

## **Instructions for using the workbook**

The information required for the exposure assessment needs to be entered in the worksheet "**Data entry**".

In the following worksheets formulas calculate the exposure values automatically

Worksheet "**Operator Outdoor Spray AOEM**" is to be for outdoor spray applications. PPE options can be selected in this worksheet

Worksheet "**Operator Granules**" is for granular applications. Currently the calculator does not allow operator exposure for indoor applications. PPE options can be selected in this worksheet

Worksheets "**Resident exposure**" and "**Bystander exposure**" are only relevant for outdoor applications

Worksheet "**Recreational Exposure**" is only applicable for golf course, turf, other sports lawns or amenity turf/grassland areas where members of the public are likely to have access

The combined results of the exposure assessment are presented in worksheet "**Summary**"

This calculator should be used in conjunction with the **Guidance on the Assessment of Exposure for Operators, Workers, Residents and Bystanders in Risk Assessment for Plant Protection Products**

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Note: Some drop-down menus depend on others. To avoid errors, please fill-in from top to bottom

Substance name	Boscalid
Product name	Collis
Reference value non acutely toxic active substance (RVNAS)	0,1 mg/kg bw/day
Reference value acutely toxic active substance (RVAAS)	0,1 mg/kg bw/day
Crop type	Grapes
<b>Substance properties</b>	
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.
Minimum volume water for application (liquids)	200 L/ha
Maximum application rate of active substance	0,128 kg a.s. /ha
50% Dissipation Time DT50	30 days
Initial Dislodgeable Foliar Residue	3 µg/cm <sup>2</sup> of foliage/kg a.s. applied/ha
Dermal absorption of product	7,00%
Dermal absorption of in-use dilution	7,00%
Oral absorption of active substance	44,00%
Inhalation absorption of active substance	100,00%
Vapour pressure of active substance	moderately volatile substances with a vapour pressure between 5*10 <sup>-3</sup> Pa and 10 <sup>-2</sup> Pa
<b>Scenario</b>	
Indoor or Outdoor application	Outdoor
Application method	Upward spraying
Application equipment	Vehicle-mounted
Buffer strip	5 m
Number of applications	3
Interval between multiple applications	7 days
Season (upward spraying orchards only)	not relevant

**Exposure assessment**

Substance	Boscalid	Formulation = Soluble concentrates, emulsifiable concentrate, etc.	Application rate-0,128 kg a.s. /ha	Spray dilution = 0,64 g a.s./l	Vapour pressure = moderately volatile substances with a vapour pressure between 5*10-3Pa and 10-2Pa
Scenario	Grapes / Outdoor / Upward spraying / Vehicle-mounted			Buffer = 5	Number applications = 3, Application interval = 7 days
Percentage Absorption	Dermal for product = 7	Dermal for in use dilution = 7	Oral = 44	Inhalation = 100	
RVNAS	0,1 mg/kg bw/day		RVAAS	0,1 mg/kg bw/day	
DFR	3 µg a.s./cm2 per kg a.s./ha		DT50	30 days	

<b>Operator Model</b>	Mixing, loading and application AOEM				
Potential exposure	Longer term systemic exposure mg/kg bw/day		0,0317	% of RVNAS	31,72%
	Acute systemic exposure mg/kg bw/day		0,2219	% of RVAAS	221,89%
Mixing and Loading		Gloves = No	Clothing = Work wear - arms, body and legs covered	RPE = None	Soluble bags = No
Application		Gloves = No	Clothing = Work wear - arms, body and legs covered	RPE = None	Closed cabin = No
Exposure (including PPE options above)	Longer term systemic exposure mg/kg bw/day		0,0138	% of RVNAS	13,82%
	Acute systemic exposure mg/kg bw/day		0,0554	% of RVAAS	55,39%

<b>Worker - Hand harvesting</b>	Potential exposure mg/kg bw/day		0,2768	% of RVNAS	276,79%
	Working clothing mg/kg bw/day		0,0932	% of RVNAS	93,19%
	Working clothing and gloves mg/kg bw/day			% of RVNAS	

<b>Resident - child</b>	Spray drift (75th percentile) mg/kg bw/day		0,0063	% of RVNAS	6,31%
	Vapour (75th percentile) mg/kg bw/day		0,0161	% of RVNAS	16,05%
	Surface deposits (75th percentile) mg/kg bw/day		0,0002	% of RVNAS	0,25%
	Entry into treated crops (75th percentile) mg/kg bw/day		0,0039	% of RVNAS	3,89%
	All pathways (mean) mg/kg bw/day		0,0234	% of RVNAS	23,42%
<b>Resident - adult</b>	Spray drift (75th percentile) mg/kg bw/day		0,0035	% of RVNAS	3,47%
	Vapour (75th percentile) mg/kg bw/day		0,0035	% of RVNAS	3,45%
	Surface deposits (75th percentile) mg/kg bw/day		0,0001	% of RVNAS	0,09%
	Entry into treated crops (75th percentile) mg/kg bw/day		0,0022	% of RVNAS	2,16%
	All pathways (mean) mg/kg bw/day		0,0075	% of RVNAS	7,51%

<b>Bystander - child</b>	Spray drift (95th percentile) mg/kg bw/day		0,0144	% of RVAAS	14,44%
	Vapour (95th percentile) mg/kg bw/day		0,0161	% of RVAAS	16,05%
	Surface deposits (95th percentile) mg/kg bw/day		0,0006	% of RVAAS	0,57%
	Entry into treated crops (95th percentile) mg/kg bw/day		0,0039	% of RVAAS	3,89%
<b>Bystander - adult</b>	Spray drift (95th percentile) mg/kg bw/day		0,0079	% of RVAAS	7,95%

### Exposure assessment

Vapour (95th percentile) mg/kg bw/day	0,0035	% of RVAAS	3,45%
Surface deposits (95th percentile) mg/kg bw/day	0,0002	% of RVAAS	0,20%
Entry into treated crops (95th percentile) mg/kg bw/day	0,0022	% of RVAAS	2,16%

<b>Recreational Exposure</b>	Child % of RVNAS	Adult % of RVNAS
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**Operator exposure for Collis outdoor spray applications**

Application rate of active substance	0,128 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,28 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	7,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	7,00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
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	5873	21568	AOEM	
	Body	4243	77380	AOEM	
	Head	66	6431	AOEM	
	Protected hands (gloves)	40	254	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	30	187	AOEM	
	Protected head (hood and face shield)	1	364	AOEM	
	Inhalation	4	29	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
Head and respiratory PPE	None		1	1	
Water soluble bag	No		1		

