

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**

Latest version: 23 Oct 2014 - Version produced to support guidance document published 23/10/2014

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

| | | |
|---|---|--|
| Substance name | piperonylbutoxide | |
| Product name | Spruzit Vloeibaar | |
| Reference value non acutely toxic active substance (RVNAS) | 0,41 | mg/kg bw/day |
| Reference value acutely toxic active substance (RVAAS) | 1,11 | mg/kg bw/day |
| Crop type | Pome fruit | |
| Substance properties | Soluble concentrates, emulsifiable concentrate, etc. | |
| Formulation type | 500 | L/ha |
| Minimum volume water for application (liquids) | 0,24 | kg a.s. /ha |
| Maximum application rate of active substance | 30 | days |
| 50% Dissipation Time DT50 | 3 | µg/cm ² of foliage/kg a.s. applied/ha |
| Initial Dislodgeable Foliar Residue | 10,00% | |
| Dermal absorption of product | 10,00% | |
| Dermal absorption of in-use dilution | 100,00% | |
| Oral absorption of active substance | 100,00% | |
| Inhalation absorption of active substance | moderately volatile substances with a vapour pressure between 5*10 ⁻³ Pa and 10 ⁻² Pa | |
| Vapour pressure of active substance | | |
| Scenario | Outdoor | |
| Indoor or Outdoor application | Upward spraying | |
| Application method | Vehicle-mounted | |
| Application equipment | 5 | m |
| Buffer strip | 2 | |
| Number of applications | 7 | days |
| Interval between multiple applications | early (without leaves) | |
| Season (upward spraying orchards only) | | |

Exposure assessment

| | | | | | |
|-----------------------|---|--|-----------------------------------|--------------------------------|---|
| Substance | piperonylbutoxide | Formulation = Soluble concentrates, emulsifiable concentrate, etc. | Application rate-0,24 kg a.s. /ha | Spray dilution = 0,48 g a.s./l | Vapour pressure = moderately volatile substances with a vapour pressure between 5*10 ⁻³ Pa and 10 ⁻² Pa |
| 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 | 0,41 mg/kg bw/day | | RVAAS | 1,11 mg/kg bw/day | |
| DFR | 3 µg a.s./cm ² per kg a.s./ha | | DT50 | 30 days | |

| | | | | |
|--|--|--|------------|-------------------|
| Operator Model | Mixing, loading and application AOEM | | | |
| Potential exposure | Longer term systemic exposure mg/kg bw/day | 0,0779 | % of RVNAS | 19,01% |
| | Acute systemic exposure mg/kg bw/day | 0,4964 | % of RVAAS | 44,72% |
| 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 | 0,0322 | % of RVNAS | 7,86% |
| | Acute systemic exposure mg/kg bw/day | 0,1374 | % of RVAAS | 12,38% |

| | | | | |
|--|--|--------|------------|--------|
| Worker - Searching, reaching, picking | Potential exposure mg/kg bw/day | 0,3997 | % of RVNAS | 97,50% |
| | Working clothing mg/kg bw/day | 0,0799 | % of RVNAS | 19,50% |
| | Working clothing and gloves mg/kg bw/day | 0,0400 | % of RVNAS | 9,75% |

| | | | | |
|-------------------------|---|--------|------------|-------|
| Resident - child | Spray drift (75th percentile) mg/kg bw/day | 0,0067 | % of RVNAS | 1,64% |
| | Vapour (75th percentile) mg/kg bw/day | 0,0161 | % of RVNAS | 3,91% |
| | Surface deposits (75th percentile) mg/kg bw/day | 0,0028 | % of RVNAS | 0,69% |
| | Entry into treated crops (75th percentile) mg/kg bw/day | 0,0075 | % of RVNAS | 1,83% |
| | All pathways (mean) mg/kg bw/day | 0,0285 | % of RVNAS | 6,95% |
| Resident - adult | Spray drift (75th percentile) mg/kg bw/day | 0,0037 | % of RVNAS | 0,90% |
| | Vapour (75th percentile) mg/kg bw/day | 0,0035 | % of RVNAS | 0,84% |
| | Surface deposits (75th percentile) mg/kg bw/day | 0,0009 | % of RVNAS | 0,21% |
| | Entry into treated crops (75th percentile) mg/kg bw/day | 0,0042 | % of RVNAS | 1,02% |
| | All pathways (mean) mg/kg bw/day | 0,0098 | % of RVNAS | 2,40% |

