

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 | gibberelline a4+a7 | |
| Product name | Berelex | |
| Reference value non acutely toxic active substance (RVNAS) | 0,66 | mg/kg bw/day |
| Reference value acutely toxic active substance (RVAAS) | 0,66 | mg/kg bw/day |
| Crop type | Pome fruit | |
| Substance properties | | |
| Formulation type | Soluble concentrates, emulsifiable concentrate, etc. | |
| Minimum volume water for application (liquids) | 1000 | L/ha |
| Maximum application rate of active substance | 0,0204 | kg a.s. /ha |
| 50% Dissipation Time DT50 | 30 | days |
| Initial Dislodgeable Foliar Residue | 3 | µg/cm ² of foliage/kg a.s. applied/ha |
| Dermal absorption of product | 100,00% | |
| Dermal absorption of in-use dilution | 100,00% | |
| 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 ⁻³ Pa and 10 ⁻² Pa | |
| Scenario | | |
| Indoor or Outdoor application | Outdoor | |
| Application method | Upward spraying | |
| Application equipment | Vehicle-mounted | |
| Buffer strip | 5 | m |
| Number of applications | 1 | |
| Interval between multiple applications | 365 | days |
| Season (upward spraying orchards only) | early (without leaves) | |

Exposure assessment

| | | | | | |
|-----------------------|---|--|-------------------------------------|----------------------------------|---|
| Substance | gibberelline a4+a7 | Formulation = Soluble concentrates, emulsifiable concentrate, etc. | Application rate-0,0204 kg a.s. /ha | Spray dilution = 0,0204 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 = 1, Application interval = 365 days |
| Percentage Absorption | Dermal for product = 100 | Dermal for in use dilution = 100 | Oral = 100 | Inhalation = 100 | |
| RVNAS | 0,66 mg/kg bw/day | | RVAAS | 0,66 mg/kg bw/day | |
| DFR | 3 µg a.s./cm2 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 | 0,0881 | % of RVNAS | 13,34% |
| | Acute systemic exposure mg/kg bw/day | 1,0804 | % of RVAAS | 163,70% |
| 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 | 0,0392 | % of RVNAS | 5,93% |
| | Acute systemic exposure mg/kg bw/day | 0,1505 | % of RVAAS | 22,80% |

| | | | | |
|--|--|--------|------------|--------|
| Worker - Searching, reaching, picking | Potential exposure mg/kg bw/day | 0,1836 | % of RVNAS | 27,82% |
| | Working clothing mg/kg bw/day | 0,0367 | % of RVNAS | 5,56% |
| | Working clothing and gloves mg/kg bw/day | 0,0184 | % of RVNAS | 2,78% |

| | | | | |
|-------------------------|---|--------|------------|-------|
| Resident - child | Spray drift (75th percentile) mg/kg bw/day | 0,0028 | % of RVNAS | 0,43% |
| | Vapour (75th percentile) mg/kg bw/day | 0,0161 | % of RVNAS | 2,43% |
| | Surface deposits (75th percentile) mg/kg bw/day | 0,0009 | % of RVNAS | 0,13% |
| | Entry into treated crops (75th percentile) mg/kg bw/day | 0,0034 | % of RVNAS | 0,52% |
| | All pathways (mean) mg/kg bw/day | 0,0213 | % of RVNAS | 3,23% |
| Resident - adult | Spray drift (75th percentile) mg/kg bw/day | 0,0016 | % of RVNAS | 0,24% |
| | Vapour (75th percentile) mg/kg bw/day | 0,0035 | % of RVNAS | 0,52% |
| | Surface deposits (75th percentile) mg/kg bw/day | 0,0004 | % of RVNAS | 0,06% |
| | Entry into treated crops (75th percentile) mg/kg bw/day | 0,0019 | % of RVNAS | 0,29% |
| | All pathways (mean) mg/kg bw/day | 0,0063 | % of RVNAS | 0,95% |

| | | | | |
|--------------------------|---|--------|------------|-------|
| Bystander - child | Spray drift (95th percentile) mg/kg bw/day | 0,0065 | % of RVAAS | 0,98% |
| | Vapour (95th percentile) mg/kg bw/day | 0,0161 | % of RVAAS | 2,43% |
| | Surface deposits (95th percentile) mg/kg bw/day | 0,0022 | % of RVAAS | 0,34% |
| | Entry into treated crops (95th percentile) mg/kg bw/day | 0,0034 | % of RVAAS | 0,52% |
| Bystander - adult | Spray drift (95th percentile) mg/kg bw/day | 0,0036 | % of RVAAS | 0,55% |
| | Vapour (95th percentile) mg/kg bw/day | 0,0035 | % of RVAAS | 0,52% |