	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Application	Hands	3141	7983	AOEM	No data available for a drift reduction scenario
	Body	11279	65813	AOEM	
	Head	1482	9097	AOEM	
	Protected hands (gloves)	45	1177	AOEM	
	Protected body (workwear or protective garment and sturdy footwear)	147	288	AOEM	
	Inhalation	73	106	AOEM	
	<b>Protective Equipment</b>	Select for inclusion		Penetration factor	Inhalation Protection factor
	Gloves	No			
	Clothing	Work wear - arms, body and legs covered		Incl. in AOEM model	
	Head and respiratory PPE	None		1	1
Closed cab	No		vehicle mounted upward spraying only		

1. Total	Without RPE/PPE	With RPE/PPE
Longer term		
Total systemic exposure from mixing, loading and application (mg a.s./day)	1,9033023	0,8291227
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,0317217	0,0138187
% of RVNAS	31,72%	13,82%
Acute		

Total systemic exposure from mixing, loading and application (mg a.s./day)	13,3136865	3,3234609	
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Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,2218948	0,0553910	
% of RVAAS	221,89%	55,39%	

## 2. Longer term exposure

### 2.1 Mixing and loading

	Systemic exposure [ $\mu\text{g a.s. /day}$ ]	Systemic exposure [ $\mu\text{g a.s./kg bw/day}$ ]	Formula
<b>Without RPE/PPE</b>			
Hands	411,1416656	6,8523611	$D15^*i\_AbsorpProduct$
Body	297,0223597	4,9503727	$D16^*i\_AbsorpProduct$
Head	4,6487695	0,0774795	$D17^*i\_AbsorpProduct$
Inhalation	3,9838748	0,0663979	$D21^*i\_AbsorpInhalation$
Sum	716,7966696	11,9466112	
<b>With RPE/PPE (as selected above)</b>			
Hands	411,1416656	6,8523611	$D18^*i\_AbsorpProduct$
Body	2,0706931	0,0345116	$D19^*i\_AbsorpProduct$ or $D15^*i\_AbsorpProduct^*F24$
Head	4,6487695	0,0774795	$D20^*i\_AbsorpProduct$ or $D17^*i\_AbsorpProduct^*F25$
Inhalation	3,9838748	0,0663979	$D21^*i\_AbsorpInhalation^*G25$
Sum	421,8450030	7,0307501	
Water soluble bag	421,8450030	7,0307501	$C70^*F26$

### 2.2 Application

	Systemic exposure [ $\mu\text{g a.s. /day}$ ]	Systemic exposure [ $\mu\text{g a.s./kg bw/day}$ ]	Formula
<b>Without RPE/PPE</b>			
Hands	219,8612156	3,6643536	$D30^*i\_Absorpnuse$
Body	789,5288601	13,1588143	$D31^*i\_Absorpnuse$
Head	103,7571442	1,7292857	$D32^*i\_Absorpnuse$
Inhalation	73,3583770	1,2226396	$D35^*i\_Absorpnuse$
Sum	1186,5055969	19,7750933	
<b>With RPE/PPE (as selected above)</b>			
Hands	219,8612156	3,6643536	$D33^*i\_Absorpnuse$
Body	10,3009673	0,1716828	$D34^*i\_Absorpnuse$ or $D31^*i\_Absorpnuse^*F38$
Head	103,7571442	1,7292857	$D32^*i\_Absorpnuse^*F39$
Inhalation	73,3583770	1,2226396	$D35^*i\_Absorpnuse^*G39$
Sum	407,2777041	6,7879617	

## 3. Acute exposure

### 3.1 Mixing and loading

	Systemic exposure [ $\mu\text{g a.s. /day}$ ]	Systemic exposure [ $\mu\text{g a.s./kg bw/day}$ ]	Formula
<b>Without RPE/PPE</b>			
Hands	1509,7461699	25,1624362	$E15^*i\_AbsorpProduct$
Body	5416,5709708	90,2761828	$E16^*i\_AbsorpProduct$
Head	450,1507828	7,5025130	$E17^*i\_AbsorpProduct$
Inhalation	28,8840864	0,4814014	$E21^*i\_AbsorpInhalation$
Sum	7405,3520098	123,4225335	
<b>With RPE/PPE (as selected above)</b>			
Hands	1509,7461699	25,1624362	$E18^*i\_AbsorpProduct$
Body	13,1041245	0,2184021	$E19^*i\_AbsorpProduct$ or $E16^*i\_AbsorpProduct^*F24$
Head	450,1507828	7,5025130	$E20^*i\_AbsorpProduct$ or $E17^*i\_AbsorpProduct^*F25$
Inhalation	28,8840864	0,4814014	$E21^*i\_AbsorpInhalation^*G25$
Sum	2001,8851635	33,3647527	
Water soluble bag	2001,8851635	33,3647527	$C104^*F26$

### 2.2 Application

	Systemic exposure [ $\mu\text{g a.s. /day}$ ]	Systemic exposure [ $\mu\text{g a.s./kg bw/day}$ ]	Formula
<b>Without RPE/PPE</b>			
Hands	558,8149415	9,3135824	$E30^*i\_Absorpnuse$
Body	4606,8917721	76,7815295	$E31^*i\_Absorpnuse$
Head	636,8072654	10,6134544	$E32^*i\_Absorpnuse$
Inhalation	105,8205391	1,7636757	$E35^*i\_Absorpnuse$

Sum	5908,3345180	98,4722420	
With RPE/PPE (as selected above)			
Hands	558,8149415	9,3135824	$E33^*i\_Absorpnuse$
Body	20,1329776	0,3355496	$E34^*i\_Absorpnuse$ or $E31^*i\_Absorpnuse^*F38$
Head	636,8072654	10,6134544	$E32^*i\_Absorpnuse^*F39$
Inhalation	105,8205391	1,7636757	$E35^*i\_Absorpnhalation^*G39$
Sum	1321,5757235	22,0262621	



**Operator exposure for Collis granular applications**

Application rate of active substance	0,128 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	1,28 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	7,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	7,00%	<i>i_AbsorInuse</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Indoor or Outdoor application	Outdoor <b>This sheet is only to be used for granular applications</b>	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	

	Exposure values	mg exposure/kg a.s. mixed and loaded		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Mixing and loading	Hands	#N/A	#N/A	#N/A	#N/A
	Body	#N/A	#N/A	#N/A	#N/A
	Inhalation	#N/A	#N/A	#N/A	#N/A
	<b>Protective Equipment</b>	Choose item		Penetration factor	
	Gloves	Chemical resistant gloves			Protection for granules exposure is based on measured values
	Body PPE	Certified protective coverall			
	RPE	None		1	

	Exposure values	mg exposure/kg a.s. applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
Application	Hands	#N/A	#N/A	#N/A	#N/A
	Body	#N/A	#N/A	#N/A	#N/A
	Inhalation	#N/A	#N/A	#N/A	#N/A
	<b>Protective Equipment</b>	Choose item		Penetration factor	
	Gloves	Chemical resistant gloves			Protection for granules exposure is based on measured values
	Body PPE	Certified protective coverall			
	RPE	FP1, P1 and similar		0,25	

