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| REGISTRATION REPORT  **Part B**  Section 6  Mammalian Toxicology  Detailed summary of the risk assessment |
| Product code: **FRE 001/08/2020**  Product name: **FUNABEN® 018 PA**  Chemical active substance:  **Thiabendazole, 18 g/kg (1,8 %)** |
| Central Zone  Zonal Rapporteur Member State: Poland |
| CORE ASSESSMENT/Poland  (authorization) |
| Applicant: XXXX  Submission date: 07/07/2023  Evaluation date: 12/2023  MS Finalisation date: 03/2024 |

Version history

|  |  |
| --- | --- |
| When | What |
| December 2023 | Version evaluated by zRMS PL based on first draft and supplemented data provided in **November** by the applicant |
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Table of Contents

[6 Mammalian Toxicology (KCP 7) 5](#_Toc152763156)

[6.1 Summary 5](#_Toc152763157)

[6.2 Toxicological Information on Active Substance 8](#_Toc152763158)

[6.3 Toxicological Evaluation of Plant Protection Product 9](#_Toc152763159)

[6.4 Toxicological Evaluation of Groundwater Metabolites 11](#_Toc152763160)

[6.5 Dermal Absorption (KCP 7.3) 11](#_Toc152763161)

[6.5.1 Justification for proposed values - Thiabendazole 11](#_Toc152763162)

[6.6 Exposure Assessment of Plant Protection Product (KCP 7.2) 12](#_Toc152763163)

[6.6.1 Selection of critical use and justification 12](#_Toc152763164)

[6.6.2 Operator exposure (KCP 7.2.1) 12](#_Toc152763165)

[6.6.2.1 Estimation of operator exposure 12](#_Toc152763166)

[6.6.2.2 Measurement of operator exposure 13](#_Toc152763167)

[6.6.3 Worker exposure (KCP 7.2.3) 14](#_Toc152763168)

[6.6.3.1 Estimation of worker exposure 14](#_Toc152763169)

[6.6.3.2 Refinement of generic DFR value (KCP 7.2) 15](#_Toc152763170)

[6.6.3.3 Measurement of worker exposure 16](#_Toc152763171)

[6.6.4 Resident and bystander exposure (KCP 7.2.2) 16](#_Toc152763172)

[6.6.4.1 Estimation of resident and bystander exposure 16](#_Toc152763173)

[6.6.4.2 Measurement of resident and/or bystander exposure 16](#_Toc152763174)

[6.6.5 Combined exposure 16](#_Toc152763175)

[Appendix 1 Lists of data considered in support of the evaluation 17](#_Toc152763176)

[Appendix 2 Detailed evaluation of the studies relied upon 20](#_Toc152763177)

[A 2.1 Statement on bridging possibilities 20](#_Toc152763178)

[A 2.2 Acute oral toxicity (KCP 7.1.1) 20](#_Toc152763179)

[A 2.2.1 Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej 20](#_Toc152763180)

[A 2.3 Acute percutaneous (dermal) toxicity (KCP 7.1.2) 22](#_Toc152763181)

[A 2.3.1 Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej 22](#_Toc152763182)

[A 2.4 Acute inhalation toxicity (KCP 7.1.3) 23](#_Toc152763183)

[A 2.5 Skin irritation (KCP 7.1.4) 23](#_Toc152763184)

[A 2.5.1 Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej 23](#_Toc152763185)

[A 2.6 Eye irritation (KCP 7.1.5) 25](#_Toc152763186)

[A 2.6.1 Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej 25](#_Toc152763187)

[A 2.7 Skin sensitisation (KCP 7.1.6) 26](#_Toc152763188)

[A 2.8 Supplementary studies for combinations of plant protection products (KCP 7.1.7) 27](#_Toc152763189)

[A 2.9 Data on co-formulants (KCP 7.4) 27](#_Toc152763190)

[A 2.9.1 Material safety data sheet for each co-formulant 27](#_Toc152763191)

[A 2.9.2 Available toxicological data for each co-formulant 27](#_Toc152763192)

[A 2.10 Studies on dermal absorption (KCP 7.3) 27](#_Toc152763193)

[A 2.11 Other/Special Studies 27](#_Toc152763194)

[Appendix 3 Exposure calculations 28](#_Toc152763195)

[A 3.1 Operator exposure calculations (KCP 7.2.1.1) 28](#_Toc152763196)

[A 3.1.1 Calculations for Thiabendazole 28](#_Toc152763197)

[A 3.2 Worker exposure calculations (KCP 7.2.3.1) 32](#_Toc152763198)

[A 3.2.1 Calculations for Thiabendazole 32](#_Toc152763199)

[A 3.3 Resident and bystander exposure calculations (KCP 7.2.2.1) 33](#_Toc152763200)

[Appendix 4 Detailed evaluation of exposure and/or DFR studies relied upon (KCP 7.2, KCP 7.2.1.1, KCP 7.2.2.1, KCP 7.2.3.1) 34](#_Toc152763201)

# Mammalian Toxicology (KCP 7)

## Summary

Table 6.1‑1: Information on FRE 001/08/2020/FUNABEN® 018 PA \*

|  |  |
| --- | --- |
| Product name and code | FRE 001/08/2020 / FUNABEN® 018 PA |
| Formulation type | PA |
| Active substance (incl. content) | Thiabendazole 18 g/kg (1,8 %) |
| Function | fungicide |
| Product already evaluated as the ‘representative formulation’ during the approval of the active substance | No |
| Product previously evaluated in another MS according to Uniform Principles | No |

\* Information on the detailed composition FRE 001/08/2020/FUNABEN® 018 PA can be found in the confidential dRR Part C.

Justified proposals for classification and labelling

According to the criteria given in Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008, the following classification and labelling with regard to toxicological data is proposed for the preparation:

Table 6.1‑2: Justified proposals for classification and labelling for FRE 001/08/2020/FUNABEN® 018 PA according to Regulation (EC) No 1272/2008

|  |  |
| --- | --- |
| Hazard class, categories | Skin Sens. 1A; H317  Aquatic Chronic 3 |
| Hazard pictograms or Code for hazard pictogram | none |
| Signal word | ~~None~~ Warning |
| Hazard statement | H317, H412 |
| Precautionary statement(s) | P272  P280  P302 + P352  P333 + P313  P362 + P364  P501  SP1 |
|  |  |
| Additional labelling phrases | To avoid risks to man and the environment, comply with the instructions for use. [EUH401] |
|  | 1,2-benzisothiazol-3-one.  ~~Contains 1,2-benzisothiazol-3-one. May produce an allergic reaction. [EUH208]~~ |

Table 6.1‑3: Summary of risk assessment for operators, workers, residents and bystanders for FRE 001/08/2020/FUNABEN® 018 PA

|  | Result | PPE / Risk mitigation measures |
| --- | --- | --- |
| Operators | Acceptable | Not required |
| Workers | Acceptable | Not required |
| Residents | Assessment not required | Not required |
| Bystanders | Assessment not required | Not required |

No unacceptable risk for operators (professional and non-professional), workers, residents and bystanders was identified when the product is used as intended. No specific PPE is necessary.

A summary of the critical uses and the overall conclusion regarding exposure for operators, workers and residents/bystanders is presented in the following table.