| | | | | |
|--------------------------|---|--------|------------|-------|
| Bystander - child | Spray drift (95th percentile) mg/kg bw/day | 0,0154 | % of RVAAS | 1,39% |
| | Vapour (95th percentile) mg/kg bw/day | 0,0161 | % of RVAAS | 1,45% |
| | Surface deposits (95th percentile) mg/kg bw/day | 0,0068 | % of RVAAS | 0,61% |
| | Entry into treated crops (95th percentile) mg/kg bw/day | 0,0075 | % of RVAAS | 0,68% |
| Bystander - adult | Spray drift (95th percentile) mg/kg bw/day | 0,0085 | % of RVAAS | 0,77% |

Exposure assessment

| | | | |
|---|--------|------------|-------|
| Vapour (95th percentile) mg/kg bw/day | 0,0035 | % of RVAAS | 0,31% |
| Surface deposits (95th percentile) mg/kg bw/day | 0,0021 | % of RVAAS | 0,19% |
| Entry into treated crops (95th percentile) mg/kg bw/day | 0,0042 | % of RVAAS | 0,38% |

| | | |
|------------------------------|------------------|------------------|
| Recreational Exposure | Child % of RVNAS | Adult % of RVNAS |
|------------------------------|------------------|------------------|

Latest version: 23 Oct 2014 - Version produced to support guidance document published 23/10/2014

Operator exposure for Spruzit Vloeibaar outdoor spray applications

| | | |
|--------------------------------------|--|------------------------|
| Application rate of active substance | 0,24 kg a.s./ha | <i>i_AppRate</i> |
| Assumed area treated | 10 ha/day | <i>d_AreaTreated</i> |
| Amount of active substance applied | 2,4 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 th centile | 95 th centile | | |
| | | Hands | 9529 | | |
| Body | 6601 | 92884 | AOEM | | |
| Head | 125 | 12058 | AOEM | | |
| Protected hands (gloves) | 61 | 475 | AOEM | | |
| Protected body (workwear or protective garment and sturdy footwear) | 52 | 351 | AOEM | | |
| Protected head (hood and face shield) | 2 | 683 | AOEM | | |
| Inhalation | 5 | 29 | AOEM | | |
| Protective Equipment | Select for inclusion | | Penetration factor | Inhalation Protection factor | |
| Gloves | No | | | | |
| Clothing | Work wear - arms, body and legs covered | | Incl. in AOEM model | | |
| Head and respiratory PPE | None | | 1 | 1 | |
| Water soluble bag | No | | 1 | | |

| Application | Exposure values | µg exposure/day applied | | Reference | Comment |
|---|---|--------------------------|--------------------------------------|------------------------------|---------|
| | | 75 th centile | 95 th centile | | |
| | | Hands | 5485 | | |
| Body | 21148 | 123399 | AOEM | | |
| Head | 2779 | 17057 | AOEM | | |
| Protected hands (gloves) | 84 | 2207 | AOEM | | |
| Protected body (workwear or protective garment and sturdy footwear) | 276 | 539 | AOEM | | |
| Inhalation | 105 | 198 | AOEM | | |
| Protective Equipment | Select for inclusion | | Penetration factor | Inhalation Protection factor | |
| Gloves | No | | | | |
| Clothing | Work wear - arms, body and legs covered | | Incl. in AOEM model | | |
| Head and respiratory PPE | None | | 1 | 1 | |
| Closed cab | No | | vehicle mounted upward spraying only | | |

| 1. Total | Without RPE/PPE | With RPE/PPE |
|--|-----------------|--------------|
| Longer term | | |
| Total systemic exposure from mixing, loading and application (mg a.s./day) | 4,6760851 | 1,9339588 |
| Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day) | 0,0779348 | 0,0322326 |
| % of RVNAS | 19,01% | 7,86% |
| Acute | | |
| Total systemic exposure from mixing, loading and application (mg a.s./day) | 29,7830080 | 8,2437727 |

| | | | |
|--|-----------|-----------|--|
| Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day) | 0,4963835 | 0,1373962 | |
| % of RVAAS | 44,72% | 12,38% | |