1. Total			
	Without RPE/PPE	With RPE/PPE	
Longer term			
Total systemic exposure from mixing, loading and application (mg a.s./day)	#N/A	#N/A	
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	#N/A	#N/A	
% of RVNAS	#N/A	#N/A	

Acute			
Total systemic exposure from mixing, loading and application (mg a.s./day)	#N/A	#N/A	

Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	#N/A	#N/A
% of RVAAS	#N/A	#N/A

## 2. Longer term exposure

### 2.1 Mixing and loading

	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula
<b>Without RPE/PPE</b>			
Hands	#N/A	#N/A	$D14*100*i\_AmountAS*i\_AbsorpProduct$
Body	#N/A	#N/A	$D15*100*i\_AmountAS*i\_AbsorpProduct$
Inhalation	#N/A	#N/A	$D16*i\_AmountAS*i\_AbsorpInhalation$
Sum	#N/A	#N/A	
<b>With RPE/PPE (as selected above)</b>			
Hands	#N/A	#N/A	$D14*i\_AmountAS*i\_AbsorpProduct$
Body	#N/A	#N/A	$D15*i\_AmountAS*i\_AbsorpProduct$
Inhalation	#N/A	#N/A	$D16*i\_AmountAS*i\_AbsorpInhalation*F20$
Sum	#N/A	#N/A	

### 2.2 Application

	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula
<b>Without RPE/PPE</b>			
Hands	#N/A	#N/A	$D25*100*i\_AmountAS*i\_AbsorpInuse$
Body	#N/A	#N/A	$D26*100*i\_AmountAS*i\_AbsorpInuse$
Inhalation	#N/A	#N/A	$D27*i\_AmountAS*i\_AbsorpInhalation$
Sum	#N/A	#N/A	
<b>With RPE/PPE (as selected above)</b>			
Hands	#N/A	#N/A	$D25*i\_AmountAS*i\_AbsorpInuse$
Body	#N/A	#N/A	$D26*i\_AmountAS*i\_AbsorpInuse$
Inhalation	#N/A	#N/A	$D27*i\_AmountAS*i\_AbsorpInhalation*F31$
Sum	#N/A	#N/A	

## 3. Acute exposure

### 3.1 Mixing and loading

	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula
<b>Without RPE/PPE</b>			
Hands	#N/A	#N/A	$E14*100*i\_AmountAS*i\_AbsorpProduct$
Body	#N/A	#N/A	$E15*100*i\_AmountAS*i\_AbsorpProduct$
Inhalation	#N/A	#N/A	$E16*i\_AmountAS*i\_AbsorpInhalation$
Sum	#N/A	#N/A	
<b>With RPE/PPE (as selected above)</b>			
Hands	#N/A	#N/A	$E14*100*i\_AmountAS*i\_AbsorpProduct$
Body	#N/A	#N/A	$E15*100*i\_AmountAS*i\_AbsorpProduct$
Inhalation	#N/A	#N/A	$E16*i\_AmountAS*i\_AbsorpInhalation*F20$
Sum	#N/A	#N/A	

### 3.2 Application

	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula
<b>Without RPE/PPE</b>			
Hands	#N/A	#N/A	$E25*100*i\_AmountAS*i\_AbsorpInuse$
Body	#N/A	#N/A	$E25*100*i\_AmountAS*i\_AbsorpInuse$

Inhalation	#N/A	#N/A	$E26 * i\_AmountAS * i\_Absorplhalation$
Sum	#N/A	#N/A	
<b>With RPE/PPE (as selected above)</b>			
Hands	#N/A	#N/A	$E25 * 100 * i\_AmountAS * i\_Absorplnuse$
Body	#N/A	#N/A	$E26 * 100 * i\_AmountAS * i\_Absorplnuse$
Inhalation	#N/A	#N/A	$E27 * i\_AmountAS * i\_Absorplhalation * F31$
Sum	#N/A	#N/A	

## Worker exposure from residues on foliage for Collis

Crop type	Grapes	
Indoor or outdoor	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Worker's task	Hand harvesting	
Main body parts in contact with foliage	Hand and body	
Application rate of active substance	0,128 kg a.s./ha	<i>i_AppRate</i>
Number of applications	3	<i>i_AppNo</i>
Interval between multiple applications	7 days	<i>i_AppInt</i>
Half-life of active substance	30 days	<i>d_HalfLifeAS</i>
Multiple application factor	2,6	<i>d_MAF</i>
Dermal absorption of the product	7,00%	<i>i_AbsorpProduct</i>
Dermal absorption of the in-use dilution	7,00%	<i>i_Absorplnuse</i>
Dislodgeable foliar residue ( <i>i_AppRate</i> * <i>i_DFR</i> )	0,384 µg a.s./cm <sup>2</sup>	<i>d_DFR</i>
Working hours	8 hr	<i>d_WorkHr</i>
Dermal transfer coefficient - Total potential exposure	30000 cm <sup>2</sup> /hr	<i>d_DermTcUCV</i>
Dermal transfer coefficient - arms, body and legs covered	10100 cm <sup>2</sup> /hr	<i>d_DermTcCV1</i>
Dermal transfer coefficient - hands, arms, body and legs covered	no TC available for this assessment cm <sup>2</sup> /hr	<i>d_DermTcCV2</i>
Inhalation transfer coefficient for automated applications	NA ha/hr*10 <sup>-3</sup>	<i>d_InhalTcAut</i>
Inhalation transfer coefficient for cutting ornamentals	NA ha/hr*10 <sup>-3</sup>	<i>d_InhalTcCut</i>
Inhalation transfer coefficient for sorting / bundling ornamentals	NA ha/hr*10 <sup>-3</sup>	<i>d_InhalTcSort</i>

### 1. Total

	Potential exposure	Work wear - arms, body and legs covered	Working wear and gloves	Comments
Total systemic exposure (mg a.s./day)	16,6073356	5,5911363	no TC available for this assessment	
Total systemic exposure per kg body weight (mg/kg bw/day)	0,2767889	0,0931856		
% of RVNAS	276,79%	93,19%		

### 2. Details

	Systemic exposure		Formula	Comments
	[mg a.s. /day]	[mg a.s./kg bw/day]		
Dermal - Potential	16,6073356	0,2767889	<i>d_DermTcUCV</i> * <i>d_WorkHr</i> * <i>i_DFR</i> * <i>i_MAF</i> /1000* <i>i_Absorplnuse</i>	
Dermal - Work wear - arms, body and legs covered	5,5911363	0,0931856	<i>d_DermTcCV1</i> * <i>d_WorkHr</i> * <i>d_DFR</i> * <i>d_MAF</i> /1000* <i>i_Absorplnuse</i>	
Dermal - Working wear and gloves	no TC available for this assessment		<i>d_DermTcCV2</i> * <i>d_WorkHr</i> * <i>d_DFR</i> * <i>d_MAF</i> /1000* <i>i_Absorplnuse</i>	
Inhalation				Na for outdoor activities