Table 6.1‑4 Critical uses and overall conclusion of exposure assessment

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Use-No.\* | Crops and situation (e.g. growth stage of crop) | F, Fn, Fpn G, Gn, Gpn or I \*\* | Application | | Application rate | | PHI (d) | Remarks:   (e.g. safener/synergist (L/ha))  critical gap for operator, worker, resident or bystander exposure based on [Exposure model] | Acceptability of exposure assessment | | | |
| Method / Kind  (incl. application technique \*\*\* | Max. number  a) per use  b) per crop/ season | Max. application rate  g as/m2 of wound area | Water L/ha  min / max | Operator | Worker | Residents | Bystander |
| **Zonal uses (field or outdoor uses, certain types of protected crops)** | | | | | | | | | | | | |
| 1 | Peach | Fpn | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| 2 | Apple | Fpn | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| **Minor uses according to Article 51 (zonal uses)** | | | | | | | | | | | | |
| 3 | Pear,  Asian pear,  European crab apple | F | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| 4 | Apricot, Plum, Cherry, Sweet cherry, Nectarine | F | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| 5 | Ornamental plants (deciduous and coniferous trees and bushes),  Nursery ornamental plants | F | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| 6 | Forest nurseries plants, restockings, afforestations and forest trees’ seed orchards;  Christmas trees grown on plantations | F | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| 7 | Peach, Chaeno-meles | F | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| 8 | Bird cherry, Mahaleb cherry | F | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |
| 9 | Chokeberry, Blackberry, Raspberry | F | painting of wounds with brush | a) 1/each wound  b) 1 / each wound | a) 10\*  b) 10\* | NR | NR | \*dose per m2 of wound area resulting from the cutting and cleaning of infected places of trees | A | A | A | A |

\* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1

\*\* F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

\*\*\* e.g. LC: low crops, HC: high crop, TM: tractor-mounted, HH: hand-held

Explanation for column 10 “Acceptability of exposure assessment”

|  |  |
| --- | --- |
| A | Exposure acceptable without PPE / risk mitigation measures |
| R | Further refinement and/or risk mitigation measures required |
| N | Exposure not acceptable/ Evaluation not possible |

Data gaps

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

Noticed data gaps are: None

## Toxicological Information on Active Substance

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

Table 6.2‑1: Information on active substance

|  | 2-(thiazol-4-yl)benzimidazole |
| --- | --- |
| Common Name | Thiabendazole |
| CAS-No. | 148-79-8 |
| Classification and proposed labelling | |
| With regard to toxicological endpoints (according to the criteria in Reg. 1272/2008, as amended) | Hazard classess, categories: Aquatic Acute 1, Aquatic Chronic 1  Code for hazard pictogram: GHS09  Signal word: Warning  Hazard statements: H400, H410  Precautionary statements: P273, P391, P501 |
| Additional C&L proposal | Please insert proposal for additional C&L if no (sufficient) harmonised classification is available |
| Agreed EU endpoints | |
| AOEL systemic | 0,070 mg/kg bw/d (corrected for 70 % oral absorption |
| Reference | CONCLUSION ON PESTICIDE PEER REVIEW  Conclusion on the peer review of the pesticide risk assessment of the active substance thiabendazole (EFSA Journal 2014;12(11):3880) |
| Conditions to take into account/critical areas of concern with regard to toxicology | |
| According to CONCLUSION ON PESTICIDE PEER REVIEW  Conclusion on the peer review of the pesticide risk assessment of the active substance thiabendazole (EFSA Journal 2014;12(11):3880) for Thiabendazole | Consumer risk was identified for Apple and Pear (post-harvest) and Assessment could not be finalised for Seed potato, Apple and Pear (post-harvest), and Citrus (post-harvest). |

## Toxicological Evaluation of Plant Protection Product

A summary of the toxicological evaluation for FRE 001/08/2020/FUNABEN® 018 PA is given in the following tables. Full summaries of studies on the product that have not been previously considered within an EU peer review process are described in detail in Appendix 2.

Table 6.3‑1: Summary of evaluation of the studies on acute toxicity including irritancy and skin sensitisation for FRE 001/08/2020/FUNABEN® 018 PA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of test, species, model system (Guideline) | Result | Acceptability | Classification  (acc. to the criteria in Reg. 1272/2008) | Reference |
| LD50 oral, rat  (OECD 420 / Method B.1.BIS) | > 2000 mg/kg bw\* | Yes | none | XXXX.  / 2006  Study code OS-16/06, part I |
| LD50 dermal, rat  (OECD 402 / Method B.3) | > 2000 mg/kg bw\* | Yes | none | XXXX  / 2006  Study code OS-16/06, part II |
| LC50 inhalation, rat | Not submitted. Justification presented in Appendix 2  zRMS: No classification for acute inhalation toxicity required | | | |
| Skin irritation, rabbits  (OECD 404, Method UE B.4) | Non-irritant\* | Yes | none | XXXX  / 2006  Study code OS-16/06, part III |
| Eye irritation, rabbits  (OECD 405, Method B.5) | Non-irritant\* | Yes | none | XXXX  / 2006  Study code OS-16/06, part IV |
| Skin sensitisation | Sensitising | Yes | Skin Sens. 1A, H317 | Based on assessment of all components |
| ~~Skin sensitisation~~ | ~~Not submitted. Justification presented in Appendix 2~~ | | | |
| Supplementary studies for combinations of plant protection products | Not required |  |  |  |

\*based on results obtained for reference product FUNABEN® PLUS 03 PA (bridging approach). For justification please refer to Appendix 2

Table 6.3‑2: Additional toxicological information relevant for classification/labelling of FRE 001/08/2020/FUNABEN® 018 PA

|  | Substance (concentration in product, % w/w) | Classification of the  substance  (acc. to the criteria in Reg. 1272/2008) | Reference | Classification of product (acc. to the criteria in Reg. 1272/2008) |
| --- | --- | --- | --- | --- |
| Toxicological properties of active substance (relevant for classification of product) | Thiabendazole 18 g/kg (1,8 % w/w) | H400, H410 | MSDS\*\* | H412 |
| Toxicological properties of non-active substance(s) (relevant for classification of product) | 1,2-benzisothiasol-3(2H)-one (CAS No. 2634-33-5, ≥ 0,038 ÷ < 0,05 % (w/w))\* | H302, H315, H318, H317, H400  *specific concentration limit: Skin Sens. 1; H317 >= 0,05 %*  *specific concentration limit: Skin Sens. 1; H317 >= 0,05 %* | Reg. 1272/2008 / MSDS\*\* / | ~~EUH208~~  H317 |
|  | Optional | | |  |
| Toxicological properties of non-active substance(s) (relevant for classification of product) | 1,2-benzisothiasol-3(2H)-one (CAS No. 2634-33-5, ≥ 0,038 ÷ < 0,05 % (w/w))\* | Skin Sens. 1A, H317 | RAC opinion adopted on 26 November 2021 on 1,2-benzisothiazolin-3-one | Skin Sens. 1A, H317.  1,2-Benzisothiazolin-3-one |
| Further toxicological information | not required | | | |

\*Please use concentration range or concentration limit (e.g. 1-10% or > 1%) as provided in MSDS.

\*\*Material safety data sheet by the applicant

## Toxicological Evaluation of Groundwater Metabolites

No metabolites of thiabendazole are predicted to occur in groundwater. Taking into account the form of product (thick paste; not used when the rain falls) and mode of application (painting with brush locally on wounds of trees; additionally the present polyvinyl acetate creates an impermeable and indelible coating on the wound surface, which prevents from getting through of active substance and other co-formulants), it has been assessed, that there is no possibility to expect the pollution of groundwater.

Especially taking into account EPPO guidelines: Environmental risk assessment scheme for plant protection products, Chapter 6: Surface water and sediment (EPPO bulletin 2003, 33, pages 169-181).