Exposure assessment

| | | | |
|---|--------|------------|-------|
| Surface deposits (95th percentile) mg/kg bw/day | 0,0010 | % of RVAAS | 0,15% |
| Entry into treated crops (95th percentile) mg/kg bw/day | 0,0019 | % of RVAAS | 0,29% |

| | | |
|------------------------------|------------------|------------------|
| 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 Berelex outdoor spray applications

| | | |
|--------------------------------------|--|------------------------|
| Application rate of active substance | 0,0204 kg a.s./ha | <i>i_AppRate</i> |
| Assumed area treated | 10 ha/day | <i>d_AreaTreated</i> |
| Amount of active substance applied | 0,204 kg a.s./day | <i>i_AmountAS</i> |
| Dermal absorption of the product | 100,00% | <i>i_AbsorpProduct</i> |
| Dermal absorption of in-use dilution | 100,00% | <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 | 1429 | | |
| Body | 1167 | 45385 | AOEM | | |
| Head | 11 | 1025 | AOEM | | |
| Protected hands (gloves) | 12 | 40 | AOEM | | |
| Protected body (workwear or protective garment and sturdy footwear) | 6 | 30 | AOEM | | |
| Protected head (hood and face shield) | 0 | 58 | AOEM | | |
| Inhalation | 2 | 28 | 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 | 616 | | |
| Body | 1798 | 10489 | AOEM | | |
| Head | 236 | 1450 | AOEM | | |
| Protected hands (gloves) | 7 | 188 | AOEM | | |
| Protected body (workwear or protective garment and sturdy footwear) | 23 | 46 | AOEM | | |
| Inhalation | 26 | 17 | 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) | 5,2844589 | 2,3491930 | |
| Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day) | 0,0880743 | 0,0391532 | |
| % of RVNAS | 13,34% | 5,93% | |
| Acute | | | |

| | | | |
|--|------------|-----------|--|
| Total systemic exposure from mixing, loading and application (mg a.s./day) | 64,8266474 | 9,0285967 | |
|--|------------|-----------|--|

| | | |
|--|-----------|-----------|
| Total systemic exposure from mixing, loading and application per kg body weight (mg/kg bw/day) | 1,0804441 | 0,1504766 |
| % of RVAAS | 163,70% | 22,80% |

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 | 1428,5406131 | 23,8090102 | $D15*i_AbsorpProduct$ |
| Body | 1166,9394811 | 19,4489914 | $D16*i_AbsorpProduct$ |
| Head | 10,5842519 | 0,1764042 | $D17*i_AbsorpProduct$ |
| Inhalation | 2,3064601 | 0,0384410 | $D21*i_AbsorpInhalation$ |
| Sum | 2608,3708061 | 43,4728468 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 1428,5406131 | 23,8090102 | $D18*i_AbsorpProduct$ |
| Body | 5,8085388 | 0,0968090 | $D19*i_AbsorpProduct$ or $D15*i_AbsorpProduct*F24$ |
| Head | 10,5842519 | 0,1764042 | $D20*i_AbsorpProduct$ or $D17*i_AbsorpProduct*F25$ |
| Inhalation | 2,3064601 | 0,0384410 | $D21*i_AbsorpInhalation*G25$ |
| Sum | 1447,2398638 | 24,1206644 | |
| Water soluble bag | 1447,2398638 | 24,1206644 | $C70*F26$ |