## Resident exposure for Collis

Croptype	Grapes	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	<i>i_AppEquip</i>
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	<i>i_FormVal</i>
Buffer strip	5 m	<i>i_Buffer</i>
Application rate of the product	0,128 kg a.s./ha	<i>i_AppRate</i>
Concentration of active substance (in-use dilution for liquid applications)	0,64 g a.s./l	<i>d_ConcAS</i>
Dermal absorption of product	7,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	7,00%	<i>i_AbsorpInuse</i>
Oral absorption	44,00%	<i>i_AbsorpOrallnuse</i>
Dislodgeable foliar residue ( $i\_AppRate * i\_DFR$ )	0,384 $\mu\text{g a.s./cm}^2$	<i>d_DFR</i>
Vapour pressure of in-use dilution	moderately volatile substances with a vapour pressure between $5 * 10^{-3} \text{Pa}$ and $10^{-2} \text{Pa}$	<i>i_Volat</i>
Concentration in air	0,015 $\text{mg/m}^3$	<i>d_AirCon</i>
Resident dermal spray drift exposure 75th percentile - adult	5,63 ml spray dilution/person	
Resident dermal spray drift exposure 75th percentile - child	1,689 ml spray dilution/person	
Resident inhal. spray drift exposure 75th percentile - adult	0,00210 ml spray dilution/person	
Resident inhal. spray drift exposure 75th percentile - child	0,00164 ml spray dilution/person	
Resident dermal spray drift exposure mean - adult	3,68 ml spray dilution/person	
Resident dermal spray drift exposure mean - child	1,11 ml spray dilution/person	
Resident inhal. spray drift exposure mean - adult	0,00170 ml spray dilution/person	
Resident inhal. spray drift exposure mean - child	0,00133 ml spray dilution/person	
Exposure duration dermal	2 hours	<i>d_ReExpDur</i>
Exposure duration inhalation	24 hours	<i>d_ReExpDurInhal</i>
Exposure duration entry into treated crops	0,25 hours	<i>d_ExpDurTreatCrop</i>
Light clothing adjustment factor	18,0%	<i>d_ClothAF</i>
Breathing rate adult	0,23 $\text{m}^3/\text{day}/\text{kg}$	<i>d_BreathRAd</i>
Breathing rate child (1-3 year old)	1,07 $\text{m}^3/\text{day}/\text{kg}$	<i>d_BreathRCh</i>
Drift percentage on surface (75th percentile)	3,07%	
Drift percentage on surface (mean)	2,32%	
Turf transferable residues percentage	5,00%	<i>d_Turf</i>
Transfer coeff. of surface deposits-adult	7300 $\text{cm}^2/\text{hour}$	<i>d_ReTCAd</i>
Transfer coeff. of surface deposits-child (1-3 year old)	2600 $\text{cm}^2/\text{hour}$	<i>d_ReTCCh</i>
Saliva extraction percentage	50,00%	<i>d_SalExt</i>
Surface area of hands mouthed	20 $\text{cm}^2$	<i>d_AreaHM</i>
Frequency of hand to mouth activity	9,5 events/hour	<i>d_ReFreqHM</i>
Ingestion rate for mouthing of grass per day	25 $\text{cm}^2$	<i>d_MouthGrass</i>
Dislodgeable residues percentage transferability for object to mouth	20,00%	<i>d_DRP</i>
Transfer coefficient for entry into treated crops (75th percentile) - adult	7500 $\text{cm}^2/\text{h}$	<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 $\text{cm}^2/\text{h}$	<i>d_TcEntryCh</i>
Transfer coefficient for entry into treated crops (mean) - adult	5980 $\text{cm}^2/\text{h}$	<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (mean) - child	1794 $\text{cm}^2/\text{h}$	<i>d_TcEntryCh</i>

1. Total

1.1 1-3 year old child

	Spray drift (75th percentile)	Vapour (75th percentile)	Surface deposits (75th percentile)	Entry into treated crops (75th percentile)	All pathways (mean)
Total systemic exposure (mg a.s./day)	0,0630989	0,1605000	0,0024865	0,0389234	0,2341910
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0063099	0,0160500	0,0002487	0,0038923	0,0234191
% of RVNAS	6,31%	16,05%	0,25%	3,89%	23,42%

1.2 Adult

	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0,2081677	0,2070000	0,0051693	0,1297448	0,4506328
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0034695	0,0034500	0,0000862	0,0021624	0,0075105
% of RVNAS	3,47%	3,45%	0,09%	2,16%	7,51%

2. Resident exposure 75th Percentile

	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula	Comments
<b>1-3 year old child</b>				
Spray drift	0,0630989	0,0063099	$((C16 * i\_Absorpnuse * (1 - d\_ClothAF)) + C18) * d\_ConcAS$	the only available values are for the 8 m distance downwind from the middle of the tree trunk, which are assumed to represent 5 m distance from the edge of orchard; the same value is used for 5 and 10 m.
Vapour	0,1605000	0,0160500	$d\_AirCon * d\_BreathRCh * d\_BwChild$	
Surface deposits				
Dermal	0,0018411	0,0001841	$(i\_AppRate / 100) * C29 * d\_Turf * d\_ReTCCh * d\_ReExpDur * MAX(i\_AbsorpProduct, i\_Absorpnuse) * d\_MAF * IF(i\_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$	
Hand to mouth	0,0004228	0,0000423	$(i\_AppRate / 100) * C29 * d\_Turf * d\_SalExt * d\_AreaHM * d\_ReFreqHM * d\_ReExpDur * i\_AbsorpOrallnuse * d\_MAF$	
Object to mouth	0,0002226	0,0000223	$(i\_AppRate / 100) * C29 * d\_DRP * d\_MouthGrass * i\_AbsorpOrallnuse * d\_MAF$	

Entry into treated crops				
Dermal	0,0389234	0,0038923	$(d\_TcEntryCh*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	
Hand to mouth			$(i\_AppRate/100)*d\_Turf*d\_MAF*d\_SalExt*d\_AreaHM*d\_ReFreqHM*d\_ReExpDur*i\_AbsorpOrallnuse$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
Object to mouth			$(i\_AppRate/100)*d\_DRP*d\_MouthGrass*i\_AbsorpOrallnuse*d\_MAF$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
<b>Adult</b>				
Spray drift	0,2081677	0,0034695	$(C15*i\_Absorplnuse*(1-d\_ClothAF))+C17)*d\_ConcAS$	the only available values are for the 8 m distance downwind from the middle of the tree trunk, which are assumed to represent 5 m distance from the edge of orchard; the same value is used for 5 and 10 m.
Vapour	0,2070000	0,0034500	$d\_AirCon*d\_BreathRAD*d\_BwAdult$	
Surface deposits (dermal)	0,0051693	0,0000862	$(i\_AppRate/100)*C30*d\_Turf*d\_ReTCAd*d\_ReExpDur*i\_AbsorpProduct*d\_MAF$	
Entry into treated crops (dermal)	0,1297448	0,0021624	$(d\_TcEntryAd*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	