## Dermal Absorption (KCP 7.3)

A summary of the dermal absorption rates for the active substance in FRE 001/08/2020/FUNABEN® 018 PA are presented in the following table.

Table 6.5‑1: Dermal absorption rates for active substances in FRE 001/08/2020/FUNABEN® 018 PA

|  | Thiabendazole | |
| --- | --- | --- |
|  | Value | Reference |
| Concentrate | N/A | N/A |
| Dilution | 50 % | Guidance on dermal absorption, EFSA Journal 2017;15(6):4873  Guidance SANTE/2018/10591 rev.1 of 24 October 2018 |

### Justification for proposed values - Thiabendazole

No data on dermal absorption for Thiabendazole in FRE 001/08/2020/FUNABEN® 018 PA is available. Justifications for default values according to Guidance on Dermal Absorption (EFSA Journal 2017;15(6):4873) are presented in the following table.

Table 6.5‑2: Default dermal absorption rates for Thiabendazole

|  | Value | Justification for value | Acceptability of justification |
| --- | --- | --- | --- |
| Concentrate | N/A | N/A | According to Guidance SANTE/2018/10591 rev.1 when the active substance is present in the plant protection product at a concentration lower than 5%, plant protection product is considered as a“dilution”. |
| Dilution | 50% | Default value | According to Guidance on dermal absorption. EFSA Journal 2017;15(6):4873 |

## Exposure Assessment of Plant Protection Product (KCP 7.2)

Table 6.6‑1: Product information and toxicological reference values used for exposure assessment

|  |  |
| --- | --- |
| Product name and code | FRE 001/08/2020/FUNABEN® 018 PA |
| Formulation type | PA |
| Category | Fungicide |
| Active substance (incl. content) | **Thiabendazole**  18 g/ kg (1,8 %) |
| AOEL systemic | 0,070 mg/kg bw/d |
| Inhalation absorption | 100% |
| Oral absorption | 100% |
| Dermal absorption | Concentrate: 10 %  Dilution: NR |

### Selection of critical use and justification

Not relevant – no critical uses were identified. A list of all intended uses within the Central zone is given in Part B, Section 0.

### Operator exposure (KCP 7.2.1)

#### Estimation of operator exposure

A summary of the exposure models used for estimation of operator exposure to the active substances during application of FRE 001/08/2020/FUNABEN® 018 PA is presented in Table 6.6‑2. The outcome of the estimation is presented in Tables 6.6‑3 and 6.6.4 (longer term exposure). Detailed calculations are in Appendix 3.

Table 6.6‑2: Exposure models for intended uses

|  |  |
| --- | --- |
| Use no 1,2,3,4,5,6,7,8,9 | 555,6 g product/m2 of wound area |
| Model(s) | ~~Guidance on the assessment of exposure of operators,~~  ~~workers, residents and bystanders in risk assessment of~~  ~~plant protection products; EFSA Journal 2022; Volume 20, Issue 1~~  *ConsExpo web* tool (adapted model for Painting with brush) for non-professional users  *German model for operator, 90th percentile* (properly adapted for specific mode of application) for professional users |

Taking into account, that Thiabendazole shows low acute toxicity via oral, dermal and inhalation routes;

it is not a skin or eye irritant nor a skin sensitizer; and no AAEOL value is available, only longer term exposure has been estimated.

Due to form of product (thick paste) and specific mode of application (locally on wound of trees, using brush; small areas of plants) and lack of standardised first-tier methods, calculation of the exposure for non-professional users was performed using *ConsExpo web* (adapted model for Painting with brush). For professional users *German model for operator, 90th percentile* (properly adapted for specific mode of application) were used.

Table 6.6‑3: Estimated operator exposure (longer term exposure) – non-professional user

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Thiabendazole | |
| Model data | Level of PPE | Total absorbed dose  (mg/kg/day) | % of systemic AOEL |
| Painting wounds of trees with brush | | | |
| Application rate | | 555,6 g of product/m2 of wound area | |
| **(Fact sheet) Painting products→**  **(Product category) Brush and roller painting→**  **(Product) high solid paint→**  **(Scenario) application** (ConsExpo web)  Body weight: **60 kg**  Frequency of application**: 3 / year**  Dermal exposure only:  Model: **Direct product contact – Instant application**  Product amount: **4 g**  Retention factor: **0,1** (it was assumed that 10% of the product remains on the skin, the rest is removed, e.g. by washing hands) | without PPE | 0,060 | 86 |
| with PPE | N/A | N/A |

Table 6.6‑4: Estimated operator exposure (longer term exposure) – professional user

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Thiabendazole | |
| Model data | Level of PPE | Total absorbed dose  (mg/kg/day) | % of systemic AOEL |
| Painting wounds of trees with brush | | | |
| Application rate | | 555,6 g of product/m2 of wound area | |
| (German model for operator**; 90**th percentile)  Body weight: 60 kg | without PPE | 0,0698275 | 99,75 |
| with PPE | 0,0623575 | 89,08 |

#### Measurement of operator exposure

Since the operator exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) will not be exceeded under conditions of intended uses, even without using PPE, a study to provide measurements of operator exposure was not necessary and therefore not performed.

**zRMS**:

There is no EU harmonised, recommended model for estimation of exposure of operator applying a pesticide using paintbrush application (Guidance on the assessment of exposure of operators, workers, residents and bystanders. EFSA Journal 2022;20(1):7032). In the opinion of zRMS the model, assumptions and input data used by the applicant for estimation exposure for professional users (*German model for operator, 90th percentile* properly adapted for specific mode of application) and for non-professional users (*ConsExpo web* adapted model for Painting with brush) are considered as acceptable .

The exposure of professional operator applying on wounds of tree using brush a product FRE 001/08/2020/FUNABEN® 018 PA in line with GAP at a dose of 555,6 g of product/m2 of wound area (10 g of active substance/m2) and not wearing PPE amounts 99.75% of AOEL, and when wearing PPE ( gloves , protective cloths) 89% of AOEL. Since the exposure is below AOEL it does not pose an unacceptable health risk, but since a product is classified as skin sensitiser an operator should wear protective clothing and protective gloves during mixing/loading and application of the product.

The exposure of non-professional operator applying on wounds of tree using brush a product FRE 001/08/2020/FUNABEN® 018 PA in line with GAP at a dose of 555,6 g of product/m2 of wound area (10 g of active substance/m2) and not wearing PPE amounts 86% of AOEL. Since the exposure is below AOEL it does not pose an unacceptable health risk, but since a product is classified as skin sensitiser a non-professional operator should wear a workwear covering body, legs and arms and protective gloves during mixing/loading and application of the product.

### Worker exposure (KCP 7.2.3)

#### Estimation of worker exposure

Table 6.6‑5 shows the exposure model used for estimation of worker (performing such tasks as cutting, sorting, bundling, carrying and fruit picking – within 8 hours/day) exposure after entry into a previously treated area or handling a crop treated with FRE 001/08/2020/FUNABEN® 018 PA according to GAP table. Outcome of the estimation is presented in Table 6.6‑6 (longer term exposure). Detailed calculations are in Appendix 3.