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 |
|---|---|--|--|
| Without RPE/PPE | | | |
| Hands | 952,9234627 | 15,8820577 | $D15^*i_AbsorpProduct$ |
| Body | 660,0728779 | 11,0012146 | $D16^*i_AbsorpProduct$ |
| Head | 12,4520611 | 0,2075344 | $D17^*i_AbsorpProduct$ |
| Inhalation | 4,8034234 | 0,0800571 | $D21^*i_AbsorpInhalation$ |
| Sum | 1630,2518250 | 27,1708638 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 952,9234627 | 15,8820577 | $D18^*i_AbsorpProduct$ |
| Body | 5,1641380 | 0,0860690 | $D19^*i_AbsorpProduct$ or $D15^*i_AbsorpProduct*F24$ |
| Head | 12,4520611 | 0,2075344 | $D20^*i_AbsorpProduct$ or $D17^*i_AbsorpProduct*F25$ |
| Inhalation | 4,8034234 | 0,0800571 | $D21^*i_AbsorpInhalation*G25$ |
| Sum | 975,3430851 | 16,2557181 | |
| Water soluble bag | 975,3430851 | 16,2557181 | $C70^*F26$ |

2.2 Application

| | Systemic exposure [$\mu\text{g a.s. /day}$] | Systemic exposure [$\mu\text{g a.s./kg bw/day}$] | Formula |
|---|---|--|--|
| Without RPE/PPE | | | |
| Hands | 548,4536395 | 9,1408940 | $D30^*i_AbsorpInuse$ |
| Body | 2114,8094468 | 35,2468241 | $D31^*i_AbsorpInuse$ |
| Head | 277,9209219 | 4,6320154 | $D32^*i_AbsorpInuse$ |
| Inhalation | 104,6493134 | 1,7441552 | $D35^*i_AbsorpInhalation$ |
| Sum | 3045,8333216 | 50,7638887 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 548,4536395 | 9,1408940 | $D33^*i_AbsorpInuse$ |
| Body | 27,5918768 | 0,4598646 | $D34^*i_AbsorpInuse$ or $D31^*i_AbsorpInuse*F38$ |
| Head | 277,9209219 | 4,6320154 | $D32^*i_AbsorpInuse*F39$ |
| Inhalation | 104,6493134 | 1,7441552 | $D35^*i_AbsorpInuse*G39$ |
| Sum | 958,6157516 | 15,9769292 | |

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 |
|---|---|--|--|
| Without RPE/PPE | | | |
| Hands | 3518,6908633 | 58,6448477 | $E15^*i_AbsorpProduct$ |
| Body | 9288,3745930 | 154,8062432 | $E16^*i_AbsorpProduct$ |
| Head | 1205,7610252 | 20,0960171 | $E17^*i_AbsorpProduct$ |
| Inhalation | 29,3198774 | 0,4886646 | $E21^*i_AbsorpInhalation$ |
| Sum | 14042,1463590 | 234,0357727 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 3518,6908633 | 58,6448477 | $E18^*i_AbsorpProduct$ |
| Body | 35,1003334 | 0,5850056 | $E19^*i_AbsorpProduct$ or $E16^*i_AbsorpProduct*F24$ |
| Head | 1205,7610252 | 20,0960171 | $E20^*i_AbsorpProduct$ or $E17^*i_AbsorpProduct*F25$ |
| Inhalation | 29,3198774 | 0,4886646 | $E21^*i_AbsorpInhalation*G25$ |
| Sum | 4788,8720994 | 79,8145350 | |
| Water soluble bag | 4788,8720994 | 79,8145350 | $C104^*F26$ |

