

## **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

<b>Substance name</b>	pyrethrinen
<b>Product name</b>	Spruzit Vloeibaar
<b>Reference value non acutely toxic active substance (RVNAS)</b>	0,036 mg/kg bw/day
<b>Reference value acutely toxic active substance (RVAAS)</b>	0,046 mg/kg bw/day
<b>Crop type</b>	Pome fruit
<b>Substance properties</b>	
Formulation type	Soluble concentrates, emulsifiable concentrate, etc.
Minimum volume water for application (liquids)	500 L/ha
Maximum application rate of active substance	0,06 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	10,00%
Dermal absorption of in-use dilution	10,00%
Oral absorption of active substance	100,00%
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	2
Interval between multiple applications	7 days
Season (upward spraying orchards only)	early (without leaves)

**Exposure assessment**

Substance	pyrethrinen	Formulation = Soluble concentrates, emulsifiable concentrate, etc.	Application rate-0,06 kg a.s. /ha	Spray dilution = 0,12 g a.s./l	Vapour pressure = moderately volatile substances with a vapour pressure between 5*10-3Pa and 10-2Pa
Scenario	Pome fruit early (without leaves) / Outdoor / Upward spraying / Vehicle-mounted			Buffer = 5	Number applications = 2, Application interval = 7 days
Percentage Absorption	Dermal for product = 10	Dermal for in use dilution = 10	Oral = 100	Inhalation = 100	
RVNAS	0,036 mg/kg bw/day		RVAAS	0,046 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	0,0232	% of RVNAS	64,33%
	Acute systemic exposure mg/kg bw/day	0,1945	% of RVAAS	422,81%
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	0,0103	% of RVNAS	28,71%
	Acute systemic exposure mg/kg bw/day	0,0400	% of RVAAS	86,88%

<b>Worker - Searching, reaching, picking</b>	Potential exposure mg/kg bw/day	0,0999	% of RVNAS	277,60%
	Working clothing mg/kg bw/day	0,0200	% of RVNAS	55,52%
	Working clothing and gloves mg/kg bw/day	0,0100	% of RVNAS	27,76%

<b>Resident - child</b>	Spray drift (75th percentile) mg/kg bw/day	0,0017	% of RVNAS	4,67%
	Vapour (75th percentile) mg/kg bw/day	0,0161	% of RVNAS	44,58%
	Surface deposits (75th percentile) mg/kg bw/day	0,0007	% of RVNAS	1,97%
	Entry into treated crops (75th percentile) mg/kg bw/day	0,0019	% of RVNAS	5,21%
	All pathways (mean) mg/kg bw/day	0,0192	% of RVNAS	53,23%
<b>Resident - adult</b>	Spray drift (75th percentile) mg/kg bw/day	0,0009	% of RVNAS	2,58%
	Vapour (75th percentile) mg/kg bw/day	0,0035	% of RVNAS	9,58%
	Surface deposits (75th percentile) mg/kg bw/day	0,0002	% of RVNAS	0,59%
	Entry into treated crops (75th percentile) mg/kg bw/day	0,0010	% of RVNAS	2,89%
	All pathways (mean) mg/kg bw/day	0,0050	% of RVNAS	14,01%

<b>Bystander - child</b>	Spray drift (95th percentile) mg/kg bw/day	0,0038	% of RVAAS	8,37%
	Vapour (95th percentile) mg/kg bw/day	0,0161	% of RVAAS	34,89%
	Surface deposits (95th percentile) mg/kg bw/day	0,0017	% of RVAAS	3,70%
	Entry into treated crops (95th percentile) mg/kg bw/day	0,0019	% of RVAAS	4,07%
<b>Bystander - adult</b>	Spray drift (95th percentile) mg/kg bw/day	0,0021	% of RVAAS	4,62%