Table 6.6‑5: Exposure models for intended uses

|  |  |
| --- | --- |
| Use no 1,2,3,4,5,6,7,8,9 | 555,6 g product/m2 of wound area |
| Model | ~~Guidance on the assessment of exposure of operators,~~  ~~workers, residents and bystanders in risk assessment of~~  ~~plant protection products; EFSA Journal 2022; Volume 20, Issue 1~~  Hinweise in der Gebrauchsanleitung zum Schutz von Personen  bei Nachfolgearbeiten in mit Pflanzenschutzmitteln behandelten  Kulturen (worker re-entry) [BBA, 1998] |

Taking into account, that Thiabendazole shows low acute toxicity via oral, dermal and inhalation routes; it is not a skin or eye irritant nor a skin sensitizer and no AAEOL value is available, only longer term exposure has been estimated. Due to form of product (thick paste) and specific mode of application (locally on wound of trees, using brush; small areas of plants – minimal contact of worker), the equation for calculating the exposure takes into account the dose of the active substance in relation to the wound treated on individual tree.

Table 6.6‑6: Estimated worker exposure (longer term exposure)

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Thiabendazole | |
| Model data | Level of PPE | Total absorbed dose (mg/kg bw/day) | % of systemic AOEL |
| Transfer coefficients (Table 10, *Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment of plant protection products*; EFSA Journal 2022; Volume 20, Issue 1)  German model BBA from 1998: “*Hinweise in der*  *Gebrauchsanleitung zum Schutz von Personen bei*  *Nachfolgearbeiten in mit Pflanzenschutzmitteln*  *behandelten Kulturen (worker re-entry)*    Ornamentals (low/high) – worst-case scenario (for work wear with and without gloves)  Orchards – worst case scenario (for total potential exposure) | | Assumptions:  DFR: 3 [μga.s.x tree / cm2 x kga.s]  TC (transfer coefficient): 5000 [cm2/h/person] – work wear, no gloves  TC (transfer coefficient): 1400 [cm2/h/person] – work wear with gloves  TC (transfer coefficient): 22500 [cm2/h/person] – total potential exposure  T (task duration): 8 h/d (other activities)  R (dose): 0,00005 [kg a.s./ tree]  Dermal absorption factor: 0,5 (50 %)  DE – dermal exposure [mga.s./person x d]  TAD – total adsorbed dose [mga.s./kgbw x d] = DE \* Dermal absorption factor / body weight  2 wounds (approx. 25 cm2 of area, each) = 50 cm2 of wounds area on each tree | |
| Number of applications and application rate | | 1 x 0,00005 g a.s./ tree | |
| Body weight: 60 kg | Work wear (arms, body and legs covered) | DE = DFR x TC x T x R =  3 x 5000 x 8 x 0,00005 = 6 [μga.s./d x person] = 0,006 [mgas/d x person]  TAD = 0,006 \* 0,5 / 60 = 0,00005 [mg/kgbw x d] = | 0,07 % AOEL |
| Work wear (arms, body and legs covered) and gloves | DE = DFR x TC x T x R =  3 x 1400 x 8 x 0,00005 = 1,68 [μga.s./d x person] = 0,00168 [mgas/d x person]  TAD = 0,00168 \* 0,5 / 60 = 0,000014 [mg/kgbw x d] | 0,02 % AOEL |
| Total potential exposure | DE = DFR x TC x T x R =  3 x 22500 x 8 x 0,00005 = 27 [μga.s./d x person] = 0,027 [mgas/d x person]  TAD = 0,027 \* 0,5 / 60 = 0,000225 [mg/kgbw x d] | 0,32 % AOEL |

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

Not relevant – default value of DFR [3 μg/cm2] was used according to section 2.5.2.2 of Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment of plant protection products; EFSA Journal 2022; Volume 20, Issue 1).

#### Measurement of worker exposure

Since the worker exposure estimations carried out indicated that the acceptable operator exposure level (AOEL) will not be exceeded under conditions of intended uses and considering above mention PPE, study to provide measurements of worker exposure was not necessary and therefore not performed.

**zRMS**:

The potential exposure of worker performing such tasks as cutting, sorting, bundling, carrying and fruit picking – within 8 hours/day after entry into an area previously treated with FRE 001/08/2020/FUNABEN® 018 PA according to GAP calculated with German model BBA from 1998 amounted to 0.32% of AOEL, when wearing work wear covering arms, body and legs to 0.07 % AOEL, and work ear and protective gloves 0.02% of AOEL.

Since the exposure is below AOEL it does not pose an unacceptable health risk for worker, but since a product is classified as skin sensitiser a worker should wear a workwear covering body, legs and arms and protective gloves while performing his task in treated area.

### Resident and bystander exposure (KCP 7.2.2)

#### Estimation of resident and bystander exposure

FUNABEN® 018 PA is in a form of thick paste and is used in orchards and gardens by painting the wounds of trees with brush. Because of its form and specific mode of use, the product does not pose hazards for residents and/or bystanders. So there is no need to perform exposure assessment.

**zRMS** is of the opinion that during application of a product FRE 001/08/2020/FUNABEN® 018 PA according to GAP by painting with brush there will be no exposure for residents or bystanders since no aerosol will be created, so health risk for bystanders and resident will be negligible. .

#### Measurement of resident and/or bystander exposure

Not relevant – please refer to section 6.6.4.1.

### Combined exposure

Not relevant. The product contains only one active substance.

1. Lists of data considered in support of the evaluation

Tables considered not relevant can be deleted as appropriate.

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

List of data submitted by the applicant and relied on

| Data point | Author(s) | Year | Title Company Report No.  Source (where different from company) GLP or GEP status Published or not | Vertebrate study  Y/N | Owner |
| --- | --- | --- | --- | --- | --- |
| KCP 7.1.1  KCP 7.1.2  KCP 7.1.4  KCP 7.1.5 | XXXX | 2006 | Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej  Report no: OS-16/06  Instytu Przemysłu Organicznego, Oddział w Pszczynie, Zakład badań toksykologicznych, ul. Doświadczalna 27, 43-200 Pszczyna  GLP  Unpublished | Y | XXXX |

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

| Data point | Author(s) | Year | Title Company Report No.  Source (where different from company) GLP or GEP status Published or not | Vertebrate study  Y/N | Owner |
| --- | --- | --- | --- | --- | --- |
| KCP XX | Author | YYYY | Title  Company Report N  Source  GLP/non GLP/GEP/non GEP  Published/Unpublished | Y/N | Owner |
|  |  |  |  |  |  |

The following tables are to be completed by MS

List of data submitted by the applicant and not relied on

| Data point | Author(s) | Year | Title Company Report No.  Source (where different from company) GLP or GEP status Published or not | Vertebrate study  Y/N | Owner |
| --- | --- | --- | --- | --- | --- |
| KCP XX | Author | YYYY | Title  Company Report N  Source  GLP/non GLP/GEP/non GEP  Published/Unpublished | Y/N | Owner |
|  |  |  |  |  |  |

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

| Data point | Author(s) | Year | Title Company Report No.  Source (where different from company) GLP or GEP status Published or not | Vertebrate study  Y/N | Owner |
| --- | --- | --- | --- | --- | --- |
| KCP XX | Author | YYYY | Title  Company Report N  Source  GLP/non GLP/GEP/non GEP  Published/Unpublished | Y/N | Owner |
|  |  |  |  |  |  |

1. Detailed evaluation of the studies relied upon
   1. Statement on bridging possibilities

Bridging approach was necessary. For the evaluation of toxicity of plant protection product FRE 001/08/2020 // FUNABEN® 018 PA, studies for reference product FUNABEN® PLUS 03 PA // PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU were used. Studies of acute toxicity: oral (KCP 7.1.1), dermal (KCP 7.1.2); skin irritation (KCP 7.1.4) and eye irritation (KCP 7.1.5) are presented below. **Detailed confidential information are addressed in Part C.**

|  |  |
| --- | --- |
| Comments of zRMS: | The applicant provided results of acute oral and dermal toxicity, skin and eye irritation and skin sensitisation of formulation Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA. Based on comparison of the composition of the formulation/product FUNABEN® 018 PA (FRE 001/08/2020) with composition of formulation Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA it is considered that results of toxicity studies with Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA can be used for assessment of toxicity of FUNABEN® 018 PA (FRE 001/08/2020). For details please see Part C |

