mg/kg bw/d</b>
			<b>Residents: Oral exposure (object-to-mouth transfer)</b>		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,03 x 1 x 8,02% x 20% x 25 x 50%) / 16,15		
			External exposure	0,01203	mg/person
			External exposure	0,0007449	mg/kg bw/d
			<b>Absorbed dose</b>	<b>0,0003724</b>	<b>mg/kg bw/d</b>
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,1746442	mg/person	Total systemic exposure (absorbed dose)	0,0946854	mg/person
<b>Total systemic exposure (absorbed dose)</b>	<b>0,0029107</b>	<b>mg/kg bw/d</b>	<b>Total systemic exposure (absorbed dose)</b>	<b>0,0058629</b>	<b>mg/kg bw/d</b>
<b>% of AOEL:</b>	<b>3,64</b>	<b>%</b>	<b>% of AOEL:</b>	<b>7,33</b>	<b>%</b>

## Berries and small fruits: Currant

### Tractor mounted boom spray application outdoors to high crops

**Table A 150: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	15,73	% (HCTM, 3 m)
<b>Application rate (AR):</b>	2,16	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,018	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,01034	mg/kg a.s. (6 hours, children)
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	8	ha/d (based on High crops, tractor mounted (HCTM))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 151: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Grape (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(216 x 15,73% x 1 x 9%) / 60			(216 x 15,73% x 0,21 x 9%) / 16,15		
External exposure	33,9768	mg/person	External exposure	7,135128	mg/person
External exposure	0,56628	mg/kg bw/d	External exposure	0,4418036	mg/kg bw/d
Absorbed dose:	0,0509652	mg/kg bw/d	Absorbed dose:	0,0397623	mg/kg bw/d
Bystander: Inhalation exposure after application in Grape					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,018 / 360 x 2,16 x 8 x 5 x 100%) / 60			(0,010 / 360 x 2,16 x 8 x 5 x 100%) / 16,15		
External exposure	0,00432	mg/person	External exposure	0,0024828	mg/person
External exposure	0,000072	mg/kg bw/d	External exposure	0,0001537	mg/kg bw/d
Absorbed dose:	0,0000720	mg/kg bw/d	Absorbed dose:	0,0001537	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	3,062232	mg/person	Total systemic exposure (absorbed dose)	0,6446443	mg/person
Total systemic exposure (absorbed dose)	0,0510372	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0399161	mg/kg bw/d
% of AOEL:	63,80	%	% of AOEL:	49,90	%

**Table A 152: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	15,73	% (HCTM, 3 m)
<b>Application rate (AR):</b>	2,16	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>
			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 153: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Grape (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,0216 x 1 x 8,02% x 5% x 7300 x 2 x 9%) / 60			(0,0216 x 1 x 8,02% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	2,4803064	mg/person	External exposure	0,8833968	mg/person
External exposure	0,0413384	mg/kg bw/d	External exposure	0,0546995	mg/kg bw/d
Absorbed dose:	0,0037205	mg/kg bw/d	Absorbed dose:	0,0049230	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,0216 x 1 x 8,02% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,0679536	mg/person
			External exposure	0,0042077	mg/kg bw/d
			Absorbed dose	0,0021038	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,0216 x 1 x 8,02% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0169884	mg/person
			External exposure	0,0010519	mg/kg bw/d
			Absorbed dose	0,0005260	mg/kg bw/d
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,2397976	mg/person	Total systemic exposure (absorbed dose)	0,1302867	mg/person
Total systemic exposure (absorbed dose)	0,0039966	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0080673	mg/kg bw/d
% of AOEL:	5,00	%	% of AOEL:	10,08	%

### Manual Knapsack application to high crops

**Table A 154: Input parameters considered for the estimation of longer term resident exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	15,73	% (HCHH, 3 m)
<b>Application rate (AR):</b>	2,16	kg a.s./ha	<b>Exposed Body Surface Area (BSA):</b>	1	m <sup>2</sup> (adults)
				0,21	m <sup>2</sup> (children)
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Specific Inhalation Exposure (I*<sub>A</sub>):</b>	0,3	mg/kg a.s. (6 hours, adults)
	16,15	kg/person (children)		0,17241	mg/kg a.s. (6 hours, children)