### Exposure assessment

Vapour (95th percentile) mg/kg bw/day	0,0035	% of RVAAS	7,50%
Surface deposits (95th percentile) mg/kg bw/day	0,0005	% of RVAAS	1,16%
Entry into treated crops (95th percentile) mg/kg bw/day	0,0010	% of RVAAS	2,26%

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

Application rate of active substance	0,06 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	0,6 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	10,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	10,00%	<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	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	3278		
Body	2491	62091	AOEM		
Head	31	3014	AOEM		
Protected hands (gloves)	25	119	AOEM		
Protected body (workwear or protective garment and sturdy footwear)	15	88	AOEM		
Protected head (hood and face shield)	0	171	AOEM		
Inhalation	3	28	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		

Application	Exposure values	µg exposure/day applied		Reference	Comment
		75 <sup>th</sup> centile	95 <sup>th</sup> centile		
		Hands	1604		
Body	5287	30850	AOEM		
Head	695	4264	AOEM		
Protected hands (gloves)	21	552	AOEM		
Protected body (workwear or protective garment and sturdy footwear)	69	135	AOEM		
Inhalation	48	50	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	
<b>Longer term</b>			
Total systemic exposure from mixing, loading and application (mg a.s./day)	1,3895792	0,6201792	
Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,0231597	0,0103363	
% of RVNAS	64,33%	28,71%	
<b>Acute</b>			
Total systemic exposure from mixing, loading and application (mg a.s./day)	11,6696867	2,3978943	

Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day)	0,1944948	0,0399649	
% of RVAAS	422,81%	86,88%	

## 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	327,7737555	5,4628959	$D15^*i\_AbsorpProduct$
Body	249,1069581	4,1517826	$D16^*i\_AbsorpProduct$
Head	3,1130153	0,0518836	$D17^*i\_AbsorpProduct$
Inhalation	3,1796390	0,0529940	$D21^*i\_AbsorpInhalation$
Sum	583,1733678	9,7195561	
<b>With RPE/PPE (as selected above)</b>			
Hands	327,7737555	5,4628959	$D18^*i\_AbsorpProduct$
Body	1,5112974	0,0251883	$D19^*i\_AbsorpProduct$ or $D15^*i\_AbsorpProduct^*F24$
Head	3,1130153	0,0518836	$D20^*i\_AbsorpProduct$ or $D17^*i\_AbsorpProduct^*F25$
Inhalation	3,1796390	0,0529940	$D21^*i\_AbsorpInhalation^*G25$
Sum	335,5777071	5,5929618	
Water soluble bag	335,5777071	5,5929618	$C70^*F26$

### 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	160,4172933	2,6736216	$D30^*i\_AbsorpInuse$
Body	528,7023617	8,8117060	$D31^*i\_AbsorpInuse$
Head	69,4802305	1,1580038	$D32^*i\_AbsorpInuse$
Inhalation	47,8059749	0,7967662	$D35^*i\_AbsorpInhalation$
Sum	806,4058604	13,4400977	
<b>With RPE/PPE (as selected above)</b>			
Hands	160,4172933	2,6736216	$D33^*i\_AbsorpInuse$
Body	6,8979692	0,1149662	$D34^*i\_AbsorpInuse$ or $D31^*i\_AbsorpInuse^*F38$
Head	69,4802305	1,1580038	$D32^*i\_AbsorpInuse^*F39$
Inhalation	47,8059749	0,7967662	$D35^*i\_AbsorpInuse^*G39$
Sum	284,6014679	4,7433578	

## 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	1195,5864333	19,9264406	$E15^*i\_AbsorpProduct$
Body	6209,0772070	103,4846201	$E16^*i\_AbsorpProduct$
Head	301,4402563	5,0240043	$E17^*i\_AbsorpProduct$
Inhalation	28,3674111	0,4727902	$E21^*i\_AbsorpInhalation$
Sum	7734,4713078	128,9078551	
<b>With RPE/PPE (as selected above)</b>			
Hands	1195,5864333	19,9264406	$E18^*i\_AbsorpProduct$
Body	8,7750834	0,1462514	$E19^*i\_AbsorpProduct$ or $E16^*i\_AbsorpProduct^*F24$
Head	301,4402563	5,0240043	$E20^*i\_AbsorpProduct$ or $E17^*i\_AbsorpProduct^*F25$
Inhalation	28,3674111	0,4727902	$E21^*i\_AbsorpInhalation^*G25$
Sum	1534,1691841	25,5694864	
Water soluble bag	1534,1691841	25,5694864	$C104^*F26$