* 1. Acute oral toxicity (KCP 7.1.1)

|  |  |
| --- | --- |
| Comments of zRMS: | The study performed according to relevant OECD guideline and in GLP condition is acceptable. The “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA, and thus also FUNABEN® 018 PA (FRE 001/08/2020) does not require classification for acute oral toxicity. |

* + 1. Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej

|  |  |
| --- | --- |
| Reference | KCP 7.1.1 |
| Report | Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej  XXXX  Report no: OS-16/06, część I |
| Guideline(s) | Yes: OECD no 420, method B.1.BIS |
| Deviations | No |
| GLP | Yes |
| Acceptability | Yes |
| Duplication  (if vertebrate study) | No |

Materials and methods

|  |  |
| --- | --- |
| Test material (Lot/Batch No.) | „Pasta do smarowania ran drzew 3 % Tiofanat metylu”, próbka nr 1 |
| Species | Rat |
| No. of animals (group size) | 5 rats/female |
| Dose | 2000 mg/kg bw |
| Exposure | Once with a metal probe into the stomach |
| Vehicle/Dilution | None |
| Post exposure observation period | 14 days |
| Remarks | 1 female (pre-experiment) + 4 females |

Results and discussions

Table A 1: Results of acute oral toxicity study in rats of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA

| Dose (mg/kg bw) | Toxicological results \* | Duration of signs | Time of death | LD50 (mg/kg bw) (14 days) |
| --- | --- | --- | --- | --- |
| Male rats | | | | |
| - | - | - | - | - |
| Female rats | | | | |
| 2000 | 0/0/5 | - | - | > 2000 |

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

Table A 2: Summary of findings of acute oral toxicity study in rats of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA

|  |  |
| --- | --- |
| Mortality | No mortality occurred. |
| Clinical signs | No clinical signs of toxicity were observed. |
| Body weight | Body weight gain was considered to be normal. |
| Macroscopic examination | The necropsies performed at the end of the study revealed no apparent findings. |

Conclusion

Under the experimental conditions, the oral LD50 of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA is higher than 2000 mg/kg bw in rats. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

No additional studies for evaluated product FRE 001/08/2020 // FUNABEN® 018 PA were provided.

Taking into account, that bridging approach was performed and comparing of the composition between evaluated product FRE 001/08/2020 / FUNABEN® 018 PA and reference product: “Pasta do smarowania ran drzew 3 % Tiofanat metylu” // FUNABEN® PLUS 03 PA – no classification for acute toxicity by oral route is required for evaluated product.

The composition of both products is very similar. The content of Thiabendazole in FUNABEN® 018 PA is lower than content of Methyl thiophanate in FUNABEN® PLUS 03 PA. On the opposite to Methyl thiophanate, Thiabendazole shows no health hazards, e.g. has a low acute toxicity via oral route. So there is no indications to expect that FUNABEN® 018 PA shows acute toxicity via oral route. Besides, unnecessary suffering of vertebrates was avoided. Detailed confidential information are addressed in Part C.

* 1. Acute percutaneous (dermal) toxicity (KCP 7.1.2)

|  |  |
| --- | --- |
| Comments of zRMS: | The study performed according to relevant OECD guideline and in GLP conditions is acceptable. The “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA, and thus also FUNABEN® 018 PA (FRE 001/08/2020), does not require classification for acute dermal toxicity. |

* + 1. Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej

|  |  |
| --- | --- |
| Reference | KCP 7.1.2 |
| Report | Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej  XXXX  Report no: OS-16/06, część II |
| Guideline(s) | Yes: OECD no 402, method B.3 |
| Deviations | No |
| GLP | Yes |
| Acceptability | Yes |
| Duplication  (if vertebrate study) | No |

Materials and methods

|  |  |
| --- | --- |
| Test material (Lot/Batch No.) | „Pasta do smarowania ran drzew 3 % Tiofanat metylu”, próbka nr 1 |
| Species | Rat |
| No. of animals (group size) | 10 rats/ 5 male and 5 female |
| Dose | 2000 mg/kg bw |
| Exposure | 24 hours (dermal) |
| Vehicle/Dilution | None |
| Post exposure observation period | 14 days |
| Remarks | None |

Results and discussions

Table A 3: Results of acute dermal toxicity study in rats of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA

| Dose (mg/kg bw) | Toxicological results \* | Duration of signs | Time of death | LD50 (mg/kg bw) (14 days) |
| --- | --- | --- | --- | --- |
| Male rats | | | | |
| 2000 | 0/5/5 | 14 days | - | > 2000 |
| Female rats | | | | |
| 2000 | 0/4/5 | 14 days | - | > 2000 |

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

Table A 4: Summary of findings of acute dermal toxicity study in rats of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA

|  |  |
| --- | --- |
| Mortality | No mortality occurred. |
| Clinical signs | Yes/ erythema on the skin was observed. In case of 2 of males – very faint, barely perceptible. In case of other 3 males and 4 females – was weel outlined. |
| Body weight | Body weight gain was considered to be normal. |
| Macroscopic examination | The necropsies performed at the end of the study revealed no apparent findings. |

Conclusion

Under the experimental conditions, the dermal LD50 of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA is higher than 2000 mg/kg bw in rats. Thus, no classification is required according to Regulation (EC) No. 1272/2008. No additional studies for evaluated product FRE 001/08/2020 // FUNABEN® 018 PA were provided. Taking into account, that bridging approach was performed and comparing the composition between evaluated product FRE 001/08/2020 / FUNABEN® 018 PA and reference product: “Pasta do smarowania ran drzew 3 % Tiofanat metylu” // FUNABEN® PLUS 03 PA – no classification for acute toxicity by dermal route is required for evaluated product.

The composition of both products is very similar. The content of Thiabendazole in FUNABEN® 018 PA is lower than content of Methyl thiophanate in FUNABEN® PLUS 03 PA. On the opposite to Methyl thiophanate, Thiabendazole shows no health hazards, e.g. has a low acute toxicity via dermal route. So there is no indications to expect that FUNABEN® 018 PA shows acute toxicity via dermal route. Besides, unnecessary suffering of vertebrates was avoided. Detailed confidential information are addressed in Part C.