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 | 616,2837884 | 10,2713965 | $D30*i_AbsorpInuse$ |
| Body | 1797,5880297 | 29,9598005 | $D31*i_AbsorpInuse$ |
| Head | 236,2327836 | 3,9372131 | $D32*i_AbsorpInuse$ |
| Inhalation | 25,9834903 | 0,4330582 | $D35*i_AbsorpInhalation$ |
| Sum | 2676,0880921 | 44,6014682 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 616,2837884 | 10,2713965 | $D33*i_AbsorpInuse$ |
| Body | 23,4530953 | 0,3908849 | $D34*i_AbsorpInuse$ or $D31*i_AbsorpInuse*F38$ |
| Head | 236,2327836 | 3,9372131 | $D32*i_AbsorpInuse*F39$ |
| Inhalation | 25,9834903 | 0,4330582 | $D35*i_AbsorpInuse*G39$ |
| Sum | 901,9531576 | 15,0325526 | |

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 | 5161,3376646 | 86,0222944 | $E15*i_AbsorpProduct$ |
| Body | 45384,8190765 | 756,4136513 | $E16*i_AbsorpProduct$ |
| Head | 1024,8968714 | 17,0816145 | $E17*i_AbsorpProduct$ |
| Inhalation | 27,6476649 | 0,4607944 | $E21*i_AbsorpInhalation$ |
| Sum | 51598,7012775 | 859,9783546 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 5161,3376646 | 86,0222944 | $E18*i_AbsorpProduct$ |
| Body | 29,8352834 | 0,4972547 | $E19*i_AbsorpProduct$ or $E16*i_AbsorpProduct*F24$ |
| Head | 1024,8968714 | 17,0816145 | $E20*i_AbsorpProduct$ or $E17*i_AbsorpProduct*F25$ |
| Inhalation | 27,6476649 | 0,4607944 | $E21*i_AbsorpInhalation*G25$ |
| Sum | 6243,7174844 | 104,0619581 | |
| Water soluble bag | 6243,7174844 | 104,0619581 | $C104*F26$ |

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 | 1272,3018757 | 21,2050313 | $E30*i_AbsorpInuse$ |
| Body | 10488,9053740 | 174,8150896 | $E31*i_AbsorpInuse$ |
| Head | 1449,8736846 | 24,1645614 | $E32*i_AbsorpInuse$ |
| Inhalation | 16,8651484 | 0,2810858 | $E35*i_AbsorpInhalation$ |

| | | | |
|----------------------------------|---------------|-------------|---|
| Sum | 13227,9460826 | 220,4657680 | |
| With RPE/PPE (as selected above) | | | |
| Hands | 1272,3018757 | 21,2050313 | <i>E33*i_Absorpnuse</i> |
| Body | 45,8384757 | 0,7639746 | <i>E34*i_Absorpnuse or E31*i_Absorpnuse*F38</i> |
| Head | 1449,8736846 | 24,1645614 | <i>E32*i_Absorpnuse*F39</i> |
| Inhalation | 16,8651484 | 0,2810858 | <i>E35*i_Absorpnhalation*G39</i> |
| Sum | 2784,8791844 | 46,4146531 | |

Operator exposure for Berelex granular applications

| | | |
|--------------------------------------|--|------------------------|
| Application rate of active substance | 0,0204 kg a.s./ha | <i>i_AppRate</i> |
| Assumed area treated | 10 ha/day | <i>d_AreaTreated</i> |
| Amount of active substance applied | 0,204 kg a.s./day | <i>i_AmountAS</i> |
| Dermal absorption of the product | 100,00% | <i>i_AbsorpProduct</i> |
| Dermal absorption of in-use dilution | 100,00% | <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 | $D14*100*i_AmoutAS*i_AbsorpProduct$ |
| Body | #N/A | #N/A | $D15*100*i_AmoutAS*i_AbsorpProduct$ |
| Inhalation | #N/A | #N/A | $D16*i_AmoutAS*i_AbsorpInhalation$ |
| Sum | #N/A | #N/A | |
| With RPE/PPE (as selected above) | | | |
| Hands | #N/A | #N/A | $D14*i_AmoutAS*i_AbsorpProduct$ |
| Body | #N/A | #N/A | $D15*i_AmoutAS*i_AbsorpProduct$ |
| Inhalation | #N/A | #N/A | $D16*i_AmoutAS*i_AbsorpInhalation*F20$ |
| 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 | $D25*100*i_AmoutAS*i_Absorplnuse$ |
| Body | #N/A | #N/A | $D26*100*i_AmoutAS*i_Absorplnuse$ |
| Inhalation | #N/A | #N/A | $D27*i_AmoutAS*i_Absorplnhalation$ |
| Sum | #N/A | #N/A | |
| With RPE/PPE (as selected above) | | | |
| Hands | #N/A | #N/A | $D25*i_AmoutAS*i_Absorplnuse$ |
| Body | #N/A | #N/A | $D26*i_AmoutAS*i_Absorplnuse$ |
| Inhalation | #N/A | #N/A | $D27*i_AmoutAS*i_Absorplnhalation*F31$ |
| 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 | $E14*100*i_AmoutAS*i_AbsorpProduct$ |
| Body | #N/A | #N/A | $E15*100*i_AmoutAS*i_AbsorpProduct$ |
| Inhalation | #N/A | #N/A | $E16*i_AmoutAS*i_AbsorpInhalation$ |
| Sum | #N/A | #N/A | |
| With RPE/PPE (as selected above) | | | |
| Hands | #N/A | #N/A | $E14*100*i_AmoutAS*i_AbsorpProduct$ |
| Body | #N/A | #N/A | $E15*100*i_AmoutAS*i_AbsorpProduct$ |
| Inhalation | #N/A | #N/A | $E16*i_AmoutAS*i_AbsorpInhalation*F20$ |
| 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 | $E25*100*i_AmoutAS*i_Absorplnuse$ |
| Body | #N/A | #N/A | $E25*100*i_AmoutAS*i_Absorplnuse$ |