### 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	374,2064340	6,2367739	$E30^*i\_AbsorpInuse$
Body	3084,9721688	51,4162028	$E31^*i\_AbsorpInuse$
Head	426,4334366	7,1072239	$E32^*i\_AbsorpInuse$
Inhalation	49,6033777	0,8267230	$E35^*i\_AbsorpInhalation$
Sum	3935,2154172	65,5869236	
<b>With RPE/PPE (as selected above)</b>			
Hands	374,2064340	6,2367739	$E33^*i\_AbsorpInuse$

Body	13,4819046	0,2246984	<i>E34*i_Absorpnuse or E31*i_Absorpnuse*F38</i>
Head	426,4334366	7,1072239	<i>E32*i_Absorpnuse*F39</i>
Inhalation	49,6033777	0,8267230	<i>E35*i_Absorpnhalation*G39</i>
Sum	863,7251530	14,3954192	

**Operator exposure for Spruzit Vloeibaar granular applications**

Application rate of active substance	0,06 kg a.s./ha	<i>i_AppRate</i>
Assumed area treated	10 ha/day	<i>d_AreaTreated</i>
Amount of active substance applied	0,6 kg a.s./day	<i>i_AmountAS</i>
Dermal absorption of the product	10,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	10,00%	<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
<b>Longer term</b>		
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
<b>Acute</b>		
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	$E26 * i\_AmountAS * i\_AbsorpInhalation$
Sum	#N/A	#N/A	
<b>With RPE/PPE (as selected above)</b>			

Hands	#N/A	#N/A	$E25*100*_i\_AmountAS*_i\_Absorpnuse$
Body	#N/A	#N/A	$E26*100*_i\_AmountAS*_i\_Absorpnuse$
Inhalation	#N/A	#N/A	$E27*_i\_AmountAS*_i\_Absorpnhalation*F31$
Sum	#N/A	#N/A	

## Worker exposure from residues on foliage for Spruzit Vloeibaar

Crop type	Pome fruit	
Indoor or outdoor	Outdoor	
Application method	Upward spraying	
Application equipment	Vehicle-mounted	
Worker's task	Searching, reaching, picking	
Main body parts in contact with foliage	Hand and body	
Application rate of active substance	0,06 kg a.s./ha	<i>i_AppRate</i>
Number of applications	2	<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	1,9	<i>d_MAF</i>
Dermal absorption of the product	10,00%	<i>i_AbsorpProduct</i>
Dermal absorption of the in-use dilution	10,00%	<i>i_AbsorpInuse</i>
Dislodgeable foliar residue ( <i>i_AppRate</i> * <i>i_DFR</i> )	0,18 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	22500 cm <sup>2</sup> /hr	<i>d_DermTcUCV</i>
Dermal transfer coefficient - arms, body and legs covered	4500 cm <sup>2</sup> /hr	<i>d_DermTcCV1</i>
Dermal transfer coefficient - hands, arms, body and legs covered	2250 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)	5,9961616	1,1992323	0,5996162	
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0999360	0,0199872	0,0099936	
% of RVNAS	277,60%	55,52%	27,76%	