2.2 Application

| | Systemic exposure [$\mu\text{g a.s. /day}$] | Systemic exposure [$\mu\text{g a.s./kg bw/day}$] | Formula |
|---|---|--|----------------------------|
| Without RPE/PPE | | | |
| Hands | 1496,8257361 | 24,9470956 | $E30^*i_AbsorpInuse$ |
| Body | 12339,8886753 | 205,6648113 | $E31^*i_AbsorpInuse$ |
| Head | 1705,7337466 | 28,4288958 | $E32^*i_AbsorpInuse$ |
| Inhalation | 198,4135108 | 3,3068918 | $E35^*i_AbsorpInhalation$ |
| Sum | 15740,8616687 | 262,3476945 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 1496,8257361 | 24,9470956 | $E33^*i_AbsorpInuse$ |

| | | | |
|------------|--------------|------------|---|
| Body | 53,9276185 | 0,8987936 | <i>E34*i_Absorpinuse or E31*i_Absorpinuse*F38</i> |
| Head | 1705,7337466 | 28,4288958 | <i>E32*i_Absorpinuse*F39</i> |
| Inhalation | 198,4135108 | 3,3068918 | <i>E35*i_Absorpinhalation*G39</i> |
| Sum | 3454,9006119 | 57,5816769 | |

Operator exposure for Spruzit Vloeibaar granular applications

| | | |
|--------------------------------------|--|------------------------|
| Application rate of active substance | 0,24 kg a.s./ha | <i>i_AppRate</i> |
| Assumed area treated | 10 ha/day | <i>d_AreaTreated</i> |
| Amount of active substance applied | 2,4 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 This sheet is only to be used for granular applications | |
| Application method | Upward spraying | |
| Application equipment | Vehicle-mounted | |

| | Exposure values | mg exposure/kg a.s. mixed and loaded | | Reference | Comment |
|--------------------|-----------------------------|--------------------------------------|--------------------------|--------------------|--|
| | | 75 th centile | 95 th 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 |
| | Protective Equipment | 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 th centile | 95 th 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 |
| | Protective Equipment | 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 |
|---|----------------------------------|---------------------------------------|---|
| Without RPE/PPE | | | |
| 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 | |
| With RPE/PPE (as selected above) | | | |
| 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 |
|---|----------------------------------|---------------------------------------|---|
| Without RPE/PPE | | | |
| 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 | |
| With RPE/PPE (as selected above) | | | |
| 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 |
|---|----------------------------------|---------------------------------------|---|
| Without RPE/PPE | | | |
| 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 | |
| With RPE/PPE (as selected above) | | | |
| 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 |
|---|----------------------------------|---------------------------------------|--|
| Without RPE/PPE | | | |
| 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 | |
| With RPE/PPE (as selected above) | | | |

| | | | |
|------------|------|------|--|
| 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 | 0,24 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>) | 0,72 µg a.s./cm ² | <i>d_DFR</i> |
| Working hours | 8 hr | <i>d_WorkHr</i> |
| Dermal transfer coefficient - Total potential exposure | 22500 cm ² /hr | <i>d_DermTcUCV</i> |
| Dermal transfer coefficient - arms, body and legs covered | 4500 cm ² /hr | <i>d_DermTcCV1</i> |
| Dermal transfer coefficient - hands, arms, body and legs covered | 2250 cm ² /hr | <i>d_DermTcCV2</i> |
| Inhalation transfer coefficient for automated applications | NA ha/hr*10 ⁻³ | <i>d_InhalTcAut</i> |
| Inhalation transfer coefficient for cutting ornamentals | NA ha/hr*10 ⁻³ | <i>d_InhalTcCut</i> |
| Inhalation transfer coefficient for sorting / bundling ornamentals | NA ha/hr*10 ⁻³ | <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) | 23,9846464 | 4,7969293 | 2,3984646 | |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,3997441 | 0,0799488 | 0,0399744 | |
| % of RVNAS | 97,50% | 19,50% | 9,75% | |