<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Area Treated (A):</b>	1	ha/d (based on High crops, hand held (HCHH))
<b>Inhalation absorption (IA):</b>	100	%	<b>Exposure duration (T):</b>	5	min
<b>AOEL:</b>	0,08	mg/kg bw/d			

**Table A 155: Estimation of longer term resident exposure towards copper**

Adults			Children		
Bystander: Dermal exposure after application in Grape (via spray drift)					
SDE <sub>B</sub> = (AR x D x BSA x DA) / BW			SDE <sub>B</sub> = (AR x D x BSA x DA) / BW		
(216 x 15,73% x 1 x 9%) / 60			(216 x 15,73% x 0,21 x 9%) / 16,15		
External exposure	33,9768	mg/person	External exposure	7,135128	mg/person
External exposure	0,56628	mg/kg bw/d	External exposure	0,4418036	mg/kg bw/d
Absorbed dose:	0,0509652	mg/kg bw/d	Absorbed dose:	0,0397623	mg/kg bw/d
Bystander: Inhalation exposure after application in Grape					
SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW			SIE <sub>B</sub> = (I* <sub>A</sub> x AR x A x T x IA) / BW		
(0,300 / 360 x 2,16 x 1 x 5 x 100%) / 60			(0,172 / 360 x 2,16 x 1 x 5 x 100%) / 16,15		
External exposure	0,009	mg/person	External exposure	0,0051724	mg/person
External exposure	0,00015	mg/kg bw/d	External exposure	0,0003203	mg/kg bw/d
Absorbed dose:	0,0001500	mg/kg bw/d	Absorbed dose:	0,0003203	mg/kg bw/d
Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>			Total systemic exposure: SE <sub>B</sub> = SDE <sub>B</sub> + SIE <sub>B</sub>		
Total systemic exposure (absorbed dose)	3,066912	mg/person	Total systemic exposure (absorbed dose)	0,6473339	mg/person
Total systemic exposure (absorbed dose)	0,0511152	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0400826	mg/kg bw/d
% of AOEL:	63,89	%	% of AOEL:	50,10	%

**Table A 156: Input parameters considered for the estimation of acute bystander exposure**

<b>Intended use(s):</b>	Grape		<b>Drift (D):</b>	15,73	% (HCHH, 3 m)
<b>Application rate (AR):</b>	2,16	kg a.s./ha	<b>Transfer coefficient (TC):</b>	7300	cm <sup>2</sup> /h (adults)
				2600	cm <sup>2</sup> /h (children)
<b>Number of applications (NA):</b>	1		<b>Turf Transferable Residues (TTR):</b>	5	%
<b>Body weight (BW):</b>	60	kg/person (adults)	<b>Exposure Duration (H):</b>	2	h
	16,15	kg/person (children)	<b>Airborne Concentration of Vapour (ACV):</b>	0,001	mg/m <sup>3</sup>
<b>Dermal absorption (DA):</b>	9,00	% ('worst case')	<b>Inhalation Rate (IR):</b>	16,57	m <sup>3</sup> /d (adults),
<b>Inhalation absorption (IA):</b>	100	%		8,31	m <sup>3</sup> /d (children)
<b>Oral absorption (OA)</b>	50	%	<b>Saliva Extraction Factor (SE):</b>	50	%
<b>AOEL</b>	0,08	mg/kg bw/d	<b>Surface Area of Hands (SA):</b>	20	cm <sup>2</sup>



			<b>Frequency of Hand to Mouth (Freq):</b>	20	events/h
			<b>Dislodgeable foliar residues (DFR):</b>	20	%
			<b>Ingestion Rate for Mouthing of Grass/Day (IgR):</b>	25	cm <sup>2</sup> /d