### 2. Details

	Systemic exposure		Formula	Comments
	[mg a.s. /day]	[mg a.s./kg bw/day]		
Dermal - Potential	5,9961616	0,0999360	$d\_DermTcUCV * d\_WorkHr * i\_DFR * i\_MAF / 1000 * i\_AbsorpInuse$	
Dermal - Work wear - arms, body and legs covered	1,1992323	0,0199872	$d\_DermTcCV1 * d\_WorkHr * d\_DFR * d\_MAF / 1000 * i\_AbsorpInuse$	
Dermal - Working wear and gloves	0,5996162	0,0099936	$d\_DermTcCV2 * d\_WorkHr * d\_DFR * d\_MAF / 1000 * i\_AbsorpInuse$	
Inhalation				Na for outdoor activities

**Resident exposure for Spruzit Vloeibaar**

Croptype	Pome fruit	
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	0,06 kg a.s./ha	<i>i_AppRate</i>
Concentration of active substance (in-use dilution for liquid applications)	0,12 g a.s./l	<i>d_ConcAS</i>
Dermal absorption of product	10,00%	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	10,00%	<i>i_AbsorpInuse</i>
Oral absorption	100,00%	<i>i_AbsorpOrallnuse</i>
Dislodgeable foliar residue ( $i\_AppRate * i\_DFR$ )	0,18 µg a.s./cm <sup>2</sup>	<i>d_DFR</i>
Vapour pressure of in-use dilution	moderately volatile substances with a vapour pressure between 5*10-3Pa and 10-2Pa	<i>i_Volat</i>
Concentration in air	0,015 mg/m <sup>3</sup>	<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 m <sup>3</sup> /day/kg	<i>d_BreathRAAd</i>
Breathing rate child (1-3 year old)	1,07 m <sup>3</sup> /day/kg	<i>d_BreathRCh</i>
Drift percentage on surface (75th percentile)	15,79%	
Drift percentage on surface (mean)	11,69%	
Turf transferable residues percentage	5,00%	<i>d_Turf</i>
Transfer coeff. of surface deposits-adult	7300 cm <sup>2</sup> /hour	<i>d_ReTCAd</i>
Transfer coeff. of surface deposits-child (1-3 year old)	2600 cm <sup>2</sup> /hour	<i>d_ReTCCh</i>
Saliva extraction percentage	50,00%	<i>d_SalExt</i>
Surface area of hands mouthed	20 cm <sup>2</sup>	<i>d_AreaHM</i>
Frequency of hand to mouth activity	9,5 events/hour	<i>d_ReFreqHM</i>
Ingestion rate for mouthing of grass per day	25 cm <sup>2</sup>	<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 cm <sup>2</sup> /h	<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (75th percentile) - child	2250 cm <sup>2</sup> /h	<i>d_TcEntryCh</i>
Transfer coefficient for entry into treated crops (mean) - adult	5980 cm <sup>2</sup> /h	<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops (mean) - child	1794 cm <sup>2</sup> /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)	0,0168170	0,1605000	0,0071010	0,0187380	0,1916200
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0016817	0,0160500	0,0007101	0,0018738	0,0191620
% of RVNAS	4,67%	44,58%	1,97%	5,21%	53,23%

1.2 Adult

	Spray drift	Vapour	Surface deposits	Entry into treated crops	All pathways (mean)
Total systemic exposure (mg a.s./day)	0,0556512	0,2070000	0,0127993	0,0624600	0,3026925
Total systemic exposure per kg body weight (mg/kg bw/day)	0,0009275	0,0034500	0,0002133	0,0010410	0,0050449
% of RVNAS	2,58%	9,58%	0,59%	2,89%	14,01%

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	0,0168170	0,0016817	$((C16 * i\_Absorpnuse * (1 - d\_ClothAF)) + C18) * d\_ConcAS$	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	0,0045586	0,0004559	$(i\_AppRate / 100) * C29 * d\_Turf * d\_ReTCCh * d\_ReExpDur * MAX(i\_AbsorpProduct, i\_Absorpnuse) * d\_MAF * IF(i\_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$	
Hand to mouth	0,0016657	0,0001666	$(i\_AppRate / 100) * C29 * d\_Turf * d\_SalExt * d\_AreaHM * d\_ReFreqHM * d\_ReExpDur * i\_AbsorpOralnuse * d\_MAF$	
Object to mouth	0,0008767	0,0000877	$(i\_AppRate / 100) * C29 * d\_DRP * d\_MouthGrass * i\_AbsorpOralnuse * d\_MAF$	