### 3. Summing of exposure pathways mean

	Systemic exposure [mg a.s./day]	Systemic exposure [mg a.s./kg bw/day]	Formula	Comments
<b>1-3 year old child</b>				
Spray drift	0,0407770	0,0040777	$((C20*i\_Absorplnuse*(1-d\_ClothAF))+C22)*d\_ConcAS$	the only available values are for the 8 m distance downwind from the middle of the tree trunk, which are assumed to represent 5 m distance from the edge of orchard; the same value is used for 5 and 10 m.
Vapour	0,1605000	0,0160500	$d\_AirCon*d\_BreathRCh*d\_BwChild$	
Surface deposits				
Dermal	0,0013913	0,0001391	$(i\_AppRate/100)*C30*d\_Turf*d\_ReTCCh*d\_ReExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$	
Hand to mouth	0,0003195	0,0000320	$(i\_AppRate/100)*C30*d\_Turf*d\_SalExt*d\_AreaHM*d\_ReFreqHM*d\_ReExpDur*i\_AbsorpOrallnuse*d\_MAF$	
Object to mouth	0,0001682	0,0000168	$(i\_AppRate/100)*C30*d\_DRP*d\_MouthGrass*i\_AbsorpOrallnuse*d\_MAF$	
Entry into treated crops				
Dermal	0,0310350	0,0031035	$(d\_TcEntryMeanCh*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse))$	
Hand to mouth			$(i\_AppRate/100)*1*d\_Turf*d\_MAF*d\_SalExt*d\_AreaHM*d\_ReFreqHM*d\_ReExpDur*i\_AbsorpOrallnuse$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
Object to mouth			$(i\_AppRate/100)*1*d\_DRP*d\_MouthGrass*i\_AbsorpOrallnuse*d\_MAF$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
<b>Adult</b>				
Spray drift	0,1362765	0,0022713	$((C19*i\_Absorplnuse*(1-d\_ClothAF))+C21)*d\_ConcAS$	the only available values are for the 8 m distance downwind from the middle of the tree trunk, which are assumed to represent 5 m distance from the edge of orchard; the same value is used for 5 and 10 m.
Vapour	0,2070000	0,0034500	$d\_AirCon*d\_BreathRAD*d\_BwAdult$	
Surface deposits (dermal)	0,0039064	0,0000651	$(i\_AppRate/100)*C30*d\_Turf*d\_ReTCAd*d\_ReExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$	
Entry into treated crops (dermal)	0,1034499	0,0017242	$(d\_TcEntryMeanAd*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	



**Bystander exposure for Collis**

Croptype	Grapes	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	i_AppEquip
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.	
Application rate of the product	0,128 kg a.s./ha	i_AppRate
Buffer strip	5 m	i_Buffer
Concentration of active substance (in-use dilution for liquid applications)	0,64 g a.s./l	d_ConcAS
Dermal absorption of product	7,00%	i_AbsorpProduct
Dermal absorption of in-use dilution	7,00%	i_AbsorpInuse
Oral absorption	44,00%	i_AbsorpOrallnuse
Dislodgeable foliar residue (i_AppRate*i_DFR)	0,384 µg a.s./cm <sup>2</sup>	d_DFR
Vapour pressure of in-use dilution	moderately volatile substances with a vapour pressure between 5*10-3Pa and 10-2Pa Pa	i_Volat
Concentration in air	0,015 mg/m <sup>3</sup>	d_AirCon
Bystander dermal spray drift exposure - adult	12,9 ml spray dilution/person	
Bystander dermal spray drift exposure - child	3,87 ml spray dilution/person	
Bystander inhal. spray drift exposure - adult	0,00440 ml spray dilution/person	
Bystander inhal. spray drift exposure - child	0,00348 ml spray dilution/person	
Exposure duration	2 hours	d_ByExpDur
Exposure duration entry into treated crops	0,25 hours	d_ExpDurTreatCrop
Light clothing adjustment factor	18,0%	d_ClothAF
Breathing rate adult	0,23 m <sup>3</sup> /hours/kg	d_BreathRAd
Breathing rate child (1-3 year old)	1,07 m <sup>3</sup> /hours/kg	d_BreathRCh
Drift percentage on surface (90th percentile)	3,62%	
Turf transferable residues percentage	5,00%	d_Turf
Transfer coeff. of surface deposits-adult	14500 cm <sup>2</sup> /hour	d_ByTCAd
Transfer coeff. of surface deposits-child (1-3 year old)	5200 cm <sup>2</sup> /hour	d_ByTCCh
Saliva extraction percentage	50,00%	d_SalExt
Surface area of hands mouthed	20 cm <sup>2</sup>	d_AreaHM
Frequency of hand to mouth activity	20 events/hour	d_ByFreqHM
Ingestion rate for mouthing of grass per day	25 cm <sup>2</sup>	d_MouthGrass
Dislodgeable residues percentage transferability for object to mouth	20,00%	d_DRP
Transfer coefficient for entry into treated crops - adult	7500 cm <sup>2</sup> /h	d_TcEntryAd
Transfer coefficient for entry into treated crops - child	2250 cm <sup>2</sup> /h	d_TcEntryCh

**1. Total**

**1.1 1-3 year old child**

	Spray drift	Vapour	Surface deposits	Entry into treated crops
Total systemic exposure (mg a.s./day)	0,1443977	0,1605000	0,0056540	0,0389234
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0144398	0,0160500	0,0005654	0,0038923
% of RVAAS	14,44%	16,05%	0,57%	3,89%

**1.2 Adult**

	Spray drift	Vapour	Surface deposits	Entry into treated crops
Total systemic exposure (mg a.s./day)	0,4767104	0,2070000	0,0121072	0,1297448
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0079452	0,0034500	0,0002018	0,0021624
% of RVAAS	7,95%	3,45%	0,20%	2,16%

2. Details

	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula	Comments
<b>1-3 year old child</b>				
Spray drift	0,1443977	0,0144398	$((C16*i\_Absorplnuse*(1-d\_ClothAF))+C18)*d\_ConcAS$	the only available values are for the 8 m distance downwind from the middle of the tree trunk, which are assumed to represent 5 m distance from the edge of orchard; the same value is used for 5 and 10 m.
Vapour	0,1605000	0,0160500	$d\_AirCon*d\_BreathRCh*d\_BwChild$	
Surface deposits				
Dermal	0,0043419	0,0004342	$(i\_AppRate/100)*C24*d\_Turf*d\_ByTCCh*d\_ByExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip="Vehicle-mounted-Drift Reduction",0.5,1)$	
Hand to mouth	0,0010497	0,0001050	$(i\_AppRate/100)*C25*d\_Turf*d\_SalExt*d\_AreaHM*d\_ByFreqHM*d\_ByExpDur*i\_AbsorpOralnuse*d\_MAF$	
Object to mouth	0,0002624	0,0000262	$(i\_AppRate/100)*C25*d\_DRP*d\_MouthGrass*i\_AbsorpOralnuse*d\_MAF$	