| | | | |
|---|------|------|--|
| Inhalation | #N/A | #N/A | $E26 * i_AmoutAS * i_AbsorpInhalation$ |
| Sum | #N/A | #N/A | |
| With RPE/PPE (as selected above) | | | |
| Hands | #N/A | #N/A | $E25 * 100 * i_AmoutAS * i_Absorpnuse$ |
| Body | #N/A | #N/A | $E26 * 100 * i_AmoutAS * i_Absorpnuse$ |
| Inhalation | #N/A | #N/A | $E27 * i_AmoutAS * i_AbsorpInhalation * F31$ |
| Sum | #N/A | #N/A | |

Worker exposure from residues on foliage for Berelex

| | | |
|--|--------------------------------|------------------------|
| 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 | 0,0204 kg a.s./ha | <i>i_AppRate</i> |
| Number of applications | 1 | <i>i_AppNo</i> |
| Interval between multiple applications | 365 days | <i>i_AppInt</i> |
| Half-life of active substance | 30 days | <i>d_HalfLifeAS</i> |
| Multiple application factor | 1,0 | <i>d_MAF</i> |
| Dermal absorption of the product | 100,00% | <i>i_AbsorpProduct</i> |
| Dermal absorption of the in-use dilution | 100,00% | <i>i_AbsorpInuse</i> |
| Dislodgeable foliar residue (<i>i_AppRate</i> * <i>i_DFR</i>) | 0,0612 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) | 11,0160000 | 2,2032000 | 1,1016000 | |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,1836000 | 0,0367200 | 0,0183600 | |
| % of RVNAS | 27,82% | 5,56% | 2,78% | |

2. Details

| | Systemic exposure | | Formula | Comments |
|--|-------------------|---------------------|--|---------------------------|
| | [mg a.s. /day] | [mg a.s./kg bw/day] | | |
| Dermal - Potential | 11,0160000 | 0,1836000 | $d_DermTcUCV * d_WorkHr * i_DFR * i_MAF / 1000 * i_AbsorpInuse$ | |
| Dermal - Work wear - arms, body and legs covered | 2,2032000 | 0,0367200 | $d_DermTcCV1 * d_WorkHr * d_DFR * d_MAF / 1000 * i_AbsorpInuse$ | |
| Dermal - Working wear and gloves | 1,1016000 | 0,0183600 | $d_DermTcCV2 * d_WorkHr * d_DFR * d_MAF / 1000 * i_AbsorpInuse$ | |
| Inhalation | | | | Na for outdoor activities |
| | | | | |