Entry into treated crops				
Dermal	0,0187380	0,0018738	$(d\_TcEntryCh*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	
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	0,0556512	0,0009275	$(C15*i\_Absorplnuse*(1-d\_ClothAF))+C17)*d\_ConcAS$	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)	0,0127993	0,0002133	$(i\_AppRate/100)*C30*d\_Turf*d\_ReTCA*d\_ReExpDur*i\_AbsorpProduct*d\_MAF$	
Entry into treated crops (dermal)	0,0624600	0,0010410	$(d\_TcEntryAd*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	

### 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	0,0109224	0,0010922	$((C20*i\_Absorplnuse*(1-d\_ClothAF))+C22)*d\_ConcAS$	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	0,0033750	0,0003375	$(i\_AppRate/100)*C30*d\_Turf*d\_ReTCA*d\_ReExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$	
Hand to mouth	0,0012332	0,0001233	$(i\_AppRate/100)*C30*d\_Turf*d\_SalExt*d\_AreaHM*d\_ReFreqHM*d\_ReExpDur*i\_AbsorpOrallnuse*d\_MAF$	
Object to mouth	0,0006490	0,0000649	$(i\_AppRate/100)*C30*d\_DRP*d\_MouthGrass*i\_AbsorpOrallnuse*d\_MAF$	
Entry into treated crops				
Dermal	0,0149404	0,0014940	$(d\_TcEntryMeanCh*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	
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	0,0364152	0,0006069	$((C19*i\_Absorplnuse*(1-d\_ClothAF))+C21)*d\_ConcAS$	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)	0,0094758	0,0001579	$(i\_AppRate/100)*C30*d\_Turf*d\_ReTCA*d\_ReExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$	
Entry into treated crops (dermal)	0,0498015	0,0008300	$(d\_TcEntryMeanAd*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	

**Bystander exposure for Spruzit Vloeibaar**

Croptype	<b>Pome fruit</b>	
Application method	<b>Upward spraying</b>	
Application equipment	<b>Vehicle-mounted</b>	<i>i_AppEquip</i>
Formulation type	<b>Soluble concentrates, emulsifiable concentrate, etc.</b>	
Application rate of the product	<b>0,06</b> kg a.s./ha	<i>i_AppRate</i>
Buffer strip	<b>5</b> m	<i>i_Buffer</i>
Concentration of active substance (in-use dilution for liquid applications)	<b>0,12</b> g a.s./l	<i>d_ConcAS</i>
Dermal absorption of product	<b>10,00%</b>	<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution	<b>10,00%</b>	<i>i_AbsorpInuse</i>
Oral absorption	<b>100,00%</b>	<i>i_AbsorpOrallnuse</i>
Dislodgeable foliar residue (i_AppRate*i_DFR)	<b>0,18</b> µg a.s./cm <sup>2</sup>	<i>d_DFR</i>
Vapour pressure of in-use dilution	<b>moderately volatile substances with a vapour pressure between 5*10-3Pa and 10-2Pa</b> Pa	<i>i_Volat</i>
Concentration in air	<b>0,015</b> mg/m <sup>3</sup>	<i>d_AirCon</i>
Bystander dermal spray drift exposure - adult	<b>12,9</b> ml spray dilution/person	
Bystander dermal spray drift exposure - child	<b>3,87</b> ml spray dilution/person	
Bystander inhal. spray drift exposure - adult	<b>0,00440</b> ml spray dilution/person	
Bystander inhal. spray drift exposure - child	<b>0,00348</b> ml spray dilution/person	
Exposure duration	<b>2</b> hours	<i>d_ByExpDur</i>
Exposure duration entry into treated crops	<b>0,25</b> hours	<i>d_ExpDurTreatCrop</i>
Light clothing adjustment factor	<b>18,0%</b>	<i>d_ClothAF</i>
Breathing rate adult	<b>0,23</b> m <sup>3</sup> /hours/kg	<i>d_BreathRAd</i>
Breathing rate child (1-3 year old)	<b>1,07</b> m <sup>3</sup> /hours/kg	<i>d_BreathRCh</i>
Drift percentage on surface (90th percentile)	<b>19,89%</b>	
Turf transferable residues percentage	<b>5,00%</b>	<i>d_Turf</i>
Transfer coeff. of surface deposits-adult	<b>14500</b> cm <sup>2</sup> /hour	<i>d_ByTCAd</i>
Transfer coeff. of surface deposits-child (1-3 year old)	<b>5200</b> cm <sup>2</sup> /hour	<i>d_ByTCCh</i>
Saliva extraction percentage	<b>50,00%</b>	<i>d_SalExt</i>
Surface area of hands mouthed	<b>20</b> cm <sup>2</sup>	<i>d_AreaHM</i>
Frequency of hand to mouth activity	<b>20</b> events/hour	<i>d_ByFreqHM</i>
Ingestion rate for mouthing of grass per day	<b>25</b> cm <sup>2</sup>	<i>d_MouthGrass</i>
Dislodgeable residues percentage transferability for object to mouth	<b>20,00%</b>	<i>d_DRP</i>
Transfer coefficient for entry into treated crops - adult	<b>7500</b> cm <sup>2</sup> /h	<i>d_TcEntryAd</i>
Transfer coefficient for entry into treated crops - child	<b>2250</b> cm <sup>2</sup> /h	<i>d_TcEntryCh</i>