2. Details

| | Systemic exposure | | Formula | Comments |
|--|-------------------|---------------------|--|---------------------------|
| | [mg a.s. /day] | [mg a.s./kg bw/day] | | |
| Dermal - Potential | 23,9846464 | 0,3997441 | $d_DermTcUCV * d_WorkHr * i_DFR * i_MAF / 1000 * i_AbsorpInuse$ | |
| Dermal - Work wear - arms, body and legs covered | 4,7969293 | 0,0799488 | $d_DermTcCV1 * d_WorkHr * d_DFR * d_MAF / 1000 * i_AbsorpInuse$ | |
| Dermal - Working wear and gloves | 2,3984646 | 0,0399744 | $d_DermTcCV2 * d_WorkHr * d_DFR * d_MAF / 1000 * i_AbsorpInuse$ | |
| 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 | 0,24 kg a.s./ha | <i>i_AppRate</i> |
| Concentration of active substance (in-use dilution for liquid applications) | 0,48 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 ($i_AppRate * i_DFR$) | 0,72 µg a.s./cm ² | <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 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 m ³ /day/kg | <i>d_BreathRAAd</i> |
| Breathing rate child (1-3 year old) | 1,07 m ³ /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 ² /hour | <i>d_ReTCAd</i> |
| Transfer coeff. of surface deposits-child (1-3 year old) | 2600 cm ² /hour | <i>d_ReTCCh</i> |
| Saliva extraction percentage | 50,00% | <i>d_SalExt</i> |
| Surface area of hands mouthed | 20 cm ² | <i>d_AreaHM</i> |
| Frequency of hand to mouth activity | 9,5 events/hour | <i>d_ReFreqHM</i> |
| Ingestion rate for mouthing of grass per day | 25 cm ² | <i>d_MouthGrass</i> |
| Dislodgeable residues percentage transferability for object to mouth | 20,00% | <i>d_DRP</i> |
| Transfer coefficient for entry into treated crops (75th percentile) - adult | 7500 cm ² /h | <i>d_TcEntryAd</i> |
| Transfer coefficient for entry into treated crops (75th percentile) - child | 2250 cm ² /h | <i>d_TcEntryCh</i> |
| Transfer coefficient for entry into treated crops (mean) - adult | 5980 cm ² /h | <i>d_TcEntryAd</i> |
| Transfer coefficient for entry into treated crops (mean) - child | 1794 cm ² /h | <i>d_TcEntryCh</i> |

1. Total

1.1 1-3 year old child

| | Spray drift (75th percentile) | Vapour (75th percentile) | Surface deposits (75th percentile) | Entry into treated crops (75th percentile) | All pathways (mean) |
|---|-------------------------------|--------------------------|------------------------------------|--|---------------------|
| Total systemic exposure (mg a.s./day) | 0,0672679 | 0,1605000 | 0,0284038 | 0,0749520 | 0,2849799 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0067268 | 0,0160500 | 0,0028404 | 0,0074952 | 0,0284980 |
| % of RVNAS | 1,64% | 3,91% | 0,69% | 1,83% | 6,95% |

1.2 Adult

| | Spray drift | Vapour | Surface deposits | Entry into treated crops | All pathways (mean) |
|---|-------------|-----------|------------------|--------------------------|---------------------|
| Total systemic exposure (mg a.s./day) | 0,2226048 | 0,2070000 | 0,0511970 | 0,2498401 | 0,5897699 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0037101 | 0,0034500 | 0,0008533 | 0,0041640 | 0,0098295 |
| % of RVNAS | 0,90% | 0,84% | 0,21% | 1,02% | 2,40% |

2. Resident exposure 75th Percentile

| | Systemic exposure [mg a.s. /day] | Systemic exposure [mg a.s./kg bw/day] | Formula | Comments |
|---------------------------|----------------------------------|---------------------------------------|---|---|
| 1-3 year old child | | | | |
| Spray drift | 0,0672679 | 0,0067268 | $((C16 * i_AbsorpInuse * (1 - d_ClothAF)) + C18) * d_ConcAS$ | 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 | 0,0182345 | 0,0018235 | $(i_AppRate/100) * C29 * d_Turf * d_ReTCCh * d_ReExpDur * MAX(i_AbsorpProduct, i_AbsorpInuse) * d_MAF * IF(i_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$ | |
| Hand to mouth | 0,0066626 | 0,0006663 | $(i_AppRate/100) * C29 * d_Turf * d_SalExt * d_AreaHM * d_ReFreqHM * d_ReExpDur * i_AbsorpOrallnuse * d_MAF$ | |
| Object to mouth | 0,0035066 | 0,0003507 | $(i_AppRate/100) * C29 * d_DRP * d_MouthGrass * i_AbsorpOrallnuse * d_MAF$ | |

| | | | | |
|-----------------------------------|-----------|-----------|--|---|
| Entry into treated crops | | | | |
| Dermal | 0,0749520 | 0,0074952 | $(d_TcEntryCh*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorpinuse)$ | |
| 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. |
| Adult | | | | |
| Spray drift | 0,2226048 | 0,0037101 | $(C15*i_Absorpinuse*(1-d_ClothAF))+C17)*d_ConcAS$ | 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) | 0,0511970 | 0,0008533 | $(i_AppRate/100)*C30*d_Turf*d_ReTCAd*d_ReExpDur*i_AbsorpProduct*d_MAF$ | |
| Entry into treated crops (dermal) | 0,2498401 | 0,0041640 | $(d_TcEntryAd*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorpinuse)$ | |