**Table A 157: Estimation of acute bystander exposure towards copper**

Adults			Children		
Residents: Dermal exposure after application in Grape (via deposits caused by spray drift)					
SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW			SDE <sub>R</sub> = (AR x NA x D x TTR x TC x H x DA) / BW		
(0,0216 x 1 x 8,02% x 5% x 7300 x 2 x 9%) / 60			(0,0216 x 1 x 8,02% x 5% x 2600 x 2 x 9%) / 16,15		
External exposure	2,4803064	mg/person	External exposure	0,8833968	mg/person
External exposure	0,0413384	mg/kg bw/d	External exposure	0,0546995	mg/kg bw/d
Absorbed dose:	0,0037205	mg/kg bw/d	Absorbed dose:	0,0049230	mg/kg bw/d
Residents: Inhalation exposure to vapour					
SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW			SIE <sub>R</sub> = (AC <sub>V</sub> x IR x IA) / BW		
(0,001 x 16,57 x 100%) / 60			(0,001 x 8,31 x 100%) / 16,15		
External exposure	0,01657	mg/person	External exposure	0,00831	mg/person
External exposure	0,0002762	mg/kg bw/d	External exposure	0,0005146	mg/kg bw/d
Absorbed dose:	0,0002762	mg/kg bw/d	Absorbed dose:	0,0005146	mg/kg bw/d
			Residents: Oral exposure (hand-to-mouth transfer)		
			SOE <sub>H</sub> = (AR x NA x D x TTR x SE x SA x Freq x H x OA) / BW		
			(0,0216 x 1 x 8,02% x 5% x 50% x 20 x 20 x 2 x 50%) / 16,15		
			External exposure	0,0679536	mg/person
			External exposure	0,0042077	mg/kg bw/d
			Absorbed dose	0,0021038	mg/kg bw/d
			Residents: Oral exposure (object-to-mouth transfer)		
			SOE <sub>O</sub> = (AR x NA x D x DFR x IgR x OA) / BW		
			(0,0216 x 1 x 8,02% x 20% x 25 x 50%) / 16,15		
			External exposure	0,0169884	mg/person
			External exposure	0,0010519	mg/kg bw/d
			Absorbed dose	0,0005260	mg/kg bw/d
Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub>			Total systemic exposure: SE <sub>R</sub> = SDE <sub>R</sub> + SIE <sub>R</sub> + SOE <sub>H</sub> + SOE <sub>O</sub>		
Total systemic exposure (absorbed dose)	0,2397976	mg/person	Total systemic exposure (absorbed dose)	0,1302867	mg/person
Total systemic exposure (absorbed dose)	0,0039966	mg/kg bw/d	Total systemic exposure (absorbed dose)	0,0080673	mg/kg bw/d
% of AOEL:	5,00	%	% of AOEL:	10,08	%







### A 3.4 Operator exposure calculations according to OPEX model v.0.3.22

#### A 3.4.1 Calculations for copper as copper oxychloride

##### A. Professional user

**Pome frutis** Apple, pear, Quince, Medlar  
**Stone frutis** Cherry, sweet cherry







**Table A 158: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading	Application	Copper oxychloride (% AOEL)	
		Normal & vehicle-mounted	Normal & manual-knapsack
		371	119
		177	10.2
		77.6	7.7

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
<b>Orchards/Outdoor/Upward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Copper oxychloride	Number of applications and application rate: 2 x 0.75 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear + Protected hands + FP1, P1 and similar App: Workwear	0.06	77.6
<b>Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Copper oxychloride	Number of applications and application rate: 2 x 0.75 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.008	10.2

**Stone frutis** Cherry, sweet cherry, apricot, plum







**Table A 159: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading	Application	Copper oxychloride (% AOEL)	
		Normal & manual-knapsack	Normal & vehicle-mounted
		136	631
		14.4	267
		4.9	79