Resident exposure for Berelex

| | | |
|---|---|--------------------------|
| 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 | 0,0204 kg a.s./ha | <i>i_AppRate</i> |
| Concentration of active substance (in-use dilution for liquid applications) | 0,0204 g a.s./l | <i>d_ConcAS</i> |
| Dermal absorption of product | 100,00% | <i>i_AbsorpProduct</i> |
| Dermal absorption of in-use dilution | 100,00% | <i>i_AbsorpInuse</i> |
| Oral absorption | 100,00% | <i>i_AbsorpOrallnuse</i> |
| Dislodgeable foliar residue ($i_AppRate * i_DFR$) | 0,0612 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) | 0,0282871 | 0,1605000 | 0,0088421 | 0,0344250 | 0,2130624 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0028287 | 0,0160500 | 0,0008842 | 0,0034425 | 0,0213062 |
| % of RVNAS | 0,43% | 2,43% | 0,13% | 0,52% | 3,23% |

1.2 Adult

| | Spray drift | Vapour | Surface deposits | Entry into treated crops | All pathways (mean) |
|---|-------------|-----------|------------------|--------------------------|---------------------|
| Total systemic exposure (mg a.s./day) | 0,0942215 | 0,2070000 | 0,0235145 | 0,1147500 | 0,3774965 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0015704 | 0,0034500 | 0,0003919 | 0,0019125 | 0,0062916 |
| % of RVNAS | 0,24% | 0,52% | 0,06% | 0,29% | 0,95% |

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 | 0,0282871 | 0,0028287 | $((C16 * i_Absorpnuse * (1 - d_ClothAF)) + C18) * d_ConcAS$ | 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 | 0,0083750 | 0,0008375 | $(i_AppRate / 100) * C29 * d_Turf * d_ReTCCh * d_ReExpDur * MAX(i_AbsorpProduct, i_Absorpnuse) * d_MAF * IF(i_AppEquip = "Vehicle-mounted-Drift Reduction", 0.5, 1)$ | |
| Hand to mouth | 0,0003060 | 0,0000306 | $(i_AppRate / 100) * C29 * d_Turf * d_SalExt * d_AreaHM * d_ReFreqHM * d_ReExpDur * i_AbsorpOralnuse * d_MAF$ | |
| Object to mouth | 0,0001611 | 0,0000161 | $(i_AppRate / 100) * C29 * d_DRP * d_MouthGrass * i_AbsorpOralnuse * d_MAF$ | |

| | | | | |
|-----------------------------------|-----------|-----------|--|---|
| Entry into treated crops | | | | |
| Dermal | 0,0344250 | 0,0034425 | $(d_TcEntryCh*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorplnuse)$ | |
| 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. |
| Adult | | | | |
| Spray drift | 0,0942215 | 0,0015704 | $(C15*i_Absorplnuse*(1-d_ClothAF))+C17)*d_ConcAS$ | 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) | 0,0235145 | 0,0003919 | $(i_AppRate/100)*C30*d_Turf*d_ReTCA*d_ReExpDur*i_AbsorpProduct*d_MAF$ | |
| Entry into treated crops (dermal) | 0,1147500 | 0,0019125 | $(d_TcEntryAd*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorplnuse)$ | |

3. Summing of exposure pathways mean

| | Systemic exposure [mg a.s./day] | Systemic exposure [mg a.s./kg bw/day] | Formula | Comments |
|-----------------------------------|---------------------------------|---------------------------------------|---|---|
| 1-3 year old child | | | | |
| Spray drift | 0,0185681 | 0,0018568 | $((C20*i_Absorplnuse*(1-d_ClothAF))+C22)*d_ConcAS$ | 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 | 0,0062004 | 0,0006200 | $(i_AppRate/100)*C30*d_Turf*d_ReTCh*d_ReExpDur*MAX(i_AbsorpProduct,i_Absorplnuse)*d_MAF*IF(i_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$ | |
| Hand to mouth | 0,0002266 | 0,0000227 | $(i_AppRate/100)*C30*d_Turf*d_SalExt*d_AreaHM*d_ReFreqHM*d_ReExpDur*i_AbsorpOrallnuse*d_MAF$ | |
| Object to mouth | 0,0001192 | 0,0000119 | $(i_AppRate/100)*C30*d_DRP*d_MouthGrass*i_AbsorpOrallnuse*d_MAF$ | |
| Entry into treated crops | | | | |
| Dermal | 0,0274482 | 0,0027448 | $(d_TcEntryMeanCh*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorplnuse))$ | |
| 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. |
| Adult | | | | |
| Spray drift | 0,0615937 | 0,0010266 | $"(C19*i_Absorplnuse*(1-d_ClothAF))+C21)*d_ConcAS"$ | 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) | 0,0174087 | 0,0002901 | $(i_AppRate/100)*C30*d_Turf*d_ReTCA*d_ReExpDur*MAX(i_AbsorpProduct,i_Absorplnuse)*d_MAF*IF(i_AppEquip = "Vehicle-mounted-Drift Reduction",0.5,1)$ | |
| Entry into treated crops (dermal) | 0,0914940 | 0,0015249 | $(d_TcEntryMeanAd*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorplnuse)$ | |