**1. Total**

**1.1 1-3 year old child**

	<b>Spray drift</b>	<b>Vapour</b>	<b>Surface deposits</b>	<b>Entry into treated crops</b>
Total systemic exposure (mg a.s./day)	<b>0,0384988</b>	<b>0,1605000</b>	<b>0,0170061</b>	<b>0,0187380</b>
Total systemic exposure per kg body weight (mg/kg bw/day)	<b>0,0038499</b>	<b>0,0160500</b>	<b>0,0017006</b>	<b>0,0018738</b>
% of RVAAS	<b>8,37%</b>	<b>34,89%</b>	<b>3,70%</b>	<b>4,07%</b>

**1.2 Adult**

	<b>Spray drift</b>	<b>Vapour</b>	<b>Surface deposits</b>	<b>Entry into treated crops</b>
Total systemic exposure (mg a.s./day)	<b>0,1274640</b>	<b>0,2070000</b>	<b>0,0320245</b>	<b>0,0624600</b>
Total systemic exposure per kg body weight (mg/kg bw/day)	<b>0,0021244</b>	<b>0,0034500</b>	<b>0,0005337</b>	<b>0,0010410</b>
% of RVAAS	<b>4,62%</b>	<b>7,50%</b>	<b>1,16%</b>	<b>2,26%</b>

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	0,0384988	0,0038499	$((C16*i\_Absorplnuse*(1-d\_ClothAF))+C18)*d\_ConcAS$	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	0,0114846	0,0011485	$(i\_AppRate/100)*C24*d\_Turf*d\_ByTCCh*d\_ByExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip="Vehicle-mounted-Drift Reduction",0.5,1)$	
Hand to mouth	0,0044172	0,0004417	$(i\_AppRate/100)*C25*d\_Turf*d\_SalExt*d\_AreaHM*d\_ByFreqHM*d\_ByExpDur*i\_AbsorpOralnuse*d\_MAF$	
Object to mouth	0,0011043	0,0001104	$(i\_AppRate/100)*C25*d\_DRP*d\_MouthGrass*i\_AbsorpOralnuse*d\_MAF$	