Entry into treated crops				
Dermal	0,0389234	0,0038923	$(d\_TcEntryCh*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	
Hand to mouth			$(i\_AppRate/100)*d\_MAF*d\_Turf*d\_SalExt*d\_AreaHM*d\_ByFreqHM*d\_ByExpDur*i\_AbsorpOrallnuse$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
Object to mouth			$(i\_AppRate/100)*d\_DRP*d\_MouthGrass*i\_AbsorpOrallnuse*d\_MAF$	Considered only for application on grassland and lawns and for application on golf course, turf or other sports lawns.
<b>Adult</b>				
Spray drift	0,4767104	0,0079452	$((C15*i\_Absorplnuse*(1-d\_ClothAF))+C17)*d\_ConcAS$	the only available values are for the 8 m distance downwind from the middle of the tree trunk, which are assumed to represent 5 m distance from the edge of orchard; the same value is used for 5 and 10 m.
Vapour	0,2070000	0,0034500	$d\_AirCon*d\_BreathRAD*d\_BwAdult$	
Surface deposits (dermal)	0,0121072	0,0002018	$(i\_AppRate/100)*C24*d\_Turf*d\_ByTCAd*d\_ByExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip="Vehicle-mounted-Drift Reduction",0.5,1)$	
Entry into treated crops (dermal)	0,1297448	0,0021624	$(d\_TcEntryAd*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	

## Recreational exposure for Collis

Croptype		Golf course, turf or other sports lawns	This sheet is only to be used for treatment of grassland used for recreational purposes
Application method		Upward spraying	
Application equipment		Vehicle-mounted	<i>i_AppEquip</i>
Formulation type		Soluble concentrates, emulsifiable concentrate, etc.	<i>i_FormVal</i>
Application rate of the product		0,128 kg a.s./ha	<i>i_AppRate</i>
Dermal absorption of product		7,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution		7,00%	<i>i_Absorplnuse</i>
Oral absorption		44,00%	<i>i_AbsorpOrallnuse</i>
Dislodgeable foliar residue ( $i\_AppRate \cdot i\_DFR$ )		0,384 $\mu\text{g a.s./cm}^2$	<i>d_DFR</i>
Exposure duration dermal		2 hours	<i>d_ReExpDur</i>
Light clothing adjustment factor Adult resident		18,0%	<i>d_ClothAF</i>
Drift percentage on surface		100,00%	
Turf transferable residues percentage		5,00%	<i>d_Turf</i>
Transfer coeff. of surface deposits-adult		7300 $\text{cm}^2/\text{hour}$	<i>d_ReTCAd</i>
Transfer coeff. of surface deposits-child (1-3 year old)		2600 $\text{cm}^2/\text{hour}$	<i>d_ReTCCh</i>
Saliva extraction percentage		50,00%	<i>d_SalExt</i>
Surface area of hands mouthed		20 $\text{cm}^2$	<i>d_AreaHM</i>
Frequency of hand to mouth activity		9,5 events/hour	<i>d_ReFreqHM</i>
Ingestion rate for mouthing of grass per day		25 $\text{cm}^2$	<i>d_MouthGrass</i>

### 2. Details

	Systemic exposure [mg a.s. /day]	Systemic exposure [mg a.s./kg bw/day]	Formula	Comments
<b>1-3 year old child</b>				
Surface deposits				
Dermal	0,0599709	0,0059971	$(i\_AppRate/100) \cdot C13 \cdot d\_Turf \cdot d\_ReTCCh \cdot d\_ReExpDur \cdot \text{MAX}(i\_AbsorpProduct, i\_Absorplnuse) \cdot d\_MAF$	
Hand to mouth	0,0137735	0,0013774	$(i\_AppRate/100) \cdot C13 \cdot d\_Turf \cdot d\_SalExt \cdot d\_AreaHM \cdot d\_ReFreqHM \cdot d\_ReExpDur \cdot i\_AbsorpOrallnuse \cdot d\_MAF$	
Object to mouth	0,0072492	0,0007249	$(i\_AppRate/100) \cdot C13 \cdot d\_DRP \cdot d\_MouthGrass \cdot i\_AbsorpOrallnuse \cdot d\_MAF$	
Total systemic exposure	0,0809937	0,0080994		
% of RVNAS				
<b>Adult</b>				
Surface deposits (dermal)	0,1683799	0,0028063	$(i\_AppRate/100) \cdot C13 \cdot d\_Turf \cdot d\_ReTCAd \cdot d\_ReExpDur \cdot \text{MAX}(i\_AbsorpProduct, i\_Absorplnuse) \cdot d\_MAF$	
% of RVNAS				