Bystander exposure for Berelex

| | | |
|---|---|--------------------------|
| Croptype | Pome fruit | |
| Application method | Upward spraying | |
| Application equipment | Vehicle-mounted | <i>i_AppEquip</i> |
| Formulation type | Soluble concentrates, emulsifiable concentrate, etc. | |
| Application rate of the product | 0,0204 kg a.s./ha | <i>i_AppRate</i> |
| Buffer strip | 5 m | <i>i_Buffer</i> |
| Concentration of active substance (in-use dilution for liquid applications) | 0,0204 g a.s./l | <i>d_ConcAS</i> |
| Dermal absorption of product | 100,00% | <i>i_AbsorpProduct</i> |
| Dermal absorption of in-use dilution | 100,00% | <i>i_AbsorpInuse</i> |
| Oral absorption | 100,00% | <i>i_AbsorpOrallnuse</i> |
| Dislodgeable foliar residue (i_AppRate*i_DFR) | 0,0612 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 Pa | <i>i_Volat</i> |
| Concentration in air | 0,015 mg/m ³ | <i>d_AirCon</i> |
| 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 | <i>d_ByExpDur</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 /hours/kg | <i>d_BreathRAd</i> |
| Breathing rate child (1-3 year old) | 1,07 m ³ /hours/kg | <i>d_BreathRCh</i> |
| Drift percentage on surface (90th percentile) | 19,89% | |
| Turf transferable residues percentage | 5,00% | <i>d_Turf</i> |
| Transfer coeff. of surface deposits-adult | 14500 cm ² /hour | <i>d_ByTCAd</i> |
| Transfer coeff. of surface deposits-child (1-3 year old) | 5200 cm ² /hour | <i>d_ByTCCh</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 | 20 events/hour | <i>d_ByFreqHM</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 - adult | 7500 cm ² /h | <i>d_TcEntryAd</i> |
| Transfer coefficient for entry into treated crops - child | 2250 cm ² /h | <i>d_TcEntryCh</i> |

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) | 0,0648084 | 0,1605000 | 0,0221137 | 0,0344250 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0064808 | 0,0160500 | 0,0022114 | 0,0034425 |
| % of RVAAS | 0,98% | 2,43% | 0,34% | 0,52% |

1.2 Adult

| | Spray drift | Vapour | Surface deposits | Entry into treated crops |
|---|------------------|------------------|------------------|--------------------------|
| Total systemic exposure (mg a.s./day) | 0,2158810 | 0,2070000 | 0,0588346 | 0,1147500 |
| Total systemic exposure per kg body weight (mg/kg bw/day) | 0,0035980 | 0,0034500 | 0,0009806 | 0,0019125 |
| % of RVAAS | 0,55% | 0,52% | 0,15% | 0,29% |

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 | 0,0648084 | 0,0064808 | $((C16*i_Absorplnuse*(1-d_ClothAF))+C18)*d_ConcAS$ | 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 | 0,0210993 | 0,0021099 | $(i_AppRate/100)*C24*d_Turf*d_ByTCCh*d_ByExpDur*MAX(i_AbsorpProduct,i_Absorplnuse)*d_MAF*IF(i_AppEquip="Vehicle-mounted-Drift Reduction",0.5,1)$ | |
| Hand to mouth | 0,0008115 | 0,000812 | $(i_AppRate/100)*C25*d_Turf*d_SalExt*d_AreaHM*d_ByFreqHM*d_ByExpDur*i_AbsorpOrallnuse*d_MAF$ | |
| Object to mouth | 0,0002029 | 0,000203 | $(i_AppRate/100)*C25*d_DRP*d_MouthGrass*i_AbsorpOrallnuse*d_MAF$ | |