Entry into treated crops				
Dermal	0,0187380	0,0018738	$(d\_TcEntryCh*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	
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	0,1274640	0,0021244	$((C15*i\_Absorplnuse*(1-d\_ClothAF)t)+C17)*d\_ConcAS$	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)	0,0320245	0,0005337	$(i\_AppRate/100)*C24*d\_Turf*d\_ByTCAd*d\_ByExpDur*MAX(i\_AbsorpProduct,i\_Absorplnuse)*d\_MAF*IF(i\_AppEquip="Vehicle-mounted-Drift Reduction",0.5,1)$	
Entry into treated crops (dermal)	0,0624600	0,0010410	$(d\_TcEntryAd*0.25*d\_DFR*d\_MAF)/1000*MAX(i\_AbsorpProduct,i\_Absorplnuse)$	



## Recreational exposure for Spruzit Vloeibaar

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		0,06	kg a.s./ha		<i>i_AppRate</i>
Dermal absorption of product		10,00%			<i>i_AbsorpProduct</i>
Dermal absorption of in-use dilution		10,00%			<i>i_Absorplnuse</i>
Oral absorption		100,00%			<i>i_AbsorpOrallnuse</i>
Dislodgeable foliar residue ( $i\_AppRate * i\_DFR$ )		0,18	$\mu\text{g a.s./cm}^2$		<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_ReTCAAd</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	0,0288704	0,0028870	$(i\_AppRate/100) * C13 * d\_Turf * d\_ReTCCh * d\_ReExpDur * \text{MAX}(i\_AbsorpProduct, i\_Absorplnuse) * d\_MAF$	
Hand to mouth	0,0105488	0,0010549	$(i\_AppRate/100) * C13 * d\_Turf * d\_SalExt * d\_AreaHM * d\_ReFreqHM * d\_ReExpDur * i\_AbsorpOrallnuse * d\_MAF$	
Object to mouth	0,0055520	0,0005552	$(i\_AppRate/100) * C13 * d\_DRP * d\_MouthGrass * i\_AbsorpOrallnuse * d\_MAF$	
Total systemic exposure	0,0449712	0,0044971		
% of RVNAS				
<b>Adult</b>				
Surface deposits (dermal)	0,0810592	0,0013510	$(i\_AppRate/100) * C13 * d\_Turf * d\_ReTCAAd * d\_ReExpDur * \text{MAX}(i\_AbsorpProduct, i\_Absorplnuse) * d\_MAF$	
% of RVNAS				