<i>d_AirConVol</i>	Concentration in air of moderately volatile substances	0,015 mg/m <sup>3</sup>
<i>d_AirConNonVol</i>	Concentration in air of low volatile substances	0,001 mg/m <sup>3</sup>
<i>d_AreaHM</i>	Surface area of hands mouthed	20 cm <sup>2</sup>
<i>d_AreaTreated</i>	Area treated (defined by crop type)	10 ha
<i>d_BreathRAd</i>	Breathing rate adult residents	0,23 m <sup>3</sup> /day/kg
<i>d_BreathRCh</i>	Breathing rate child (1-3 year old) residents	1,07 m <sup>3</sup> /day/kg
<i>d_BwAdult</i>	Adult body weight	60 kg
<i>d_BwChild</i>	Child body weight (1 to < 3 year olds)	10 kg
<i>d_ByBreathRAd</i>	Breathing rate adult bystander	0,04 m <sup>3</sup> /hours/kg
<i>d_ByBreathRCh</i>	Breathing rate child (1-3 year old) bystander	0,19 m <sup>3</sup> /hours/kg
<i>d_ByExpDur</i>	Exposure duration intense activity breathing rates	2 hours
<i>d_ByFreqHM</i>	Frequency of hand to mouth activity	20 events/hour
<i>d_ByTCAd</i>	Transfer coeff. of surface deposits-adult	14500 cm <sup>2</sup> /hour
<i>d_ByTCCh</i>	Transfer coeff. of surface deposits-child (1-3 year old)	5200 cm <sup>2</sup> /hour
<i>d_ClothAF</i>	Light clothing adjustment factor resident and bystanders	18,0%
<i>d_ConcAs</i>	Concentration of active substance (in-use dilution for liquid applications)	0,64 g a.s./l
<i>d_DFR</i>	Dislodgeable foliar residue (i_AppRate*i_DFR)	0,384 µg a.s./cm <sup>2</sup>
<i>d_DRP</i>	Dislodgeable residues percentage transferability for object to mouth	20,0%
<i>d_HalfLifeAS</i>	Half-life of active substance (DT50)	30 days
<i>d_InhalTcAut</i>	Inhalation transfer coefficient for automated applications	NA ha/hr*10 <sup>^(-3)</sup>
<i>d_InhalTcCut</i>	Inhalation transfer coefficient for cutting ornamentals	NA ha/hr*10 <sup>^(-3)</sup>
<i>d_InhalTcSort</i>	Inhalation transfer coefficient for sorting / bundling ornamentals	NA ha/hr*10 <sup>^(-3)</sup>
<i>d_MAF</i>	Multiple application factor	2,57
<i>d_MouthGrass</i>	Ingestion rate for mouthing of grass per day	25 cm <sup>2</sup> grass/day
<i>d_ReExpDur</i>	Exposure duration resident dermal	2 hours
<i>d_ReExpDurInhal</i>	Exposure duration resident inhalation	24 hours
<i>d_ExpDurTreatCrop</i>	Exposure duration for resident and bystander entry into treated crops	0,25 hours
<i>d_ReFreqHM</i>	Frequency of hand to mouth activity	9,5 events/hour
<i>d_ReTCAd</i>	Transfer coeff. of surface deposits-adult	7300 cm <sup>2</sup> /hour
<i>d_ReTCCh</i>	Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm <sup>2</sup> /hour
<i>d_SalExt</i>	Saliva extraction percentage	50,0%
<i>d_TcEntryAd</i>	Transfer coefficient for entry into treated crops 75th percentile - adult	7500 cm <sup>2</sup> /h
<i>d_TcEntryCh</i>	Transfer coefficient for entry into treated crops 75th percentile - child	2250 cm <sup>2</sup> /h
<i>d_TcEntryMeanAd</i>	Transfer coefficient for entry into treated crops mean - adult	5980 cm <sup>2</sup> /h
<i>d_TcEntryMeanCh</i>	Transfer coefficient for entry into treated crops mean - child	1794 cm <sup>2</sup> /h
<i>d_Turf</i>	Turf transferable residues percentage	5,0%
<i>d_PctExtrapolation</i>	For exposure value 75 percentiles above this amount linear extrapolation is performed	1,5 kg
<i>d_head75ProtectionFactor</i>	Coefficient to estimate head protection factor 75 th Percentile	1,79422
<i>d_head95ProtectionFactor</i>	Coefficient to estimate head protection factor 95 Percentile	1,24705

*sys\_KeyOperator* Variables for operator exposure lookup key  
*sys\_OperatorModel* Operator model

*i\_IndoorOutdoor&i\_FormVal&i\_AppMeth&i\_AppEquip&*

1

RPE reduction factor	
key_MixRPE, ay_MixRPE	
None	1
FP1, P1 and similar	0,25
FP2, P2 and similar	0,1

PPE reduction factor	
key_MixPPEBody, ay_MixPPEBody	
Potential exposure	1
Work wear - arms, body and legs covered	0,1
Certified protective coverall	0,05

PPE reduction factor	
key_MixPPEHead, ay_MixPPEHead	
None	1
Hood	0,5
Hood and visor	0,05
FP1, P1 and similar	0,8
FP2, P2 and similar	0,8

Application: Gloves PPE reduction factor (depending on formulation type)		
key_AppPPEHands, ay_AppPPEHands		
Wettable powder, soluble powder	Chemical resistant gloves	0,05
Granules, fine granules	Chemical resistant gloves	0,05
Wettable granules, soluble granules	Chemical resistant gloves	0,05
Soluble concentrates, emulsifiable concentrate, etc.	Chemical resistant gloves	0,1
Wettable powder, soluble powder	None	1
Granules, fine granules	None	1
Wettable granules, soluble granules	None	1
Soluble concentrates, emulsifiable concentrate, etc.	None	1

Crop dependent exposure parameters									
key_CropType, ay_CropType	Transfer coefficients	Transfer coefficients	no TC available for this assessment	Transfer coefficients	Area Treated				
Crop type	Arm, body and legs covered	Total potential exposure	Activity	hours per day	Body parts involved	Hands, arm, body and legs covered	Type of crop for Resident Bystander	Vehicle Mounted Applications	
Bare soil	NA	NA	NA	NA	NA	NA	Field crops		50
Low berries and other small fruits		3000	5800 Reaching, picking		8 Hand and forearm		750 Field crops		50
Brassica vegetables		2500	5800 Reaching, picking		8 Hand and body		580 Field crops		50
Bulb vegetables		2500	5800 Reaching, picking		8 Hand and body		580 Field crops		50
Cane fruit		4500	22500 Searching, reaching, picking		8 Hand and body		2250 Field crops		10
Cereals		1400	12500 Inspection, irrigation		2 Hand and body	no TC available for this assessment	Field crops		50
Citrus fruit		4500	22500 Searching, reaching, picking		8 Hand and body		2250 Fruit crops		10
Fruiting vegetables		2500	5800 Reaching, picking		8 Hand and body		580 Field crops		50
Grapes		10100	30000 Hand harvesting		8 Hand and body	no TC available for this assessment	Grapes		10
Grassland and lawns		1400	12500 Inspection, irrigation		2 Hand and body	no TC available for this assessment	Field crops		50
Golf course, turf or other sports lawns		2500	5800 Maintenance		8 Hand and body		580 Field crops		50
Hops		1400	12500 Inspection, irrigation		2 Hand and body	no TC available for this assessment	Hops		50
Leaf vegetables and fresh herbs		2500	5800 Reaching, picking		8 Hand and body		580 Field crops		10
Legume vegetables		2500	5800 Reaching, picking		8 Hand and body		580 Field crops		50
Oilfruits		4500	22500 Searching, reaching, picking		8 Hand and body		2250 Fruit crops		10
Oilseeds		1400	12500 Inspection, irrigation		2 Hand and body	no TC available for this assessment	Field crops		50
Ornamentals		5000	14000 Cutting, sorting, bundling, carrying		8 Hand and body		1400 Field crops		10
Pome fruit		4500	22500 Searching, reaching, picking		8 Hand and body		2250 Fruit crops		10
Root and tuber vegetables		1400	12500 Inspection, irrigation		2 Hand and body	no TC available for this assessment	Field crops		50
Stone fruit		4500	22500 Searching, reaching, picking		8 Hand and body		2250 Fruit crops		10
Tree nuts		4500	22500 Searching, reaching, picking		8 Hand and body		2250 Fruit crops		10