3. Summing of exposure pathways mean

| | Systemic exposure [mg a.s./day] | Systemic exposure [mg a.s./kg bw/day] | Formula | Comments |
|-----------------------------------|---------------------------------|---------------------------------------|--|---|
| 1-3 year old/ child | | | | |
| Spray drift | 0,0436896 | 0,0043690 | $((C20*i_Absorpinuse*(1-d_ClothAF))+C22)*d_ConcAS$ | 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 | 0,0134998 | 0,0013500 | $(i_AppRate/100)*C30*d_Turf*d_ReTCCh*d_ReExpDur*MAX(i_AbsorpProduct,i_Absorpinuse)*d_MAF*IF(L_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$ | |
| Hand to mouth | 0,0049326 | 0,0004933 | $(i_AppRate/100)*C30*d_Turf*d_SalExt*d_AreaHM*d_ReFreqHM*d_ReExpDur*i_AbsorpOrallnuse*d_MAF$ | |
| Object to mouth | 0,0025961 | 0,0002596 | $(i_AppRate/100)*C30*d_DRP*d_MouthGrass*i_AbsorpOrallnuse*d_MAF$ | |
| Entry into treated crops | | | | |
| Dermal | 0,0597617 | 0,0059762 | $(d_TcEntryMeanCh*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorpinuse)$ | |
| 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. |
| Adult | | | | |
| Spray drift | 0,1456608 | 0,0024277 | $((C19*i_Absorpinuse*(1-d_ClothAF))+C21)*d_ConcAS$ | 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) | 0,0379033 | 0,0006317 | $(i_AppRate/100)*C30*d_Turf*d_ReTCAd*d_ReExpDur*MAX(i_AbsorpProduct,i_Absorpinuse)*d_MAF*IF(L_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$ | |
| Entry into treated crops (dermal) | 0,1992058 | 0,0033201 | $(d_TcEntryMeanAd*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorpinuse)$ | |

Bystander exposure for Spruzit Vloeibaar

| | | |
|---|---|-------------------|
| Croptype | Pome fruit | |
| Application method | Upward spraying | |
| Application equipment | Vehicle-mounted | i_AppEquip |
| Formulation type | Soluble concentrates, emulsifiable concentrate, etc. | |
| Application rate of the product | 0,24 kg a.s./ha | i_AppRate |
| Buffer strip | 5 m | i_Buffer |
| Concentration of active substance (in-use dilution for liquid applications) | 0,48 g a.s./l | d_ConcAS |
| Dermal absorption of product | 10,00% | i_AbsorpProduct |
| Dermal absorption of in-use dilution | 10,00% | i_AbsorpInuse |
| Oral absorption | 100,00% | i_AbsorpOrallnuse |
| Dislodgeable foliar residue (i_AppRate*i_DFR) | 0,72 µg a.s./cm ² | d_DFR |
| Vapour pressure of in-use dilution | moderately volatile substances with a vapour pressure between 5*10 ⁻³ Pa and 10 ⁻² Pa | i_Volat |
| Concentration in air | 0,015 mg/m ³ | 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 ³ /hours/kg | d_BreathRAd |
| Breathing rate child (1-3 year old) | 1,07 m ³ /hours/kg | d_BreathRCh |
| Drift percentage on surface (90th percentile) | 19,89% | |
| Turf transferable residues percentage | 5,00% | d_Turf |
| Transfer coeff. of surface deposits-adult | 14500 cm ² /hour | d_ByTCAd |
| Transfer coeff. of surface deposits-child (1-3 year old) | 5200 cm ² /hour | d_ByTCCh |
| Saliva extraction percentage | 50,00% | d_SalExt |
| Surface area of hands mouthed | 20 cm ² | d_AreaHM |
| Frequency of hand to mouth activity | 20 events/hour | d_ByFreqHM |
| Ingestion rate for mouthing of grass per day | 25 cm ² | d_MouthGrass |
| Dislodgeable residues percentage transferability for object to mouth | 20,00% | d_DRP |
| Transfer coefficient for entry into treated crops - adult | 7500 cm ² /h | d_TcEntryAd |
| Transfer coefficient for entry into treated crops - child | 2250 cm ² /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) | 0,1539952 | 0,1605000 | 0,0680245 | 0,0749520 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0153995 | 0,0160500 | 0,0068024 | 0,0074952 |
| % of RVAAS | 1,39% | 1,45% | 0,61% | 0,68% |