* 1. Acute inhalation toxicity (KCP 7.1.3)

Due to form of plant protection product (thick paste), study was technically not feasible.

|  |  |
| --- | --- |
| Comments of zRMS: | Noting that a product FUNABEN® 018 PA has a consistency of paste the exposure by inhalation to this product is not possible thus testing of inhalation toxicity is waived. It is further noted that none of the constituents of the product FUNABEN® 018 PA is classified for acute inhalation toxicity thus according to calculation method described in Regulation 1272/2008 classification for acute inhalation toxicity is not required. |

* 1. Skin irritation (KCP 7.1.4)

|  |  |
| --- | --- |
| Comments of zRMS: | The study performed according to relevant OECD guideline and in GLP conditions is acceptable. The “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA, and thus also FUNABEN® 018 PA (FRE 001/08/2020), does not require classification for skin corrosion/irritation. |

* + 1. Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej

|  |  |
| --- | --- |
| Reference | KCP 7.1.4 |
| Report | Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej  XXXX  Report no: OS-16/06, część III |
| Guideline(s) | Yes: OECD no 404, method UE B.4 |
| Deviations | No |
| GLP | Yes |
| Acceptability | Yes |
| Duplication  (if vertebrate study) | No |

Materials and methods

|  |  |
| --- | --- |
| **Test material (Lot/Batch No.)** | „Pasta do smarowania ran drzew 3 % Tiofanat metylu”, próbka nr 1 |
| **Species** | Rabbit, New Zealand White |
| **No. of animals (group size)** | 3 females |
| **Initial test using one animal** | Yes |
| **Exposure** | 0.5 mL (4 hours, semi-occlusive) |
| **Vehicle/Dilution** | None |
| **Post exposure observation period** | 14 days |
| **Remarks** | None |

Results and discussions

Table A 8: Skin irritation of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Animal No. |  | Scores after treatment \* | | | | | | Mean scores (24-72 h) | Reversible (day) |
| 1 h | 24 h | 48 h | 72 h | 7d | 14d |
| 1 | Erythema  Oedema | 1  0 | 1  0 | 0  0 | 0  0 | -  - | -  - | 0,3  0 | 3 |
| 2 | Erythema  Oedema | 1  0 | 1  0 | 1  0 | 1 \*\*  0 | 1  0 | 0  0 | 1  0 | 14 |
| 3 | Erythema  Oedema | 1  0 | 1  0 | 1  0 | 1  0 | 1  0 | 0  0 | 1  0 | 14 |

\* scores in the range of 0 to 1

\*\* dry epidermis

|  |  |
| --- | --- |
| Clinical signs: | Yes, erythema was observed for all rabbits. In case of rabbit no 2 also dry epidermis was obseved after 72 hours. |

Conclusion

Under the experimental conditions, “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA is not a skin irritant. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

No additional studies for evaluated product FRE 001/08/2020 // FUNABEN® 018 PA were provided.

Taking into account, that bridging approach was performed and comparing the composition between evaluated product FRE 001/08/2020 / FUNABEN® 018 PA and reference product: “Pasta do smarowania ran drzew 3 % Tiofanat metylu” // FUNABEN® PLUS 03 PA – no classification for skin irritation is required for evaluated product.

The composition of both products is very similar. The content of Thiabendazole in FUNABEN® 018 PA is lower than content of Methyl thiophanate in FUNABEN® PLUS 03 PA. On the opposite to Methyl thiophanate, Thiabendazole shows no health hazards, e.g. it is not a skin or eye irritant nor a skin sensitiser. So there is no indications to expect that FUNABEN® 018 PA is irritating for skin. Besides, unnecessary suffering of vertebrates was avoided. Detailed confidential information are addressed in Part C.

* 1. Eye irritation (KCP 7.1.5)

|  |  |
| --- | --- |
| Comments of zRMS: | The study performed according to relevant OECD guideline and in GLP conditions is acceptable. The “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA, and thus also FUNABEN® 018 PA (FRE 001/08/2020), does not require classification for serious eye damage/eye irritation. |

* + 1. Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej

|  |  |
| --- | --- |
| Reference | KCP 7.1.5 |
| Report | Sprawozdanie. PASTA DO SMAROWANIA RAN DRZEW 3 % TIOFANAT METYLU. Badania toksyczności ostrej  XXXX  Report no: OS-16/06, część IV |
| Guideline(s) | Yes: OECD no 405, method B.5 |
| Deviations | No |
| GLP | Yes |
| Acceptability | Yes |
| Duplication  (if vertebrate study) | No |

Materials and methods

|  |  |
| --- | --- |
| Test material (Lot/Batch No.) | „Pasta do smarowania ran drzew 3 % Tiofanat metylu”, próbka nr 1 |
| Species | Rabbit, New Zealand White |
| No. of animals (group size) | 3 males |
| Initial test using one animal | Yes |
| Exposure | 0.1 mL (single instillation in conjunctival sac) |
| Irrigation (time point) | No |
| Vehicle/Dilution | None |
| Post exposure observation period | 7 days |
| Remarks | None |

Results and discussions

Table A 9: Eye irritation of “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Animal No. |  | Scores after treatment \* | | | | | Mean scores (24-72 h) | Reversible (day) |
| 1 h | 24 h | 48 h | 72 h | 7 d |
| 1 | Corneal opacity  Iritis  Redness conjunctivae  Chemosis conjunctivae | 0  0  2  1 | 0  0  2  1 | 0  0  2  1 | 0  0  1  0 | 0  0  0  0 | 0  0  1,7  0,7 | 7 |
| 2 | Corneal opacity  Iritis  Redness conjunctivae  Chemosis conjunctivae | 0  0  2  1 | 0  0  2  1 | 0  0  1  1 | 0  0  1  1 | 0  0  0  0 | 0  0  1,3  1 | 7 |
| 3 | Corneal opacity  Iritis  Redness conjunctivae  Chemosis conjunctivae | 0  0  2  1 | 0  0  2  1 | 0  0  1  1 | 0  0  1  0 | 0  0  0  0 | 0  0  1,3  0,7 | 7 |

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

|  |  |
| --- | --- |
| Clinical signs: | Yes / redness conjuctivae and chemosis conjunctivae for all rabbits within at least 48 hours. |

Conclusion

Under the experimental conditions, “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA is not an eye irritant. Thus, no classification is required according to Regulation (EC) No. 1272/2008.

No additional studies for evaluated product FRE 001/08/2020 // FUNABEN® 018 PA were provided.

Taking into account, that bridging approach was performed and comparing the composition between evaluated product FRE 001/08/2020 / FUNABEN® 018 PA and reference product: “Pasta do smarowania ran drzew 3 % Tiofanat metylu” // FUNABEN® PLUS 03 PA – no classification for eye irritation is required for evaluated product.

The composition of both products is very similar. The content of Thiabendazole in FUNABEN® 018 PA is lower than content of Methyl thiophanate in FUNABEN® PLUS 03 PA. On the opposite to Methyl thiophanate, Thiabendazole shows no health hazards, e.g. it is not a skin or eye irritant nor a skin sensitiser. So there is no indications to expect that FUNABEN® 018 PA is irritating for eyes. Besides, unnecessary suffering of vertebrates was avoided. Detailed confidential information are addressed in Part C.

* 1. Skin sensitisation (KCP 7.1.6)

No additional studies for evaluated product FRE 001/08/2020 // FUNABEN® 018 PA were provided.

Bridging approach was performed. Reference product: “Pasta do smarowania ran drzew 3 % Tiofanat metylu” // FUNABEN® PLUS 03 PA is classified as skin sensitizer (assessment based on classification of its active substance - Methyl thiophanate).