Resident Spray Drift					
These values are the 75th Percentiles for Residents (assuming average breathing rates for inhalation exposures)					
key_ResidSpray, ay_ResidSpray	Adults Dermal	Children Dermal	Adults Inhalation	Children Inhalation	
Downward spraying2-3		0,47	0,327	0,0001	0,00022
Downward spraying5		0,24	0,22	0,00009	0,00017
Downward spraying10		0,20	0,18	0,00009	0,00013
Upward spraying2-3	NA	NA	NA	NA	
Upward spraying5		5,63	1,689	0,0021	0,00164
Upward spraying10		5,63	1,689	0,0021	0,00164

Bystander Spray Drift					
These values are the 95th Percentiles for Bystanders (assuming high breathing rates for inhalation exposures)					
key_BySpray, ay_BySpray	Adults Dermal	Children Dermal	Adults Inhalation	Children Inhalation	
Downward spraying2-3		1,21	0,74	0,0005	0,0011
Downward spraying5		0,57	0,48	0,00048	0,0008
Downward spraying10		0,48	0,39	0,00051	0,00076
Upward spraying2-3	NA	NA	NA	NA	
Upward spraying5		12,9	3,87	0,0044	0,0035
Upward spraying10		12,9	3,87	0,0044	0,0035

Mean Spray Drift					
These values are the mean values (assuming average breathing rates for inhalation exposures)					
key_AvgSpray, ay_AvgSpray	Adults Dermal	Children Dermal	Adults Inhalation	Children Inhalation	
Downward spraying2-3		0,22	0,18	0,0001	0,0002
Downward spraying5		0,12	0,12	0,0001	0,0001
Downward spraying10		0,11	0,1	0,0001	0,0001
Upward spraying2-3	NA	NA	NA	NA	
Upward spraying5		3,68	1,11	0,0017	0,0013
Upward spraying10		3,68	1,11	0,0017	0,0013

Resident and bystander Surface Deposits Drift percentage			
Ground sediments in % of the application rate calculated on the basis of percentile values (drift data acc. Rautmann)			
key_ByCropType, ay_ByCropType	Bystander surface deposit (90th Percentile)	Resident surface deposit (77th Percentile)	mean
Field cropsnot relevant2-3		0,085	0,056
Field cropsnot relevant5		0,035	0,023
Field cropsnot relevant10		0,019	0,013
Fruit cropsnot relevant2-3		0,292	0,240
Fruit cropsnot relevant5		0,199	0,158
Fruit cropsnot relevant10		0,118	0,090
Fruit cropsearly (without leaves)2-3		0,292	0,240
Fruit cropsearly (without leaves)5		0,199	0,158

Fruit cropsearly (without leaves)10	0,118	0,090	0,061
Fruit cropslate (dense foliage)2-3	0,157	0,110	0,070
Fruit cropslate (dense foliage)5	0,084	0,060	0,037
Fruit cropslate (dense foliage)10	0,036	0,027	0,016
Grapesnot relevant2-3	0,080	0,069	0,053
Grapesnot relevant5	0,036	0,031	0,023
Grapesnot relevant10	0,012	0,010	0,008
Hopsnot relevant2-3	0,193	0,159	0,100
Hopsnot relevant5	0,116	0,086	0,059
Hopsnot relevant10	0,058	0,037	0,029



1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Mixing Method</b>	<b>Outdoor/Indoor</b>	<b>Formulation type</b>	<b>Application method</b>	<b>Application equipment</b>	<b>Type of exposure</b>	<b>Mixing &amp; Loading 75th percentile</b>	<b>Mixing &amp; Loading 95th percentile</b>	<b>Mixing &amp; Loading Comments</b>	<b>Mixing &amp; Loading Model</b>	<b>Application 75th percentile</b>	<b>Application 95th percentile</b>	<b>Application Comments</b>	<b>Application Model</b>
IndoorGranules, fine granulesApplication of granulesManualBody	Indoor	Granules, fine granules	Application of granules	Manual	Body			Value for application is for combination of mixing&loading and application	PHED	68,8708	253,4438	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
IndoorGranules, fine granulesApplication of granulesManualHands	Indoor	Granules, fine granules	Application of granules	Manual	Hands			Value for application is for combination of mixing&loading and application	PHED	26,5320	94,3636	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
IndoorGranules, fine granulesApplication of granulesManualInhalation	Indoor	Granules, fine granules	Application of granules	Manual	Inhalation			Value for application is for combination of mixing&loading and application	PHED	0,4677	1,5251	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
OutdoorGranules, fine granulesBroadcast application of granulesVehicle-mountedBody	Outdoor	Granules, fine granules	Broadcast application of granules	Vehicle-mounted	Body	0,0162	0,0427	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED	0,0047	0,0151	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
OutdoorGranules, fine granulesBroadcast application of granulesVehicle-mountedHands	Outdoor	Granules, fine granules	Broadcast application of granules	Vehicle-mounted	Hands	0,0015	0,0069	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED	0,0004	0,0018	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
OutdoorGranules, fine granulesBroadcast application of granulesVehicle-mountedInhalation	Outdoor	Granules, fine granules	Broadcast application of granules	Vehicle-mounted	Inhalation	0,0208	0,0784		PHED	0,0012	0,0045		PHED
OutdoorGranules, fine granulesIn furrow application of granulesVehicle-mountedBody	Outdoor	Granules, fine granules	In furrow application of granules	Vehicle-mounted	Body	0,0162	0,0427	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED	0,0047	0,0151	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
OutdoorGranules, fine granulesIn furrow application of granulesVehicle-mountedHands	Outdoor	Granules, fine granules	In furrow application of granules	Vehicle-mounted	Hands	0,0015	0,0069	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED	0,0004	0,0018	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
OutdoorGranules, fine granulesIn furrow application of granulesVehicle-mountedInhalation	Outdoor	Granules, fine granules	In furrow application of granules	Vehicle-mounted	Inhalation	0,0208	0,0784		PHED	0,0012	0,0045		PHED
OutdoorGranules, fine granulesManual application of granulesManualBody	Outdoor	Granules, fine granules	Manual application of granules	Manual	Body			Value for application is for combination of mixing&loading and application	PHED	68,8708	253,4438	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
OutdoorGranules, fine granulesManual application of granulesManualHands	Outdoor	Granules, fine granules	Manual application of granules	Manual	Hands			Value for application is for combination of mixing&loading and application	PHED	26,5320	94,3636	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED
OutdoorGranules, fine granulesManual application of granulesManualInhalation	Outdoor	Granules, fine granules	Manual application of granules	Manual	Inhalation			Value for application is for combination of mixing&loading and application	PHED	0,4677	1,5251	Exposure value originally included use of PPE, calculated potential exposure is 100 times higher assuming a 'worst case' reduction factor of 1% for gloves/coverall	PHED