1.2 Adult

| | Spray drift | Vapour | Surface deposits | Entry into treated crops |
|---|-------------|-----------|------------------|--------------------------|
| Total systemic exposure (mg a.s./day) | 0,5098560 | 0,2070000 | 0,1280980 | 0,2498401 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0084976 | 0,0034500 | 0,0021350 | 0,0041640 |
| % of RVAAS | 0,77% | 0,31% | 0,19% | 0,38% |

2. Details

| | Systemic exposure [mg a.s. /day] | Systemic exposure [mg a.s./kg bw/day] | Formula | Comments |
|---------------------------|----------------------------------|---------------------------------------|---|---|
| 1-3 year old child | | | | |
| Spray drift | 0,1539952 | 0,0153995 | $((C16*i_Absorpnuse*(1-d_ClothAF))+C18)*d_ConcAS$ | 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 | 0,0459386 | 0,0045939 | $(i_AppRate/100)*C24*d_Turf*d_ByTCCh*d_ByExpDur*MAX(i_AbsorpProduct,i_Absorpnuse)*d_MAF*IF(i_AppEquip="Vehicle-mounted-Drift Reduction",0.5,1)$ | |
| Hand to mouth | 0,0176687 | 0,0017669 | $(i_AppRate/100)*C25*d_Turf*d_SalExt*d_AreaHM*d_ByFreqHM*d_ByExpDur*i_AbsorpOralinuse*d_MAF$ | |
| Object to mouth | 0,0044172 | 0,0004417 | $(i_AppRate/100)*C25*d_DRP*d_MouthGrass*i_AbsorpOralinuse*d_MAF$ | |

| | | | | |
|-----------------------------------|-----------|-----------|---|---|
| Entry into treated crops | | | | |
| Dermal | 0,0749520 | 0,0074952 | $(d_TcEntryCh * 0.25 * d_DFR * d_MAF) / 1000 * MAX(i_AbsorpProduct, i_Absorplnuse)$ | |
| 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. |
| Adult | | | | |
| Spray drift | 0,5098560 | 0,0084976 | $((C15 * i_Absorplnuse * (1 - d_ClothAF) + C17) * d_ConcAS$ | 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) | 0,1280980 | 0,0021350 | $(i_AppRate / 100) * C24 * d_Turf * d_ByTCAd * d_ByExpDur * MAX(i_AbsorpProduct, i_Absorplnuse) * d_MAF * IF(i_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$ | |
| Entry into treated crops (dermal) | 0,2498401 | 0,0041640 | $(d_TcEntryAd * 0.25 * d_DFR * d_MAF) / 1000 * MAX(i_AbsorpProduct, i_Absorplnuse)$ | |

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 | | 0,24 | 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 ($i_AppRate * i_DFR$) | | 0,72 | $\mu\text{g a.s./cm}^2$ | | <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 | cm^2/hour | | <i>d_ReTCAAd</i> |
| Transfer coeff. of surface deposits-child (1-3 year old) | | 2600 | cm^2/hour | | <i>d_ReTCCh</i> |
| Saliva extraction percentage | | 50,00% | | | <i>d_SalExt</i> |
| Surface area of hands mouthed | | 20 | cm^2 | | <i>d_AreaHM</i> |
| Frequency of hand to mouth activity | | 9,5 | events/hour | | <i>d_ReFreqHM</i> |
| Ingestion rate for mouthing of grass per day | | 25 | cm^2 | | <i>d_MouthGrass</i> |