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
<b>Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Number of applications and application rate: 1 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride	M/L: Workwear App: Workwear	0.01	14.4
<b>Orchards/Outdoor/Upward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Number of applications and application rate: 1 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride	M/L: Workwear + Protected hands + FP1, P1 and similar App: Workwear + Protected hands	0.06	79

#### Stone frutis peach

**Table A 160: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**







Mixing/loading	Application	Copper oxychloride (% AOEL)	
		Normal & manual-knapsack	Normal & vehicle-mounted
		136	631
		14.4	267
		4.9	79

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
<b>Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Number of applications and application rate: 1 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride	M/L: Workwear App: Workwear	0.01	14.4
<b>Orchards/Outdoor/Upward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Number of applications and application rate: 1 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride			

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
	M/L: Workwear + Protected hands + FP1, P1 and similar App: Workwear + Protected hands	0.06	79

### Tree nuts Walnut, Hazelnut

**Table A 161: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**







		Copper oxychloride (% AOEL)	
Mixing/loading	Application	Normal & manual-knapsack	Normal & vehicle-mounted
		136	631
		14.4	267
		4.9	79

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
<b>Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Copper oxychloride	Number of applications and application rate: 2 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	14.4
<b>Orchards/Outdoor/Upward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Copper oxychloride	Number of applications and application rate: 2 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear + Protected hands + FP1, P1 and similar App: Workwear + Protected hands	0.06	79

### Fruiting vegetables (outdoor)

Tomato, Aubergines, Cucumber, Gherkins, Courgette

**Table A 162: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**





Mixing/loading	Application	Copper oxychloride (% AOEL)	
		Normal & vehicle-mounted	Normal & manual-knapsack
		698	173
		351	22.9
		83.5	20.3

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Low vegetables/Outdoor/Downward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear + Protected hands + FP1, P1 and similar App: Workwear	0.07	83.5
Low vegetables/Outdoor/Downward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.02	22.9

#### Fruiting vegetables (indoor)

Tomato, Aubergines, Melon, Pumpkins, Watermelon

**Table A 163: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading	Application	Copper oxychloride (% AOEL)
		Normal & manual-knapsack
		49.5
		7.7





Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Low vegetables/Indoor/Downward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Copper oxychloride	Number of applications and application rate: 4 x 0.8 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.006	7.7

### Fruiting vegetables (indoor)

Cucumber

**Table A 164:** Estimation of longer term operator exposure towards copper according to OPEX model v 0.3.22





		Copper oxychloride (% AOEL)
Mixing/loading	Application	Normal & manual-knapsack
		75.8
		10.5



Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Low vegetables/Indoor/Downward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.008	10.5

### Legume vegetables

French bean, Peas with pods

**Table A 165:** Estimation of longer term operator exposure towards copper according to OPEX model v 0.3.22







		Copper oxychloride (% AOEL)	
Mixing/loading	Application	Normal & vehicle-mounted	Normal & manual-knapsack
		631	136
		267	14.4

Mixing/loading	Application	Copper oxychloride (% AOEL)	
		Normal & vehicle-mounted	Normal & manual-knapsack
		79	4.9

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
High vegetables/Outdoor/Upward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 2 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear + Protected hands + FP1, P1 and similar App: Workwear + Protected hands	0.06	79
High vegetables/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 2 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	14.4

**Table and wine grapes**  
Grape

**Table A 166: Estimation of longer term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading	Application	Copper oxychloride (% AOEL)	
		Normal & vehicle-mounted	Normal & manual-knapsack
		547	131
		239	13.1
		95.6	10.4







Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Viticulture/Outdoor/Upward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
	M/L: Workwear + Protected hands + FP2, P2 and similar App: Workwear	0.08	95.6
<b>Viticulture/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Copper oxychloride	Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	13.1

### Berries and small fruits

Currant

**Table A 167: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading	Application	Copper oxychloride (% AOEL)	
		Normal & vehicle-mounted	Normal & manual-knapsack
		530	130
		233	12.8
		92.4	10.2