The composition of both products is very similar. The content of Thiabendazole in FUNABEN® 018 PA is lower than content of Methyl thiophanate in FUNABEN® PLUS 03 PA. On the opposite to Methyl thiophanate, Thiabendazole is not a skin sensitizer. So there is no indications to expect that FUNABEN® 018 PA should be considered as skin sensitizer. Besides, unnecessary suffering of vertebrates was avoided. Detailed confidential information are addressed in Part C.

|  |  |
| --- | --- |
| Comments of zRMS: | No study of skin sensitisation of the reference product “Pasta do smarowania ran drzew 3 % Tiofanat metylu”/FUNABEN® PLUS 03 PA, and of the product FUNABEN® 018 PA (FRE 001/08/2020) has been provided.  Skin sensitisation property of the reference product FUNABEN® PLUS 03 PA has been evaluated based on calculation method in line with point 3.4.3.3.1. of Regulation 1272/2008: “The mixture shall be classified as skin sensitiser when at least one ingredient has been classified as a skin sensitiser and is present at or above the appropriate generic concentration limit”. The same rule has to be applied for the current product FUNABEN® 018 PA.  According to harmonised classification of all components of the product FUNABEN® 018 PA given in the Regulation 1272/2008 and their generic or specific concentration limits for skin sensitisation the product FUNABEN® 018 PA (FRE 001/08/2020) does not require classification as a skin sensitiser. However, the RAC opinion adopted on 26 November 2021 on 1,2-benzisothiazolin-3-one has changed the specific concentration limit for skin sensitisation of this this substance therefore using rules of Regulation 1272/2008, this product should be classified as Skin Sens. 1A; H317 ( see part C for details) |

* 1. Supplementary studies for combinations of plant protection products (KCP 7.1.7)

Not relevant.

* 1. Data on co-formulants (KCP 7.4)
     1. Material safety data sheet for each co-formulant

Information regarding material safety data sheets of the co-formulants can be found in the confidential dossier of this submission (Registration Report - Part C).

* + 1. Available toxicological data for each co-formulant

Available toxicological data for each co-formulant can be found in the confidential dossier of this submission (Registration Report - Part C).

* 1. Studies on dermal absorption (KCP 7.3)

No studies on dermal absorption for Thiabendazole from FRE 001/08/2020/FUNABEN® 018 PA were performed. Default value (50 % for dilution) according to Guidance on Dermal Absorption (EFSA Journal 2017;15(6):4873) and Guidance SANTE/2018/10591 rev.1 of 24 October 2018 was chosen.

* 1. Other/Special Studies

No other/special studies were performed.

1. Exposure calculations
   1. Operator exposure calculations (KCP 7.2.1.1)
      1. Calculations for Thiabendazole

Taking into account, that Thiabendazole shows low acute toxicity via oral, dermal and inhalatory routes;

it is not a skin or eye irritant nor a skin sensitizer and no AAEOL value is available, only longer term exposure has been estimated. Due to form of product (thick paste) and specific mode of application (locally on wound of trees, using brush; small areas of plants) and lack of appropriate standardised first-tier methods, calculation of the exposure for non-professional users was performed using *ConsExpo web* (adapted model for Painting with brush). For professional users *German model for operator, 90th percentile* (properly adapted for specific mode of application) was used.

Table A 12: Input parameters considered for the estimation of operator exposure (professional)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Formulation type | PA | | Crop type | apple |
| Application rate (AR)\*\* | 0,1 | kg a.s./ha | Application method | painting |
| Area treated per day (A)\* | 0,25 | ha | Application equipment | brush |
| Dermal absorption (DA) | N/A | % (concentr.) | Indoor/outdoor | Outdoor |
| 50% | % (dilution) | Closed cabin | N/A |
| Inhalation absorption (IA) | 100 | % | Drift reduction | N/A |
| Body weight (BW) | 60 | kg/person | Cultivation | Normal |
| AOEL | 0,07 | mg/kg bw/d | Water soluble bag | N/A |
| AAOEL | N/A | mg/kg bw/d |  |  |

**Additional justifications:**

\*Area treated per day (0,15 ha) – estimated based on average planting rate for apples (2000 plants/ha – data from efficacy studies), average amount and area of wounds on each tree (2 wounds, 25 cm2 each – data obtained from the performer of the efficacy studies) and real perceptual abilities of operator. In result, the operator is able to use the product on 300 trees (located on 0,15 ha) / day (worst-case scenario).

\*\*Application rate (0,1 kga.s./ha) – based on average amount and area of wounds on each tree (2 wounds x 25 cm2→50 cm2 area of wounds on each tree), dose of product per m2 of wound area (555,6 g / m2) and estimated average planting rate (2000 plants/ha). In result: 2000 plants x 50 cm2 of wounds = 100 000 cm2 of wounds. Operator will then use 5,556 kg of FUNABEN® 018 PA, containing 0,1 kg of Thiabendazole. Using of PPE – gloves only.

**Table A 13: Input parameters considered for the estimation of operator exposure (non-professional)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Formulation type | PA | | Exposed area (hands) | 820 cm2 |
| Frequency | 3 | Per year | Weight fraction substance | 1,8 % |
| Exposure model (dermal) | Direct contact-instant application | | Product amount | 4 g |
| Absorption fraction | 50 | % | Retention factor | 0,1 |
|  |  |
| Inhalation absorption (IA) | N/A | % |  |  |
| Body weight (BW) - adult | 60 | kg/person |  |  |
| AOEL | 0,07 | mg/kg bw/d |  |  |
| AAOEL | N/A | mg/kg bw/d |  |  |

Additional justifications:

Model for painting with brush was chosen. In this model non-professional user will use the product 3 times per year and have direct contact (hands) with 4 g of product (worst-case scenario). 10 % of the product will remain on skin (the rest will be removed, e.g by washing the hands). Due to form of product (thick-paste), using outdoor, only dermal exposure is expected.

Table A 14: Estimation of longer term operator exposure towards Thiabendazole according to German model for operator, 90th percentile ~~EFSA guidance~~ (professional user)



|  |  |  |
| --- | --- | --- |
| **Internal dose on day of exposure [mg/kg bw/ day]** | **AOEL [mg/kg bw/day]** | **% AOEL** |
| 0,0698275 (without PPE) | 0,07 | 99,75 |
| 0,0623575 (with PPE) | 89,08 |

Conclusion: exposure for the operator (professional) is acceptable, even without using PPE.

Table A 15:Estimation of longer term operator exposure towards Thiabendazole according to *ConsExpo web* (adapted model for Painting with brush) ~~EFSA guidance~~ (non-professional user)

|  |  |
| --- | --- |
| **Substance** | |
| Name | Thiabendazole |
| CAS number | 148-79-8 |
| Molecular weight | 201g/mol |
| KOW | – |
| **Product** | |
| Name | FUNABEN 018 PA |
| Weight fraction substance | 1.8% |
| **Population** | |
| Name | EU framework Biocides adult |
| Body weight | 60kg |

Scenarios

* [Scenario *Application of paste on wounds*](https://consexpoweb.nl/assessment/48840/report#scenario_133336)

Scenario *Application of paste on wounds*

| Label | Value |
| --- | --- |
| Frequency | 3per year |
| Description |  |

**Inhalation**

| Label | Value |
| --- | --- |
| Exposure model | n.a. |
| Absorption model | n.a. |

**Dermal**

| Label | | Value | |
| --- | --- | --- | --- |
| Exposure model | Direct contact - Instant application | |
| Exposed area | 820cm² | |
| Weight fraction substance | 1.8% | |
| Product amount | 4g | |
| Retention Factor | 0.1 | |
| Absorption model | Fixed fraction | |
| Absorption fraction | 50% | |

**Oral**

| Label | Value |
| --- | --- |
| Exposure model | n.a. |
| Absorption model | n.a. |

**Results for scenario *Application of paste on wounds***

*  Show dose descriptions

**Dermal**

|  |  |
| --- | --- |
| Dermal load  (amount per cm² on the skin) | 8.8 × 10⁻³mg/cm² |
| External event dose  (the amount that can potentially be absorbed per kg body weight during one event) | 1.2 × 10⁻¹mg/kg bw |
| External dose on day of exposure  (the amount that can potentially be absorbed per kg body weight during one day) | 1.2 × 10⁻¹mg/kg bw |
| Internal event dose  (absorbed dose per kg body weight during one exposure event) | 6.0 × 10⁻²mg/kg bw |
| Internal dose on day of exposure  (absorbed dose per kg body weight during one day. Note: these can be higher than the ‘event dose’ for exposure frequencies larger than 1 per day.) | 6.0 × 10⁻²mg/kg bw/day |
| Internal year average dose  (daily absorbed dose per kg body weight averaged over a year.) | 4.9 × 10⁻⁴mg/kg bw/day |