2. Details

| | Systemic exposure [mg a.s. /day] | Systemic exposure [mg a.s./kg bw/day] | Formula | Comments |
|---------------------------|----------------------------------|---------------------------------------|---|----------|
| 1-3 year old child | | | | |
| Surface deposits | | | | |
| Dermal | 0,1154816 | 0,0115482 | $(i_AppRate/100) * C13 * d_Turf * d_ReTCCh * d_ReExpDur * \text{MAX}(i_AbsorpProduct, i_Absorplnuse) * d_MAF$ | |
| Hand to mouth | 0,0421952 | 0,0042195 | $(i_AppRate/100) * C13 * d_Turf * d_SalExt * d_AreaHM * d_ReFreqHM * d_ReExpDur * i_AbsorpOrallnuse * d_MAF$ | |
| Object to mouth | 0,0222080 | 0,0022208 | $(i_AppRate/100) * C13 * d_DRP * d_MouthGrass * i_AbsorpOrallnuse * d_MAF$ | |
| Total systemic exposure | 0,1798848 | 0,0179885 | | |
| % of RVNAS | | | | |
| Adult | | | | |
| Surface deposits (dermal) | 0,3242369 | 0,0054039 | $(i_AppRate/100) * C13 * d_Turf * d_ReTCAAd * d_ReExpDur * \text{MAX}(i_AbsorpProduct, i_Absorplnuse) * d_MAF$ | |
| % of RVNAS | | | | |

| | | |
|---------------------------------|---|-------------------------------|
| <i>d_AirConVol</i> | Concentration in air of moderately volatile substances | 0,015 mg/m ³ |
| <i>d_AirConNonVol</i> | Concentration in air of low volatile substances | 0,001 mg/m ³ |
| <i>d_AreaHM</i> | Surface area of hands mouthed | 20 cm ² |
| <i>d_AreaTreated</i> | Area treated (defined by crop type) | 10 ha |
| <i>d_BreathRAd</i> | Breathing rate adult residents | 0,23 m ³ /day/kg |
| <i>d_BreathRCh</i> | Breathing rate child (1-3 year old) residents | 1,07 m ³ /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 ³ /hours/kg |
| <i>d_ByBreathRCh</i> | Breathing rate child (1-3 year old) bystander | 0,19 m ³ /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 ² /hour |
| <i>d_ByTCCh</i> | Transfer coeff. of surface deposits-child (1-3 year old) | 5200 cm ² /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) | 0,48 g a.s./l |
| <i>d_DFR</i> | Dislodgeable foliar residue (i_AppRate*i_DFR) | 0,72 µg a.s./cm ² |
| <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 ^{^(-3)} |
| <i>d_InhalTcCut</i> | Inhalation transfer coefficient for cutting ornamentals | NA ha/hr*10 ^{^(-3)} |
| <i>d_InhalTcSort</i> | Inhalation transfer coefficient for sorting / bundling ornamentals | NA ha/hr*10 ^{^(-3)} |
| <i>d_MAF</i> | Multiple application factor | 1,85 |
| <i>d_MouthGrass</i> | Ingestion rate for mouthing of grass per day | 25 cm ² 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 ² /hour |
| <i>d_ReTCCh</i> | Transfer coeff. of surface deposits-child (1-3 year old) | 2600 cm ² /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 ² /h |
| <i>d_TcEntryCh</i> | Transfer coefficient for entry into treated crops 75th percentile - child | 2250 cm ² /h |
| <i>d_TcEntryMeanAd</i> | Transfer coefficient for entry into treated crops mean - adult | 5980 cm ² /h |
| <i>d_TcEntryMeanCh</i> | Transfer coefficient for entry into treated crops mean - child | 1794 cm ² /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> | Coeficient to estimate head protection factor 75 th Percentile | 1,79422 |
| <i>d_head95ProtectionFactor</i> | Coeficient 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 | 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 |
|--|-----------------------|-------------------------|-----------------------------------|------------------------------|-------------------------|---|---|---|-----------------------------------|------------------------------------|------------------------------------|---|--------------------------|
| Match Method | Outdoor/Indoor | Formulation type | Application method | Application equipment | Type of exposure | Mixing & Loading 75th percentile | Mixing & Loading 95th percentile | Mixing & Loading Comments | Mixing & Loading Model | Application 75th percentile | Application 95th percentile | Application Comments | Application Model |
| 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 | 0,0013 | 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 | 0,0013 | 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 |