| | | | | |
|-----------------------------------|-----------|-----------|--|---|
| Entry into treated crops | | | | |
| Dermal | 0,0344250 | 0,0034425 | $(d_TcEntryCh*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorplnuse)$ | |
| 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 | 0,2158810 | 0,0035980 | $((C15*i_Absorplnuse*(1-d_ClothAF)t)+C17)*d_ConcAS$ | 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) | 0,0588346 | 0,0009806 | $(i_AppRate/100)*C24*d_Turf*d_ByTCAd*d_ByExpDur*MAX(i_AbsorpProduct,i_Absorplnuse)*d_MAF*IF(i_AppEquip="Vehicle-mounted-Drift Reduction",0.5,1)$ | |
| Entry into treated crops (dermal) | 0,1147500 | 0,0019125 | $(d_TcEntryAd*0.25*d_DFR*d_MAF)/1000*MAX(i_AbsorpProduct,i_Absorplnuse)$ | |

Recreational exposure for Berelex

| 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 | | 0,0204 | kg a.s./ha | | <i>i_AppRate</i> |
| Dermal absorption of product | | 100,00% | | | <i>i_AbsorpProduct</i> |
| Dermal absorption of in-use dilution | | 100,00% | | | <i>i_Absorplnuse</i> |
| Oral absorption | | 100,00% | | | <i>i_AbsorpOrallnuse</i> |
| Dislodgeable foliar residue ($i_AppRate \cdot i_DFR$) | | 0,0612 | $\mu\text{g a.s./cm}^2$ | | <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_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> |

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 | 0,0530400 | 0,0053040 | $(i_AppRate/100) \cdot C13 \cdot d_Turf \cdot d_ReTCCh \cdot d_ReExpDur \cdot \text{MAX}(i_AbsorpProduct, i_Absorplnuse) \cdot d_MAF$ | |
| Hand to mouth | 0,0019380 | 0,0001938 | $(i_AppRate/100) \cdot C13 \cdot d_Turf \cdot d_SalExt \cdot d_AreaHM \cdot d_ReFreqHM \cdot d_ReExpDur \cdot i_AbsorpOrallnuse \cdot d_MAF$ | |
| Object to mouth | 0,0010200 | 0,0001020 | $(i_AppRate/100) \cdot C13 \cdot d_DRP \cdot d_MouthGrass \cdot i_AbsorpOrallnuse \cdot d_MAF$ | |
| Total systemic exposure | 0,0559980 | 0,0055998 | | |
| % of RVNAS | | | | |
| Adult | | | | |
| Surface deposits (dermal) | 0,1489200 | 0,0024820 | $(i_AppRate/100) \cdot C13 \cdot d_Turf \cdot d_ReTCAd \cdot d_ReExpDur \cdot \text{MAX}(i_AbsorpProduct, i_Absorplnuse) \cdot d_MAF$ | |
| % of RVNAS | | | | |

| | | |
|---------------------------------|---|---------------------------------------|
| <i>d_AirConVol</i> | Concentration in air of moderately volatile substances | 0,015 mg/m 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) | 0,0204 g a.s./l |
| <i>d_DFR</i> | Dislodgeable foliar residue (i_AppRate*i_DFR) | 0,0612 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 | 1,00 |
| <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> | Coefficient to estimate head protection factor 75 th Percentile | 1,79422 |
| <i>d_head95ProtectionFactor</i> | Coefficient to estimate head protection factor 95 Percentile | 1,24705 |

sys_KeyOperator Variables for operator exposure lookup key
sys_OperatorModel Operator model

i_IndoorOutdoor&i_FormVal&i_AppMeth&i_AppEquip&

1

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

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

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

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

| Crop dependent exposure parameters | | | | | | | | | | |
|---|----------------------------|--------------------------|--|-----------------------|---------------------|-------------------------------------|-------------------------------------|------------------------------|----|--|
| key_CropType, ay_CropType | Transfer coefficients | Transfer coefficients | 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 | | 10 | |
| Leaf vegetables and fresh herbs | | 2500 | 5800 Reaching, picking | | 8 Hand and body | | 580 Field crops | | 50 | |
| 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 | 0,0018 | 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 |