**Integrated**

|  |  |
| --- | --- |
| Internal event dose  (absorbed dose per kg body weight during one exposure event) | 6.0 × 10⁻²mg/kg bw |
| Internal dose on day of exposure  (absorbed dose per kg body weight during one day. Note: these can be higher than the ‘event dose’ for exposure frequencies larger than 1 per day.) | 6.0 × 10⁻²mg/kg bw/day |
| Internal year average dose  (daily absorbed dose per kg body weight averaged over a year.) | 4.9 × 10⁻⁴mg/kg bw/day |

|  |  |  |
| --- | --- | --- |
| **Internal dose on day of exposure [mg/kg bw/ day]** | **AOEL [mg/kg bw/day]** | **% AOEL** |
| 0,06 | 0,07 | 86 |

Conclusion: exposure for the operator (non-professional) is acceptable.

* 1. Worker exposure calculations (KCP 7.2.3.1)
     1. Calculations for Thiabendazole

Table A 15: Input parameters considered for the estimation of worker exposure

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Intended uses | Painting with brush, apple (covering of all uses) | | Dislodgeable foliar residue (DFR) | 3 | µg/cm2/kg a.s./tree |
| Dose (R)\* | 0,00005 | kg a.s./tree | Dermal absorption (DA) | 50 | % (worst case) |
| Number of applications (NA) | 1 |  | Inhalation absorption (IA) | 100 | % |
| Interval between applications | N/A | days | Task duration (T) | 8 | h/d |
| Half-life of active substance | N/A | days | TC dermal (potential) | 14000 | cm2/h |
| Multiple application factor (MAF) | N/A |  | TC dermal (work wear) | 5000 | cm2/h |
| Body weight (BW) | 60 | kg/person | TC dermal (work wear, gloves) | 1400 | cm2/h |
| AOEL | 0,07 | mg/kg bw/d | Task specific factor inhalation | N/A | ha/h x 10-3 |
| AAOEL | N/A | mg/kg bw/d |  |  |  |

**Additional justifications:**

\*Dose (0,00005 kga.s / tree) – taking into account specific mode of application (locally on wounds of trees, small area of wounds and small area of crop), dose of product per m2 of wounds (555,6 g / m2), average amount and area of wounds on each tree (2 wounds, 25 cm2 of area, each → 50 cm2 of wounds; data obtained from the performer of efficacy studies) The following equation [based on german model BBA from 1998: “*Hinweise in der Gebrauchsanleitung zum Schutz von Personen bei Nachfolgearbeiten in mit Pflanzenschutzmitteln behandelten Kulturen (worker re-entry*) **and** *Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment of plant protection products; EFSA Journal 2022; Volume 20, Issue 1*) was used forthe calculation of dermal exposure:

DE = DFR x TC x T x R, where:

DFR (dislogeable foliar residue): 3 [μga.s.x tree / cm2 x kga.s]

TC (transfer coefficient): 22500 [cm2/h/person – potential exposure (orchards, worst-case scenario)

TC (transfer coefficient): 5000 [cm2/h/person] – work wear, no gloves (ornamentals, worst-case scenario)

TC (transfer coefficient): 1400 [cm2/h/person] – work wear with gloves (ornamentals, worst-case scenario)

T (task duration): 8 h/d

R (dose): 0,00005 [kg a.s./ tree]

DE – dermal exposure [mga.s./person x d]

Dermal absorption factor = 0,5 (50 %)

Dermal exposure has been estimated for: worker wearing protective clothing, with gloves (TC = 1400

cm2/h/person) and without (TC = 5000 cm2/h/person) gloves; a well as for case of total potential exposure

(TC = 22500 cm2/h/person).

TAD (total adsorbed dose, mga.s./kgbw x d] = Dermal exposure \* Dermal absorption factor / body weight (60 kg, adult)

Table A 16: Estimation of acute worker exposure towards Thiabendazole according to EFSA guidance

Taking into account, that Thiabendazole shows low acute toxicity via oral, dermal and inhalatory routes; it is not a skin or eye irritant nor a skin sensitizer and no AAEOL value is available, only longer term exposure has been estimated.

Table A 17: Estimation of longer term worker exposure towards Thiabendazole according to EFSA guidance

|  |  |  |  |
| --- | --- | --- | --- |
|  | **TAD [mga.s./kgbw x d]** | **AOEL [mg/kg bw/day]** | **% AOEL** |
| Potential | 0,000225 | 0,07 | 0,32 |
| Work wear, no gloves | 0,00005 | 0,07 |
| Work wear + gloves | 0,000014 | 0,02 |

* 1. Resident and bystander exposure calculations (KCP 7.2.2.1)

FUNABEN® 018 PA is in a form of thick paste and used in orchards and gardens by painting (locally) the wounds of trees with brush. Because of its form and specific mode of use, the product does not pose hazards for residents and/or bystanders. So there is no need to perform exposure assessment.

1. Detailed evaluation of exposure and/or DFR studies relied upon (KCP 7.2, KCP 7.2.1.1, KCP 7.2.2.1, KCP 7.2.3.1)

Taking into account, that Thiabendazole shows low acute toxicity via oral, dermal and inhalatory routes; it is not a skin or eye irritant nor a skin sensitizer and no AAEOL value is available, only longer term exposure has been estimated for operators (non-professional and professional) and workers.

Calculations of long-term exposure for professional user have been performed using German model, 90th percentile (properly adapted for specific mode of application). It has been assessed, that for professional user, operating with plant protection product FUNABEN® 018 PA on 0,15 ha of area of crops (apple), acceptable level of exposure, even without using personal protective equipment, was obtained.

Such calculations (as worst-case scenario) covers all intended uses (zonal and minor uses) from presented GAP table.

Calculations of long-term exposure for non-professional user (typically not wearing personal protective equipment) have been performed using *ConsExpo web* (model for Painting with brush). It has been assessed, that for amateur using product FUNABEN® 018 PA three times per year and (as worst-case scenario) having direct contact (hands) with 4 g of product, acceptable level of exposure, was obtained. Such calculations (as worst-case scenario) covers all intended uses (zonal and minor uses) from presented GAP table.

Calculations of long-term exposure for workers (total potential exposure, work wear with gloves, work wear without gloves) have been performed based on german model BBA from 1998 *“Hinweise in der Gebrauchsanleitung zum Schutz von Personen bei Nachfolgearbeiten in mit Pflanzenschutzmitteln behandelten Kulturen (worker re-entry)* and *Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment of plant protection products; EFSA Journal 2022; Volume 20, Issue 1).* It has been assessed, that exposure level (potential; when using work wear with; and without gloves) for worker performing other activities (cutting, sorting, bundling, carrying and fruit picking) within 8 hours/day, is acceptable. Such calculations (as worst-case scenario) covers all intended uses (zonal and minor uses) from presented GAP table.

It has also been assessed, that due to form of product (thick paste; not used when the rain falls) and specific mode of application (locally on wounds of trees, small area of wounds, small area of crops), no exposure of residents/bystanders is expected. In result, no exposure calculation is necessary.