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
<b>Cane fruit/high berries/Outdoor/Upward spraying/Vehicle-mounted/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Copper oxychloride	Number of applications and application rate: 2 x 1.2 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear + Protected hands + FP2, P2 and similar App: Workwear	0.07	92.4
<b>Cane fruit/high berries/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal</b>			
Copper oxychloride	Number of applications and application rate: 2 x 1.2 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	12.8







## B. Non-professional user

**Pome frutis** Apple, pear, Quince, Medlar

**Stone frutis** Cherry, sweet cherry





**Table A 168:** Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22

Mixing/loading Application		Copper oxychloride (% AOEL) Normal & manual-knapsack
		119
		10.2

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 2 x 0.75 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.008	10.2

**Stone frutis** Cherry, sweet cherry, apricot, plum





**Table A 169:** Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22

Mixing/loading Application		Copper oxychloride (% AOEL) Normal & manual-knapsack
		136
		14.4

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 1 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	14.4

**Stone frutis** peach





**Table A 170: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading Application		Copper oxychloride (% AOEL)
		Normal & manual-knapsack
		136
		14.4

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 1 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	14.4

#### Tree nuts Walnut, Hazelnut

**Table A 171: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**





Mixing/loading Application		Copper oxychloride (% AOEL)
		Normal & manual-knapsack
		136
		14.4

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Orchards/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 2 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	14.4

#### Fruiting vegetables (outdoor)

Tomato, Aubergines, Cucumber, Gherkins, Courgette

**Table A 172: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**





Mixing/loading Application		Copper oxychloride (% AOEL)
		Normal & manual-knapsack
		173
		22.9

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Low vegetables/Outdoor/Downward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride	M/L: Workwear App: Workwear	0.02	22.9

### Fruiting vegetables (indoor)

Tomato, Aubergines, Melon, Pumpkins, Watermelon

**Table A 173: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**





Mixing/loading Application		Copper oxychloride (% AOEL)
		Normal & manual-knapsack
		75.8
		10.5

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Low vegetables/Indoor/Downward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride	M/L: Workwear App: Workwear	0.008	10.5

### Fruiting vegetables (indoor)

Cucumber





**Table A 174: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

		Copper oxychloride (% AOEL)
Mixing/loading	Application	Normal & manual-knapsack
		49.5
		7.7

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Low vegetables/Indoor/Downward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 4 x 0.8 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.006	7.7

**Legume vegetables**  
French bean, Peas with pods





**Table A 175: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

		Copper oxychloride (% AOEL)
Mixing/loading	Application	Normal & manual-knapsack
		136
		14.4

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
High vegetables/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Copper oxychloride	Number of applications and application rate: 2 x 1.5 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %		
	M/L: Workwear App: Workwear	0.01	14.4

**Table and wine grapes**  
Grape





**Table A 176: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading Application		Copper oxychloride (% AOEL) Normal & manual-knapsack
		131
		13.1

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Viticulture/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Number of applications and application rate: 3 x 1.25 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride	M/L: Workwear App: Workwear	0.01	13.1

**Berries and small fruits**  
Currant

**Table A 177: Estimation of short term operator exposure towards copper according to OPEX model v 0.3.22**

Mixing/loading Application		Copper oxychloride (% AOEL) Normal & manual-knapsack
		130
		12.8

Model data	Level of PPE	Total absorbed dose [mg/kg bw per day]	% of systemic AOEL
Cane fruit/high berries/Outdoor/Upward spraying/Manual-knapsack/Drift reduction: 0 %/75th percentile Crop density: Normal			
Number of applications and application rate: 2 x 1.2 kg a.s./ha Dermal absorption (concentrate): 1 % Dermal absorption (in-use dilution): 9 %			
Copper oxychloride	M/L: Workwear App: Workwear	0.01	12.8

### A 3.5 Combined exposure calculations for active substances

Not relevant.

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