<i>d_AirConVol</i>	Concentration in air of moderately volatile substances	<b>0,015</b> mg/m <sup>3</sup>
<i>d_AirConNonVol</i>	Concentration in air of low volatile substances	<b>0,001</b> mg/m <sup>3</sup>
<i>d_AreaHM</i>	Surface area of hands mouthed	<b>20</b> cm <sup>2</sup>
<i>d_AreaTreated</i>	Area treated (defined by crop type)	<b>10</b> ha
<i>d_BreathRAd</i>	Breathing rate adult residents	<b>0,23</b> m <sup>3</sup> /day/kg
<i>d_BreathRCh</i>	Breathing rate child (1-3 year old) residents	<b>1,07</b> m <sup>3</sup> /day/kg
<i>d_BwAdult</i>	Adult body weight	<b>60</b> kg
<i>d_BwChild</i>	Child body weight (1 to < 3 year olds)	<b>10</b> kg
<i>d_ByBreathRAd</i>	Breathing rate adult bystander	<b>0,04</b> m <sup>3</sup> /hours/kg
<i>d_ByBreathRCh</i>	Breathing rate child (1-3 year old) bystander	<b>0,19</b> m <sup>3</sup> /hours/kg
<i>d_ByExpDur</i>	Exposure duration intense activity breathing rates	<b>2</b> hours
<i>d_ByFreqHM</i>	Frequency of hand to mouth activity	<b>20</b> events/hour
<i>d_ByTCAd</i>	Transfer coeff. of surface deposits-adult	<b>14500</b> cm <sup>2</sup> /hour
<i>d_ByTCCh</i>	Transfer coeff. of surface deposits-child (1-3 year old)	<b>5200</b> cm <sup>2</sup> /hour
<i>d_ClothAF</i>	Light clothing adjustment factor resident and bystanders	<b>18,0%</b>
<i>d_ConcAs</i>	Concentration of active substance (in-use dilution for liquid applications)	<b>0,12</b> g a.s./l
<i>d_DFR</i>	Dislodgeable foliar residue (i_AppRate*i_DFR)	<b>0,18</b> µg a.s./cm <sup>2</sup>
<i>d_DRP</i>	Dislodgeable residues percentage transferability for object to mouth	<b>20,0%</b>
<i>d_HalfLifeAS</i>	Half-life of active substance (DT50)	<b>30</b> days
<i>d_InhalTcAut</i>	Inhalation transfer coefficient for automated applications	<b>NA</b> ha/hr*10 <sup>^-3</sup>
<i>d_InhalTcCut</i>	Inhalation transfer coefficient for cutting ornamentals	<b>NA</b> ha/hr*10 <sup>^-3</sup>
<i>d_InhalTcSort</i>	Inhalation transfer coefficient for sorting / bundling ornamentals	<b>NA</b> ha/hr*10 <sup>^-3</sup>
<i>d_MAF</i>	Multiple application factor	<b>1,85</b>
<i>d_MouthGrass</i>	Ingestion rate for mouthing of grass per day	<b>25</b> cm <sup>2</sup> grass/day
<i>d_ReExpDur</i>	Exposure duration resident dermal	<b>2</b> hours
<i>d_ReExpDurInhal</i>	Exposure duration resident inhalation	<b>24</b> hours
<i>d_ExpDurTreatCrop</i>	Exposure duration for resident and bystander entry into treated crops	<b>0,25</b> hours
<i>d_ReFreqHM</i>	Frequency of hand to mouth activity	<b>9,5</b> events/hour
<i>d_ReTCAd</i>	Transfer coeff. of surface deposits-adult	<b>7300</b> cm <sup>2</sup> /hour
<i>d_ReTCCh</i>	Transfer coeff. of surface deposits-child (1-3 year old)	<b>2600</b> cm <sup>2</sup> /hour
<i>d_SalExt</i>	Saliva extraction percentage	<b>50,0%</b>
<i>d_TcEntryAd</i>	Transfer coefficient for entry into treated crops 75th percentile - adult	<b>7500</b> cm <sup>2</sup> /h
<i>d_TcEntryCh</i>	Transfer coefficient for entry into treated crops 75th percentile - child	<b>2250</b> cm <sup>2</sup> /h
<i>d_TcEntryMeanAd</i>	Transfer coefficient for entry into treated crops mean - adult	<b>5980</b> cm <sup>2</sup> /h
<i>d_TcEntryMeanCh</i>	Transfer coefficient for entry into treated crops mean - child	<b>1794</b> cm <sup>2</sup> /h
<i>d_Turf</i>	Turf transferable residues percentage	<b>5,0%</b>
<i>d_PctExtrapolation</i>	For exposure value 75 percentiles above this amount linear extrapolation is performed	<b>1,5</b> kg
<i>d_head75ProtectionFactor</i>	Coefficient to estimate head protection factor 75 th Percentile	<b>1,79422</b>
<i>d_head95ProtectionFactor</i>	Coefficient to estimate head protection factor 95 Percentile	<b>1,24705</b>

*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	2250	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	0,041
Field cropsnot relevant5		0,035	0,023	0,018
Field cropsnot relevant10		0,019	0,013	0,010
Fruit cropsnot relevant2-3		0,292	0,240	0,190
Fruit cropsnot relevant5		0,199	0,158	0,117
Fruit cropsnot relevant10		0,118	0,090	0,061
Fruit cropsearly (without leaves)2-3		0,292	0,240	0,190
Fruit cropsearly (without leaves)5		0,199	0,158	0,117

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>Match 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



